Building Value from Business Intelligence and Analytics in SMES

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Abstract

Analysis of BI and A use in small and medium-sized businesses is the subject of this paper, which summarizes the findings of an exploratory study (SMEs). A total of 24 semi-structured interviews were performed with BI & A professionals. According to the experts, SMEs need to examine a number of crucial factors."Start Small, Think Big" was highlighted as a suitable investment strategy for SMEs in order to (1) gain value from both "quick wins" and long-term assets and impacts, (2) consider BI & A investment without implementing a traditional data warehouse, and (3) consider an automated data warehouse approach. Additionally, experts emphasized the critical nature of data stewardship. We employed a well-established value framework from the literature to make sense of the data. BI & A can be enhanced in small and medium-sized organizations (SMEs) by shifting away from a "waterfall" strategy and toward an iterative and agile one. Future research should include investigating SME preparedness and capacity for BI & A. Additionally, the special decision-making requirements of SMEs must be considered.

Keywords: Business intelligence and analytics, SMEs, BI&A value framework, data governance.

1. INTRODUCTION

For several years, academics and practitioners alike have agreed that BI & A methodologies may improve decision-making and provide economic value in organisations. In order for management teams to get the most out of their organization's data, BI and A solutions are essential. Systems for business intelligence and analysis (BI & A) are essential both

internally for streamlining processes and providing actionable data and externally for improving a company's capacity to compete in the marketplace over the long run.**(Guarda et al., 2013)**
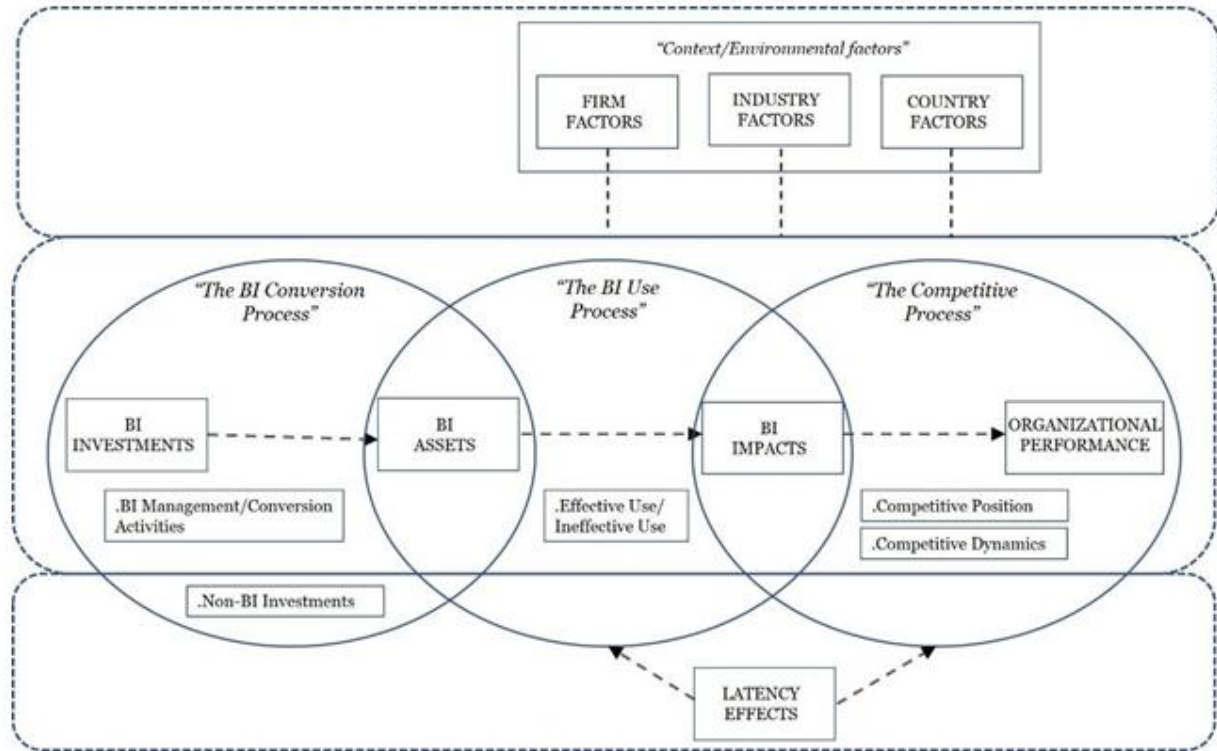

