Transforming Organizations with Business Intelligence: Comparing Theory with the Vendor Perspective

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Abstract. Business Intelligence (BI) vendors have often asserted that the use of their tools can lead to organizational transformation. This paper compares the vendor literature on the topic with two management theories. The results of a content analysis of the vendor literature are presented, followed by an overview of dynamic capability theory and absorptive capacity. This comparison shows that the BI vendor literature treats transformation in a simplistic and narrow way. The paper argues for greater engagement between academia, BI vendors and BI customers.

Keywords. Business Intelligence, Transformation, Vendors, Absorptive Capacity, Dynamic Capabilities

Introduction

Business Intelligence (BI) systems are intended to provide support and improve decision-making processes in organizations. One of the arguments used by BI vendors for adopting BI systems, both strategic and operational, is that they improve an organization’s capability to transform and compete in rapidly-changing market places. This paper evaluates that claim by comparing the capabilities firms require to adapt to market-driven change as outlined in two key theories of organizational transformation (i.e. dynamic capability theory [1] and the absorptive capacity construct [2, 3]) to the claims made by vendors about BI-led organizational transformation in their literature.

An examination of BI vendor literature is important for two reasons. First, it permits an understanding of the BI industry’s conception of the types of transformation possible through the use of BI systems. Second, leaders in organizations such as CIOs rely heavily on vendor marketing material to develop their own understandings of the capabilities of BI systems and how to integrate them into their organizations. A recent study based on interviews with CIOs found that the CIO had a well-developed and mature understanding of BI systems. The study found the most useful source of information they used to develop that understanding was information obtained from BI vendors [4]. In a competitive and large market all the major BI vendors have sophisticated and well-funded marketing and sales operations. For example, prior to

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their acquisition by SAP, the BI vendor Business Objects reported it spent approximately 70% (i.e. over $US600 million annually) of its revenue on sales and marketing activities. It is reasonable to assume that other vendors spend similar amounts. The publications produced by these organizations represent an important and influential body of literature that is often ignored by researchers [5].

1. Research Approach

The research approach consists of two steps. First, it seeks to establish an understanding of the vendor perspective of BI-enabled organizational transformation. This is established using thematic content analysis of vendor-authored literature [6, 7]. This perspective is then compared to the results of a standard academic literature review of two exemplar theories addressing the topic: absorptive capacity and dynamic capability theory. While the literature review in step two requires little explanation in terms of technique, details of the thematic content analysis are provided below. This approach is similar to other projects examining information systems topics [8, 9].

The thematic content analysis began with the collection of a sample of professional literature including white papers, blogs, surveys, and opinion and news articles. This initial collection of literature contained articles from a wide range of sources including vendors, consulting firms, IT service firms, news sites and online discussion portals. It quickly became apparent that the sample was too generic and chaotic for any meaningful analysis. The scope of the sample was subsequently restricted to BI vendor-authored literature. A stratified sampling approach [10] was adopted to ensure the sample was representative of BI vendor literature. Documents were chosen based on the nature of the vendor, and on the nature of the document itself. Vendors were included if they had annual BI-related product license revenue greater than US$15 million, significant recent revenue growth, and were included in Gartner’s Magic Quadrant for Business Intelligence Platforms. Documents were included in the sample if they were whitepapers, blog posts, marketing brochures and discussion threads that were clearly published by and expressed the opinion of the chosen BI vendor.

The sample was further screened though the use of keyword specific searches. This was performed to ensure that the documents addressed in some way the topic of business transformation. A set of keywords likely to be associated with BI-led business transformation was developed and were used to further cull the sample. Table 1 shows the keywords used and the number of occurrences in the sample.

The final sample was comprised of 103 documents. It consisted of 45 white papers, 34 blog posts and 24 marketing brochures from 11 BI vendors. A more detailed breakdown of the composition of the document sample is available from the following website: http://dsslab.infotech.monash.edu/index.php/transformation.

