



THE SIGNIFICANCE OF BA OR BUSINESS ANALYTICS IN FOSTERING AGILITY AND PERFORMANCE OF ORGANIZATIONS

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ABSTRACT

Business Analytics (BA) is becoming increasingly popular as a means of improving a company's performance. BA has the potential to influence performance in a variety of ways. It examines how business agility is affected by the quality of the company's knowledge and its capacity to come up with new ideas. In addition, environment turbulence, both technical and market-related, is studied for its moderating effect. Data from 154 companies, each with two CEOs and CIOs, was used to test the proposed methodology. Our findings show that a firm's agility can be improved by enhancing the superiority of its data and its measurements to come up with new ideas. Market and technological upheaval both decrease the impact of enterprises' adaptability on their performance, as well, as we point out in our paper.

1. Introduction

Business analytics or BA are reshaping the way businesses generate and utilize data in the marketplace today (Ramanathan, Philpott, Duan, & Cao, 2017). A growing number of researchers and practitioners are focusing on them because of their operational and strategic potential in a wide range of industries—from financial services to retail to healthcare—and because of their ability to improve the quality of life for millions of people. (Dubey et al. 2016). There are many different ways to describe business analytics (BA), but one of the most common is that it is a comprehensive strategy for managing, processing and analyzing data

also to enable organizations to anticipate changes in market requirements and answer to them rapidly. Data collection, transformation, analysis, and interpretation are all part of BA systems (Santiago Rivera & Shanks, 2015). BA has been linked to improved organizational performance in both the professional and academic literature. However, it is not yet obvious how BA affects performance.

The objectives of this study are,

- To evaluate on the effect of business analytics on business's performance
- To investigate the impact of business analytics on firm's agility
- To identify the link among business's agility and performance

The question of whether and to what extent market and technical upheaval moderates the relationship between business agility and performance when BA is enabled is an intriguing one.

The study's goal is to learn more about how BA skills affect a company's agility and performance in turbulent environments.

2. Literature review

A recent study by Ji-fan Ren, et al. (2017) found that improving business worth and company performance relies heavily on both system and information quality. According to their findings, business value is generated by the BA tools, and data quality intercedes the link between big data setting and company performance. There is a direct link among big data capabilities and business performance also the mediating influence of process-oriented lively skills. Firm performance can be improved through the usage of BA capabilities as identified by Tores, Sidorrova, and Jonnes (2018) from a dynamic capabilities approach.

According to a study, enhancing BA capabilities can have a significant impact on a company's overall success, since multiple interrelated factors interact to determine. Although the quality of information in an organization can be improved through the use of BA, we propose that innovation ability (the ability of an organization to undertake new practices) is just as significant. The agility of the firm, defined as the ability to recognize and answer to opportunities and dangers with ease, swiftness, and dexterity, is enhanced as a result of both.

According to Sherehiy, Karwowski, & Layer (2007), the agility of a company is not a goal in and of itself, but rather an essential tool for gaining an advantage in an ever-changing

marketplace. If we want to understand how agility and firm performance are linked, we need to look at the impact of technical and market volatility on the relationship (Jaworski & Kohli, 1993).

Popovi et al. (2014) found a strong correlation between the maturity of BI tools and the quality of the data they provide. Talon and Pinsoneault (2011) found that in a volatile environment, agility had a bigger impact on firm performance than it did in a stable one. Taxonomy for BA skills was developed by Delen and Demirkan (2013). They said the purpose of BA is to provide decision-makers with comprehensive knowledge about the business and to assist them in implementing more effective actions. To this end, conferring to Işk et al. (2013), organizations rely extensively on BA capabilities to find new opportunities and make more entrepreneurial decisions.

In the past, researchers have found that information has a favorable impact on performance (Gupta & George, 2016), but they haven't delved into the specifics of how information influences performance. This suggests that while there is strong evidence to support the value of investing in business analytics, further investigation is needed into how this value is generated (Sharma, Mithas&Kankanhalli, 2014). There have been various attempts to address this issue in recent years which incorporates strategic alignment as a moderator.