Figure 1 A Framework of How BI Creates Value(Trieu, 2017)

A small business's financial situation affects the solution it chooses. For many small businesses, moving to the cloud is a low-risk, high-reward investment. The maturity of an SME's IT, the availability of human resources and the execution of an application portfolio are closely linked to the company's ability to transform investments into assets. Because BI&A is a unique IT investment that requires understanding, companies must first determine what data they intend to use, what decisions need assistance, and how to turn data into valuable information. Effective data collection strategies are also necessary when creating BI&A assets. As part of data governance, this includes an emphasis on improving data quality and eradicating discrepancies. When it comes to building BI&A assets, SMBs will have to pay attention to data governance

2. RESEARCH METHODOLOGY

The expert interview method was employed in this exploratory investigation. Norwegian BI&A professionals from diverse industries were interviewed for 24 semi-structured

interviews. Experts in business intelligence and analytics (BI&A) were sourced on LinkedIn. A snowballing strategy was also employed, in which each informant was instructed to propose other people we may speak to. Table 1 provides an outline of the informants' responsibilities.

"Role	Industry	Role	Industry	Role	Industry
Consultant	IT Consultancy	BI User	Chemicals	Data Scientist	BI Software Provider
Consultant	Oil & Gas	Head of BI	IT Consultancy	Data Scientist	Insurance
Consultant	IT Consultancy	Head of BI	Chemicals	Data Scientist	IT Consultancy
Consultant	IT Consultancy	Head of BI	IT Consultancy	Data Scientist	IT Consultancy
Consultant	IT Consultancy	Head of BI	Insurance	Data Scientist	Banking
Advisor	IT Consultancy	Head of BI	IT Consultancy	Vendor	BI Software Provider
Advisor	Investment Consulting	Head of BI	Banking	Vendor	Consulting & Advisory Services
BI User	Food & Beverages	Head of BI	BI Consulting	Data Governance Leader	Insurance"

Table 1 The Informants' Roles and IndustrialAreas

Thematic analysis was used to sort the information. To begin with, NVivo was used to transcribe and analyse all of the interviews. The first step was to familiarise ourselves with the information. The transcripts were read and reviewed, and some early ideas were jotted down. Second, we systematically categorised the important features of the data and compiled relevant data for each code. Finally, we scoured the internet for possible topics and analysed

each one. Finally, we came up with distinct names and definitions for each subject. Lastly, in the results section, we give a summary of our findings.

3.RESULTS

In this section, we offer the findings from our interviews with the experts. We begin by focusing on the SMEs' BI&A conversion process. A comparison of BI&A processes in other industries is next, followed by a discussion of the competitive environment.

3.1BI&A Conversion Process

An iterative and incremental approach to BI&A investment is required, as are questions about whether a data warehouse should be part of the BI&A system and whether or not a fully automated data warehouse should be part of the BI&A system, according to those interviewed. Good data governance was also emphasized by them. A modest number of deliveries, restricted scope, and concentrated effort are the best ways to get the most rapid results for your firm. BI & A (Business Intelligence and Analysis) became more business-oriented because of this investment. This makes it easier to continue forward, sustain the commitment, and take the lead in putting together the entire picture if you've contributed anything of value. It's still possible to come up with short-term answers if you keep an eye on the broader picture."(For BI & A assets to be successful, the sources say they must be developed in tiny phases with a clear knowledge of their future utility and ability to add value. In the late 1990s and early 2000s, a Norwegian company began a BI & A project and "always covered everything," according to one source. Creating a data warehouse without knowing what its end consumers needed was a frequent practise back then. At least one participant felt strongly enough that BI & A systems should be fluid and change over time. In order to keep up with the on-going development of new products and services as well as new data sources, new systems, such as those on the cloud, must be integrated. Since the world is changing so quickly, experts say that BI & A systems must be adaptable in order to keep up. Iterations will be made to the system over its lifetime to make it better.