The documents were stored in, and subsequently coded and analyzed using NVivo 9 from QSR International. During the first reading and analysis of a sample of documents, a range of concepts and themes were identified that were related to BI enabled organizational transformation. These formed the basis of an initial set of codes. The document sample was then read and systematically coded. As the analysis

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2 At that time Business Objects, as a public company, was required to publicly declare details of its balance sheet to the U.S.A. SEC.
progressed, the codes and code groupings (themes) evolved: some codes coalescing into others while new ones emerged. After a number of cycles of reading and coding, the set of codes and themes stabilized. The project NVivo files can be accessed at http://dsslab.infotech.monash.edu/index.php/transformation.

Table 1 List of keywords used for screening documents

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Instances in Data Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big Data</td>
<td>97</td>
</tr>
<tr>
<td>Business Performance Management</td>
<td>210</td>
</tr>
<tr>
<td>Business Analytics, Predictive Analytics, Social Analytics, Sentiment Analytics</td>
<td>506</td>
</tr>
<tr>
<td>Better Decision Making, Collaborative Decision Making, Faster Decision Making</td>
<td>262</td>
</tr>
<tr>
<td>Operational Business Intelligence, Pervasive Business Intelligence</td>
<td>166</td>
</tr>
<tr>
<td>Transformation Process Intelligence, Evolve Process Intelligence, Emerge Process Intelligence</td>
<td>481</td>
</tr>
</tbody>
</table>

The results of the thematic content analysis are presented below in Section 2.

2. Understanding Organizational Transformation: The BI Vendor Perspective

The wide-ranging impact that BI systems can have on decision-making in organizations emerged as a primary theme in the vendor literature. This theme is exemplified by this quote in an Information Builders marketing brochure: “By enabling users to easily locate facts through simple keyword searches, organizations can realize significant productivity gains and enhance decision-making across the enterprise.” The impact on decision-making can be categorized into two sub-themes discussed below, namely: improving the decision-making process and improving access to information.

2.1. Improving the Decision-Making Process

The improvements to the decision-making process afforded by the use of BI were classified into three main interrelated categories, namely speed and quality, improved collaboration, and broadening the scope of decisions an organization can make through the more pervasive use of BI.

Reducing the cycle time and improving the quality of decision-making was typically referred to using words such as “better” and “faster.” For example, SAP argues, “companies want greater agility so they can make decisions based on today’s information, now.” An IBM marketing brochure focuses on improvements to cycle time and quality when it states that, “Making better, faster decisions provides decision-makers throughout the organization with the interactive, self-service environment needed for exploration and analysis.” There are many other examples where reduction in cycle time is emphasized in the vendor literature.

Facilitating collaboration between decision-makers to improve the decision-making process also emerged as a benefit of implementing a BI system. An SAP report

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3 The term ‘Big Data’ was included because both Sloan Management Review and McKinsey Quarterly published special issues using the term just prior to data collection.
clearly addresses this benefit when it states that, “customers want to analyze their spend and collaborate with suppliers in China, manufacturers in Eastern Europe, and developers in India. A BI system cannot stop at the company firewall when so many business decisions need to involve suppliers and customers.” Further examples included an IBM Cognos article that highlighted the notion of “collective intelligence” and “decision networks”. A Microstrategy whitepaper highlighted the benefits of combining improved decision speed and quality with collaboration stating that, “uniformity across a BI environment promotes better and faster business collaboration across the organization, which in turn can result in vast improvements across the company.”