3. Hypothesis development

Enterprises strive to gather the necessary data and analyze it in a timely and correct manner in order to provide decision-makers with analytical insights (Sahay & Ranjan, 2008). Higher-quality information is prepared for better judgments in a timely manner by IT and BA (DeGroote & Marx, 2013). IT utilization in the workplace has a favorable effect on information quality, according to Gustavsson and Jonsson (2008). By providing appropriate, relevant, and easy-to-use data for managers to make well decisions (Elbashir, Collier, and Davern, 2008), BA systems are fulfilling their primary mission.

Our recommendation is thus:

H1a: Business analytics positively impacts on the information quality

Companies' capacity to retrieve environmental information has been shown to be crucial in identifying new business prospects and continually evolving/innovating. It is possible to discover new business prospects by utilizing data that has been gathered.

Since this is the case, business software such as BA are being used to help companies develop their ability to innovate.

Enterprises can develop new knowledge and insights through the proper application of BA. As a result, BA systems give businesses a holistic perspective of their internal and external surroundings (Chung & Tseng, 2012). In light of what has been said thus far, we believe the following:

H1b: Business analytics impacts positively on the innovation capabilities

A firm's agility is defined as the ability to rapidly notice and adapt to unanticipated changes (Roberts & Grover, 2012). Our recommendation is as follows:

H2: Information quality impacts positively on the agility of organization.

Innovation is a critical component of being able to adapt to changing environmental conditions. A company's ability to innovate is a critical differentiator for acquiring and maintaining market share.

When it comes to being more agile, firms must be able to react quickly to changes and do so in an inventive way, as noted by van Oosterhout, Waarts, and van Hillegersberg (2006). Using IT systems not only enhances the potential for continuous innovation, but it also creates a supportive atmosphere for achieving agility within the organization, according to Tan and colleagues (2017). As a result, we believe:

H3: Innovation capacity impacts positively on the agility of organization.

Business agility has been demonstrated to be a significant factor in business success. The findings of this study reveal that agility has a significant influence on performance across a wide range of businesses and settings. An organization's dynamic capabilities have a positive correlation with its modest performance, we agree with Sherrehiy et al. (2007) who claim that business agility is a means to a conclusion instead an end in and of itself for enhancing results. Our recommendation is thus:

H4: Agility of organizations impacts positively on the performance of the organization.

Organizations must be able to answer quickly and efficiently to turbulence and uncertainty in order to provide higher value and provide consistent service to the customers. Since the markets are so volatile, businesses in these sectors have to be quick to respond to latent requirements of their customers. Companies that are sluggish to adapt to market changes may miss out on opportunities or even fall behind their rivals, as noted by Bhat, Emddad, Robertts, and Groverr (2010) Organizations operating in turbulence have to process information more quickly than those that operate in more stable business environments

because of the higher level of uncertainty they face. As a result, agility may be a good quality to use as a competitive advantage in a volatile setting. Our recommendation is thus:

H5a: Technological surge moderates the link among agility and performance of firms in a positive way.

H5b: Market turbulence moderates positively the link among performance and agility.