According to the interviews, SMEs may be able to benefit from an automated data warehouse. According to the sources, new BI and A technologies can speed up the process of putting up a data warehouse. The major objective of these technologies is to automate and improve data warehouses. When compared to a normal data warehouse, this solution is quite easy to implement and does not require a lot of resources. More than 80% of ETL procedures may be automated with automated data warehousing, yet only 20% of the time is spent on

reports and analytics, according to our sources. While automated data warehouses "optimise the process of getting the data prepared and ready for reporting," as one of the BI & A vendor's informants informed us during the interview, they do not sacrifice quality, governance, and documentation. Automated data warehousing attempts to move away from a preparation-heavy model to one that relies on analysis 80% of the time. A large majority of our clients contact us because they have many versions of their business rules, everything is disorganised, and there is no documentation. In spite of the fact that data warehousing is both costly and time-consuming, it is an unavoidable necessity. There are a number of studies that support this claim. "(Arnott & Pervan, 2016)

3.2 BI&A Use Process

The use of BI and A was considered vital for gaining control of interview data. To all of the interviewees, data collection, processing, and presentation are the most important aspects of BI & A for aiding decision-making. These decisions are made based on facts rather than intuition. Businesses with fewer than 500 employees, according to the interviewees, use BI and A assets to make BI and A impacts. According to the findings of the interviews, automating BI and A assets is critical for small and medium-sized businesses. When using the BI and A tools, you don't have to reenter the data you've previously entered. BI & A automation has become a selling point because many companies are unfamiliar with its full potential. BI & A is also being adopted by some of the most well-established small and medium-sized enterprises for the purpose of automating decision-making processes**(Elbashir et al., 2008)**

3.3 Competitive Process

Organizational performance can be improved by BI&A impacts, but they are not adequate on their own. A number of studies have found that BI&A's positive impact on organizational performance is influenced by a company's competitive position and dynamics. According to the interviews, the informants had little interest in this process.

4.0 DISCUSSION AND FUTURE RESEARCH

First and foremost, the respondents favored a small company investment strategy that was both progressive and iterative. As a result, it's recommended that they start with the simplest use cases and expand from there. They must first appreciate the benefits of the previous iteration before moving on to the next one. Incremental delivery underpins this strategy as

well. It is our view that BI&A's credibility and corporate mistrust may be overcome by early success stories. As a result, finding more funds for BI&A investments is critical. We expect that the BI&A project will be more business-oriented as a result of its solid financial foundation. They must be able to adapt to the needs of the business, as several of our interviewees have pointed out, according to our research. BI&A should never be deemed finished throughout the lifecycle of a system. Norway's banking, insurance, and finance businesses, as well as its production and sales sectors, as well as its architectural and private equity firms, have all adopted BI&A to enhance their operations..(Mowday & Sutton, 1993)Even though research reveals that BI&A has spread across a wide range of industries, it is unable to pinpoint exactly what types of companies are making use of it. Norway's small and medium-sized businesses are only just beginning to use BI&A. They used only the most basic analytics functions of BI&A. Perhaps the advanced BI&A solutions available to company leaders aren't known by them. As a result of the importance of SMEs in BI&A, we believe that greater investigation is required.

5.0 CONCLUSION

BI & A can help small and medium-sized enterprises gain a competitive advantage. For this study, we interviewed 24 industry insiders, including vendors and customers, for this study. The investigators uncovered a wide range of issues, but just three were deemed critical. As a general rule, small and medium-sized enterprises (SMEs) prefer a steady and incremental investment strategy. Thanks to new possibilities, small firms may now employ business intelligence and analytics without a data warehouse. Many small and medium-sized firms can benefit from an automated data warehousing strategy, according to the experts. Small and medium-sized businesses (SMEs) will profit from our suggested BI & A value development paradigm.

We just looked at one country because it was an exploratory trip. As a result, it has a narrower scope, which allows for more research. BI & A in small and medium-sized businesses can benefit from the conclusions of this study. If our findings hold up in different regions of the world, we'll know! Even if the study's findings cannot be generalised, they should be used to educate small businesses about the challenges they face in adopting BI & A

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