Another prominent theme in the vendor literature related to improving the decision-making process is increasing the BI user base within the organization. This theme is referred to generally as ‘pervasive BI’ or more specifically ‘operational BI.’ The vendors suggest that decision-making processes can be improved if access to the functionality of BI systems is not just limited to senior executives and made available for use by all people in the organization. A SAS whitepaper states that, “users, be they executives or customer-facing employees, line-of-business managers or suppliers, will span all levels of an organization and will be involved in a spectrum of strategic and operational decision-making.” An IBM whitepaper expands the concept of pervasiveness when it says, “expanding the reach of BI to a much broader population both within and beyond the boundaries of the enterprise” must be achieved “by combining operational and analytical applications.” The vendor literature stresses that the increased pervasiveness of BI is transforming organizations. Another IBM authored article goes on to suggest the possibility of “decision automation” and creation of “predictive models that may be used by rules engines to automate certain kinds of high-volume decisions.” High volume and low risk decisions are those that involve routine activities such as, “granting or extending credit, dynamic pricing, handling vacation requests, or call-center scripting.”

2.2. Improving Decision-Maker Insight

The second sub-theme relates to how the use of a BI system can improve a decision-maker’s access to, and the quality of, information. Many BI vendors expressed the view that current changes in the way organizations conduct their business was driving the need for improved access to information. An SAP marketing brochure supports this: “...technology makes it easier to access relevant information, allowing people to know their business, transform their decision-making and ultimately achieve remarkable results.” Furthermore, a SAS article links the themes of pervasiveness and improved access by claiming that when, “...information is made pervasive throughout the organization, the entire company can take advantage of it to gain strategic insights, make informed decisions and drive better business results.”

The vendors also frequently claim that access to information can be improved when information ‘silos’ are removed and that BI systems can be used to achieve these ends. Information silos can limit access to information between parts of an organization and tend to be the result of problems with the organization’s culture and structure. It is interesting to note that BI vendors tend to view information silos to be a potential impediment to be overcome for a BI system to be effective. An IBM article provides an example of this point of view: “To grow and prosper in today’s ever-changing world, banks too must change. They need to move beyond any existing organizational silos,
infrastructure complexities and other constraints – and towards an operation centered on the client.”

The vendors, however, present a more positive view about the ability of BI systems to address these information silos. There are frequent references to the importance of breaking down information silos through the creation of “single version of truth repositories.” For instance, a Microstrategy article states “To achieve the benefits of enterprise and departmental BI, organizations must gradually consolidate their departmental islands of BI into a single, cohesive, enterprise BI system.” Interestingly the same article goes on to highlight the potential risks of an organization not maintaining a balance between the information needs of the organization and the information needs of departments when it states “The most sophisticated and impressive enterprise BI environments are ones that deliver optimized solutions for both enterprise and departmental business users. Preserving the nimbleness of departmental BI within an all-encompassing enterprise BI environment is essential.”

When vendor literature mentions improved access to information through the reduction of organization and information silos the topic of data governance (e.g. master data management) is often mentioned. It is interesting to note however that BI vendors mention data governance as something that their customers must address rather than it being something that a BI system can address. A typical example is this SAS whitepaper which states: “…data governance is usually the most frequently mentioned and biggest challenge in the context of business analytics projects.”

In addition to explaining how BI systems can improve access to information within an organization, BI vendors provide examples of the actual benefits that can come from the use of BI systems. These benefits are usually communicated in one of two ways, namely: general comments about how improved access to information can provide decision-makers with greater insight about their organization; and case-study examples outlining the benefits obtained by their customers.

The following extract from an Information Builders white paper is an example of the general benefits of value creation and business insight that vendors believe can come from the use of a BI systems: “Big data and business analytics can create immediate value for an organization. Analytics improve an organization’s performance by making everything more transparent and measurable while exposing variability as well as potential issues and opportunities. This transparency, through operational dashboards or performance management, fosters better decision-making across an organization....Big data analytics provides a real opportunity for organizations to innovate and grow revenue.” The statement is an example of the broad range of benefits that BI systems can provide. It not only addresses the strategic aspects of value creation, revenue growth and innovation, it also addresses changes in organizational culture brought about by information transparency and process improvements that can come from the use of operational dashboards.

