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# The Role of Business Intelligence in Information-Intensive Small Businesses: Initial Results from an Interpretive Study

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## ABSTRACT

Small businesses have limited resources that need to be utilised for maximum return. Business intelligence (BI) systems can provide decision-makers, who in small businesses are predominantly the owner-managers, with access to data that enables them to make informed decisions on where to apply their limited resources. Given the dearth of literature on the role of BI in small businesses this research-in-progress paper documents the initial results from an interpretive qualitative study, the purpose of which is to explore the use of BI in information-intensive small businesses<sup>1</sup> to support strategic, tactical and operational decision-making that suggest BI can indeed play a role but that support and guidance can ensure that BI to fully exploit data for decision-making. The paper concludes with the next steps for the current research as well as future research.

## Keywords

Business intelligence, small businesses, owner-manager, interpretive paradigm, qualitative case studies

## INTRODUCTION

Small businesses have limited resources that need to be utilised for maximum return. In terms of IT small businesses tend to spend their available resources on transactional systems (Fuller, 1996; Lybaert, 1998) that are geared toward capturing transactional data but not producing information. Business intelligence (BI) systems can provide decision-makers, who in small businesses are predominantly the owner-managers (Gibcus and Van Hoesel, 2008; Martin, 1998), with access to data that enables them to make informed decisions on where to apply their limited resources. For example, an owner-manager may want to know not only the revenue generated per client but also how profitable each client is to decide which clients to target for sales and marketing. To deliver such information BI requires transactional systems to be in place to gather the data making its use the next logical step. This research-in-progress paper uses an interpretive qualitative approach to explore the use of BI in information-intensive small businesses for strategic, tactical and operational decision-making and presents the initial results followed by the next steps. In exploratory research the research questions may have yet to be formulated; in such cases the purpose of the research is defined at the outset (Rowley, 2002). The purpose of this study is to provide insight into industry practice that may be of value to small business owner-managers, vendors and policy makers in order to better understand the extent to which BI is used (or not used) in small businesses, what BI means in the context of small business and if used, how it can be supported. Owner-managers can use the findings as benchmarks against which to measure their own endeavors in relation to decision support. Before justifying the approach and presenting the initial results the key concepts, business intelligence and small businesses, are discussed briefly.

## BUSINESS INTELLIGENCE

There is little agreement in the literature on a common definition of BI (Pirttimäki, 2007; Turban, Sharda, Delen and King, 2011; Wixom and Watson, 2010). This is not unusual in a research field that is still being established. Pirttimäki (2007) remarks that definitions of BI vary depending on the perspective from which it is defined. Ponelis (2011) developed a definitional framework (see Figure 1) of BI as a result of qualitative content analysis of a selection of definitions and descriptions of BI in the literature by academics, practitioners and vendors of BI software that comprises five components: sources, systems and tools, the processes of production, the processes of consumption and decisions as outcome.

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<sup>1</sup> Information-intensive includes, amongst others, firms engaged in providing software, web-based and other IT-related services including consulting.

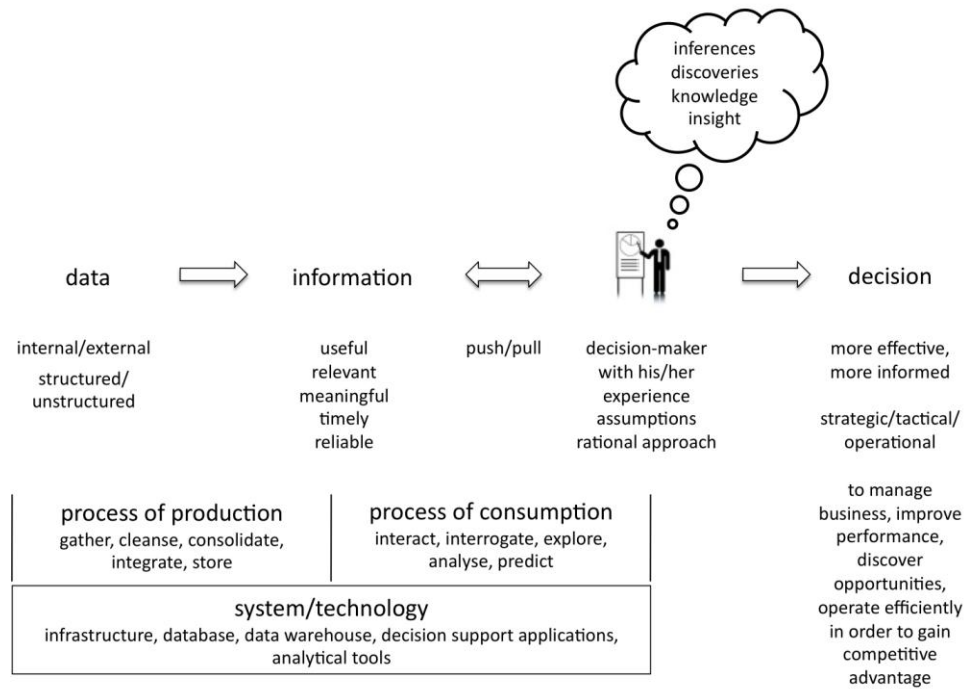


Figure 1. Business intelligence definitional framework (Ponelis, 2011)

**SMALL BUSINESSES**

As Burns (2007:10) points out one does not have to own a business to manage it; however, the majority of managers of small businesses are also owners, hence the term owner-manager. Ownership can take many forms: a sole proprietorship, partnership, close corporation, or a limited liability company but regardless of the form, owner-managers significantly control the daily operations of their businesses. What is less clear is what exactly is considered as a small business. Most definitions now classify businesses based on their number of employees, turnover and/or total assets with the particular threshold being industry-specific. To simplify participant selection in this study a small business is defined as those businesses with fewer than 200 employees.