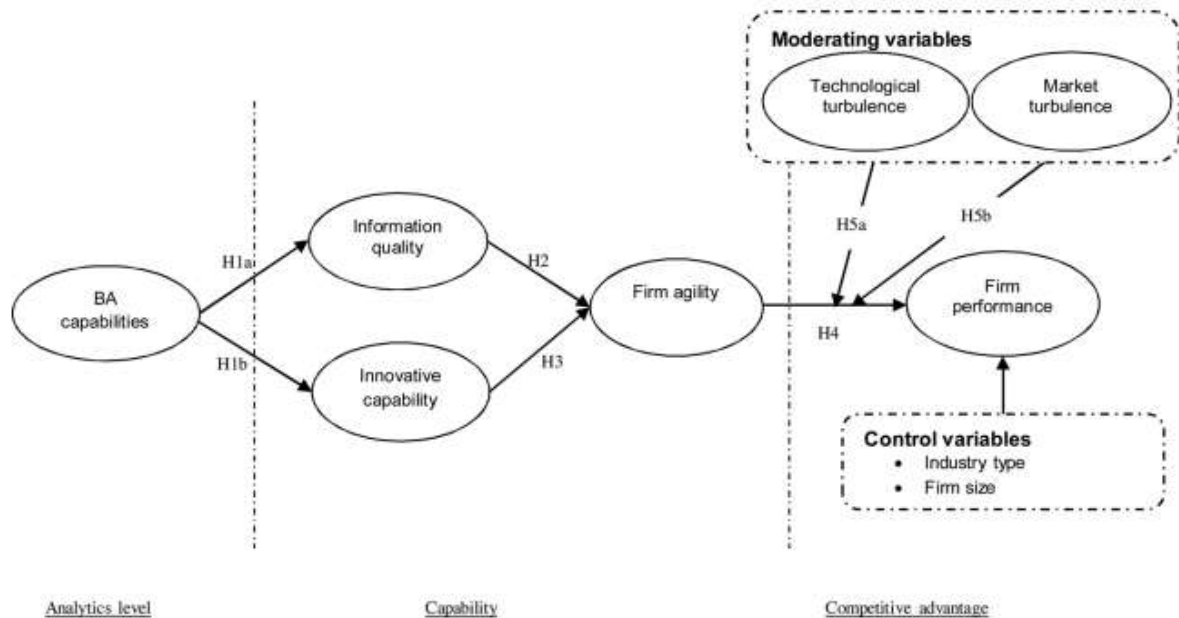


Figure 1: Hypothesis model

4. Methodology

4.1 Instrument

Various aspects of the study model were measured using scales in our questionnaire. The components for all survey items were measured with a five-point Likert scale with a 10% tolerable level of error (except for control variables). The items in the questionnaire and framework were examined by 7 CIOs and 5 CEOs with an education qualification and more than 8 years of professional knowledge.

Their suggestions for improving the questionnaire's readability and length were incorporated into the final draft. Cronbach's alpha for the test-retest reliability approach was 0.84 (above the threshold level of 0.70), which was achieved by doing the study over a 14-day period with 15 experts' responses.

4.2 Data sampling

It is common practice to conduct research by asking subject matter experts (SMEs) about how they view certain components of a company. Using a survey enables for the analysis of models and theories based on real-world data, which finds this approach suitable for the existing research.

Using a database of the 500 largest Iranian corporations, this study focused on organizations from an extensive range of industries. Due to earlier research demonstrating that successful transitions in the setting of financial and political disturbances are often related with sophisticated business practices, this study was motivated to be conducted in the Iranian context. Iranian data has been successfully used in a number of previous studies for general findings.

Demographics of the firms (number of organizations = 154).

Category	Percentage of respondents
<i>Industry type</i>	
Information Technology (IT)	16.2%
Manufacturing	13.6%
Electrical & Electronics	13.0%
Bank, Insurance, Investment	11.7%
Dairy, Food & Meat Products	8.4%
Retail/Wholesale/Distribution	7.8%
Automobile Dealership	5.8%
Chemical & Pharmaceuticals	5.2%
Medical & Healthcare	4.5%
Transportation, Logistics & Courier	3.9%
Telecommunications	3.2%
Other	6.5%
<i>Revenue (US\$ million)</i>	
Over 100	21.4%
51-100	30.5%
11-50	29.2%
Less than 10	11.7%
Missing data	7.1%
<i>Number of company employees</i>	
Fewer than 50 employees	21.4%
51-100 employees	16.2%
101-500 employees	20.8%
501-1,000 employees	17.5%
1,001-10,000 employees	27.3%

Table 1: Firm demographics

4.3 Collection of data

To get in touch with the intended audience, we used a four-step process. According to Chen, Lin, and Chang, (2009), phone calls were made to each company first. As well as obtaining or verifying information about the respondents, this pre-notice also included an overview of the study's primary objectives and the questionnaire's substance. They were also informed

that they will be asked to fill out the survey questionnaire within a few days. After receiving the pre-notice to complete the survey within two weeks, respondents received an email with a link to the survey and a letter outlining the survey's main request. The cover letter stated the goal of the study and promised respondents that their responses would be kept private. A description of the results of the survey was also promised in the cover letter.

In previous studies, only one respondent from each organization was used. As a result, it is impossible for a single person to provide comprehensive solutions to all issues about business analysis. According to our findings, the CIOs who responded to the questions on "BA capabilities" and "information quality" were CIOs, whereas the CEOs who responded to the questions about "innovative capability," "firm agility," "technology storms," and "market storms" were CEOs. Sample companies were sent 493 questionnaires provides an overview of the companies that responded to the survey.