3. Understanding Organizational Transformation: The Management Theory Perspective

The purpose of this section is to draw on the body of literature from management theory to allow a comparison with the view of organizational transformation derived from the BI vendor literature in the previous section. Broadly, there are two categories of theory that seek to explain firm behavior in competitive markets [1]: those that
examine the market structure and the firm’s relationship with it (e.g. the competitive forces and strategic competition approaches); and those that examine characteristics of the firm itself – notably the resource-based view (RBV) and theories addressing firm capabilities. As the BI vendor literature largely ignores market-level issues, instead dealing with intra-firm systems and capabilities, we have chosen two theories from the latter category to compare with. These two theories are the theory of dynamic capabilities and absorptive capacity. The theories are presented as exemplars, rather than as complete coverage of potentially relevant management theories.

3.1. Dynamic Capability Theory

3.1.1. Theoretical Background

Dynamic capability theory is an approach to understanding strategic management within RBV [1]. Under RBV, a firm’s sustained competitive advantage can be understood by how a firm’s resources and capabilities are acquired, arranged and disposed of in comparison to other firms within a given market. Dynamic capability theory extends RBV to consider turbulent markets and how firms are able to develop capabilities and routines to adapt and change to sustain competitive advantages in turbulent marketplaces.

An operational capability is a set of routines that offer managers a range of options, or paths, for planning a course of organizational action, leading to the production of outputs of a particular type [11]. A dynamic capability, on the other hand specifically provides the “ability to integrate, build, and reconfigure” capabilities in markets exhibiting a high rate of change [1, p. 516]. The dynamic capabilities approach regards these capabilities in the same way that the RBV regards strategic resources. When a firm has a “distinctive” dynamic capability [1] it cannot be easily reproduced by its competitors, giving the firm a sustained competitive advantage.

A firm’s capability for responding to this environmental change depends on two different kinds of processes: non-routine ad hoc problem solving; and resource manipulation supported by embedded organizational routines. The latter is based on dynamic capabilities that offer sustained competitive advantage [11]. Winter [20] describes zero-order, first-order, second-order etc., capabilities, with each higher level providing specific capabilities to perform the lower-level capabilities. Dynamic capabilities are higher-order capabilities that enable lower-level change processes [11].

Firms may develop a range of high-level dynamic capabilities. The more dynamic capabilities available to a firm, the greater the number of paths [1] that a manager has available to them. A path is a course of action that a firm can take, and the available paths are a function of its current position, its history and its portfolio of resources, including dynamic capabilities and other competences [1]. Dynamic capabilities are not sufficient for achieving sustained competitive advantage, but they are antecedents for managers to alter their resource base in the face of changing markets [12].

Dynamic capability theory offers a useful lens through which to understand organizational responses to a shifting environment. The theoretical constructs – markets, capabilities and routines, paths, agility, flexibility and learning – also offer several insights for the use of BI systems as a tool for organizational transformation.
3.1.2. Some Implications of Dynamic Capability Theory for BI

Strategic (as opposed to operational) BI is a potential enabler of a key dynamic capability: BI processes can be considered a higher-order dynamic capability [11]. While IT capabilities in general offer a wider range of paths available in a dynamic environment [13], strategic BI systems go beyond this to have as their primary aim support for decision-making processes leading to path selection. However, the theory offers some important considerations regarding the nature of BI if they are to be realized as a dynamic capability.

Eisenhardt and Martin [12] argue that dynamic capabilities change their nature in relation to the level of turbulence in a dynamic market. They differentiate between moderate-velocity dynamic markets and high-velocity dynamic markets. In moderate-velocity markets, dynamic capabilities become “detailed, analytic, stable processes with predictable outcomes” [12, p.1105], with linear, well defined steps. Decision-making in markets without a high degree of turbulence becomes more effective if it resembles a linear pass through Simon’s phase model of decision-making [14]. The decisions may involve complex analyses and considered deliberation, but follow a predictable, structured path. On the other hand, strategic decision-making in high-velocity dynamic markets is by necessity simpler and more evolutionary. Simple routines provide semi-structured support for decision-makers while allowing the flexibility and freedom to respond in an ambiguous and unpredictable environment.