**APPROACH AND METHODOLOGY**

According to Storey (in Levy and Powell, 2005:vi) small businesses are not scaled-down versions of large firms and their owners have a diversity of objectives, almost none of which correspond to enhancing shareholder value that drive larger firms. Moreover, the difficulties of understanding owner-managers’ thinking in order to understand how they arrive at decisions are well known (Hills and LaForge, 1992). Gilmore and Carson (2000) advocate a qualitative research approach within the interpretive research paradigm when conducting research on the decision-making processes of small business owner-managers. Furthermore, when seeking understanding, as is the case in this exploratory research, case studies are the most appropriate method (Myers, 2009; Levy and Powell, 2005:6). Arnott and Pervan (2008:667) also advocate the use of case studies, in particular interpretive case studies to increase the relevance of research since case studies “can illuminate areas of contemporary practice in ways that studies such as laboratory experiments and surveys cannot.” Although there is a dearth of literature on the role of BI in small businesses, the proposed research design has been utilised in a number of studies seeking to explore and understand specific aspects of small businesses that is similar in nature to this study. Moreover, case-based research supports the relevance of the study since case studies are considered more persuasive to owner-managers than theoretical discussions (Storey in Levy and Powell, 2005:viii).

This study adopted an interpretivist research paradigm using qualitative case studies. Data was collected through semi-structured, face-to-face interviews conducted with the owner-managers of seven information-intensive small businesses selected through purposive sampling. In interpretive research the number of participants does not determine the significance of the research but rather the information richness of the cases selected (Eisenhardt, 1989:537). Given the lack of agreement

on a definition for BI among experts, it is unlikely that owner-managers would have a common understanding of BI. The interviews thus used the five components of the definitional framework of BI discussed above as themes to elicit how individuals make sense of their experiences and actions with regard to decision-making in their businesses. The transcriptions (where audio-recording was permitted) and notes were analysed following the process outlined by Cope (2005) amended to consider the data collection process itself as the first level of analysis.

## LIMITATIONS

No research is without limitation and this study is no exception. First, much of the evidence relied on data from one individual within each enterprise. Due to the nature of the data gathered it was not always possible to triangulate between sources and the integrity of the data gathered relies on the truthfulness of participants. Second, the reliability of interpretive results rests on the interpretative abilities of the researcher who is also subjectively involved in the research process. There are some strategies that can be employed to overcome these including acknowledging the researcher's subjective role, outlining prior experience and assumptions, confirmation of the results with participants, and using a rich description to allow the reader to judge the trustworthiness of research. Due to space limitations these are not documented here except to note that the study incorporated such strategies.

## INITIAL RESULTS AND IMPLICATIONS

Not all the owner-managers referred explicitly to BI during the interviews but they all relied on BI as defined in the framework in Figure 1 above to some extent although the nature and number of sources, the systems and technology used as well as the processes of production and consumption varied. In terms of the systems and technology used to produce and consume information the study revealed a preference for inexpensive, flexible solutions that are easy to implement and use, a result that confirms previous research (Cragg and King, 1993; Fink, 1998) but in contrast to these studies, this study revealed a preference for the more recently available open source, web-based applications rather than in-house packaged software. The initial results also suggest that owner-managers who rely on informal data sources, such as social networks, and informal decision-making do so not from a lack of willingness to use formal data sources as suggested by earlier research (Huang, 2009; Gibcus and Van Hoesel, 2008; Hill and Scott, 2004) but due to a lack of knowledge of, access to and ready availability of such sources, particularly with regard to external data. The results support the statements by Blili and Raymond (1993) and Chesney (2003) that owner-managers have expertise in their respective professions and industries but not necessarily in management and administration of a business. Together these initial results imply that, whilst the owner-managers recognize the value of both information for decision-making, without the bespoke assessment of the potential and guidance and support for using BI in their small businesses they may well not use their data to support their decision-making to the extent that they could and most owner-managers require assistance with advanced analysis and interpretation of their existing data in addition to identifying potential additional sources of data.

## NEXT STEPS

In this study the researcher set out to discover the role of BI in the decision-making in small businesses by the main decision-makers, the owner-managers. The goal of qualitative research is not to confirm theory through statistical generalisations but rather to explore and develop propositions for further testing and the initial results present a first step towards building a model of BI in small businesses. The initial results indicate that performing a larger study with probability sampling to confirm the final findings and interpretations would be meaningful.

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