4.4 Measuring tools

We used a modified version of LaValle et al five-item.'s scale to gauge BAs' abilities (2010). Someh& Shanks (2015) conducted a survey in which respondents were asked to estimate the level of their company's analytics capabilities in order to ascertain the extent to which they are being used throughout the organization.

Various metrics have been used in the past to assess the performance of companies. Self-reported financial performance evaluation was utilized since creative managerial efforts cannot be judged exclusively by financial performance measures, as per Venkatraman and Ramanujam (1986). The next step is to ask the respondents about how they judge the performance of their company. Based on Chen et al., we adopted a four-item scale (2014). Rate of return, share price, increased sales, and overall profitability are some of the metrics used to evaluate an organization's performance in contrast to its competitors.

5. Data analysis and result

PLS and SmartPLS were used in this study (v. 3.2.7) Number of businesses (154 total) in Table 1. Category % of those who responded Specify the type of industry. Information and Communications Technology (ICT) (IT) 16.2% of the manufacturing sector One-fifth of all electrical and electronic products More than a tenth of a percentage point Food and Meat Products account for 11.7 percent of total sales. Retail/Wholesale/Distribution is 8.4%. Auto Dealerships have a 7.8% share of the market. Chemicals and pharmaceuticals make up 5.8% of the total. Health Care & Medical Supplies: 5.2% Transport, Logistics, and Courier Services: 4.5% Communications, at 3.9% Other (3.2%) Revenue (US\$ million) grew by 6.5

percent. More than a hundred 51–100%: 21.4% 30% of those ages 11–50 Less than ten percent 11.7 percent of the data is missing 7.1 percent of the workforce.

Constructs	1	2	3	4	5	6	7	8	9
1 BA capabilities									
2 Information quality	0.61								
3 Innovative capability	0.47	0.36							
4 Firm agility	0.40	0.47	0.37						
5 Technological turbulence	0.36	0.44	0.36	0.27					
6 Market turbulence	0.28	0.39	0.29	0.25	0.47				
7 Firm performance	0.48	0.29	0.22	0.31	0.18	0.19			
8 Industry type	0.06	0.03	0.09	0.10	0.02	0.04	0.09		
9 Firm size	0.04	0.05	0.05	0.04	0.06	0.05	0.08	0.04	

Table 2: HTMT test

With fewer than fifty workers, 25,1% of workers with 51 to 100 jobs the percentage of workers in the 101–500-worker range who are employed is 16.2 percent. 20.8 percent of employees in the 501–1,000 range 15% of 1,001–10,000 staff According to A. Ashrafi et al., 27.3 percent. Analytical software for data With Becker and Ringle. Four factors led to the selection of PLS. Firstly, the PLS-SEM approach has a wide range of application and is adaptable in terms of theory and practice. For a second, it can be utilized to deal with the limited sample sizes that we have.

6. Conclusions

It is the goal of this research to examine the influence of BA capabilities on the agility and productivity of a company. By enhancing information quality and enabling businesses to respond to market variations by building pioneering capabilities, the empirical results show that BA capabilities boost firms' agility to perceive market changes and enable them to respond to market changes. Another finding from this study shows how ambient turbulence influences the link between agility and performance.

This study also provides theoretical information by analyzing and evaluating environmental turbulence moderating effects on the association among agility and performance in the firm. Firm agility has a favorable impact on performance only in turbulent circumstances, according to our research. Firms that are dealing with a wide range of issues in both the market and technology are more likely to experience this phenomenon. Our findings demonstrate that firms that are more able to adjust to environmental changes are more

successful than those that are less capable. A distinction between companies operating in environments with high environmental turbulence might be made by this.

It has been found that BA capabilities increase the ability of a company to innovate, which has a favorable impact on its agility. Data accessibility is less significant than how corporations use.

The research also found that the influence of BA abilities on invention capability is more pronounced compared to the impact on information quality. This could be because of BA's inherent characteristics. Information quality can now be achieved by companies that have enough IT systems and software to support their business processes. For the sake of innovating their product or business model, they must, nevertheless, rely on BA's unique capacity. As a result of our research, we found that the link among agility and productivity is moderated by both technology and market volatility.

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