The distinction between the nature of dynamic capabilities for high-velocity versus moderate-velocity markets leads to a consequent distinction between the kinds of decision support needed from BI systems. In firms where the need to transform is most urgent, there is a need for systems that provide support for semi-structured decision tasks. These are the systems first described by Gorry and Scott Morton as decision support systems (DSS) [15]. DSS need to be simple and flexible to allow for adaptation to unanticipated usage patterns [16]. In less urgent environments, support for more structured decision processes is required. Gorry and Scott Morton [15] used the term ‘structured decision systems’ (SDS) to refer to systems intended to be more ‘programmed’, supporting these less flexible decision routines.

In the current BI market, SDS functionality is most closely resembled by what vendors call ‘operational BI.’ Operational BI can allow for the codification and embedding of lessons learnt through dynamic capabilities and routines. DSS functionality is more closely aligned with traditional, strategic BI. Strategic BI, however, must necessarily be simple and flexible. Large-scale, inflexible, slow-to-adapt BI systems cannot provide the kind of decision support needed in a fast-paced changing market. This may explain why there is significant anecdotal evidence of low rates of BI usage in firms (the so-called ‘BI utilization problem’ [17]) while simple, easily understood tools like spreadsheets are used extensively by senior executives.

3.2. Absorptive Capacity

3.2.1. Theoretical Background

Absorptive capacity (AC) describes one of an organization’s key learning processes, namely, the ability to identify, acquire, assimilate or transform, and exploit knowledge. An organization’s AC is considered to be a key component of successful innovation and ultimately the long-term success of the organization [3, 18]. AC draws on two
perspectives: the economics of research and development [2], and the effect of organization-wide learning and skill development on innovation [3].

AC is based on the assumption that an organization, being a collection of individuals, will acquire knowledge and develop skills in a manner similar, but not identical, to the manner in which individuals acquire knowledge and develop skills. For example, an organization will be more likely to identify and make productive use of information about a new technological development in a given field if the organization already possesses some knowledge or expertise in the same or a related field [3, 19].

In the more than 20 years since the AC construct was introduced it has been reviewed and re-conceptualized several times. Zahra and George's initial [19] and subsequent reviews [18, 20], conceptualized AC as a dynamic capability rather than as an asset. Conceptualizing AC as a dynamic capability allows it to be analyzed in the context of an organization’s many-order hierarchy of dynamic capabilities. For example; an organization’s ability to acquire and use new knowledge can improve the R&D process, which can in turn, improve the product innovation process [11, 12].

Roberts et al. conducted a review of AC in IS research and found that while IS researchers had used AC in a wide range of IS-related subject areas, it was “often” used in “contradictory ways” [20]. The outcome of the review was a conceptual framework that shows how an organization’s IT capabilities are related to AC. The framework (see Figure 1) shows how an organization’s IT capabilities moderate how it identifies, assimilates or transforms, and applies valuable external knowledge. The framework shows how complementary organizational capabilities moderate the relationship between the IT capabilities and the dimensions of AC. In general terms, the framework shows an organization’s IT capabilities are an enabler of an organization’s AC, rather than providing the AC itself.

An organization’s overall IT capabilities can be conceptualized as three separate capabilities, namely: outside-in, spanning, and inside-out. Outside-in IT capabilities are outward facing systems that allow organizations to collect and manage information from the external environment (e.g. customer, suppliers, competitors, etc.). Inside-out IT capabilities on the other hand are inward facing systems that allow information used in the organisation’s processes to be stored in a standardized format and made easily accessible. Spanning IT capabilities are systems that integrate information from the organization’s externally-facing and internally-facing systems.

Figure 1 The relationship between IT capabilities, complementary organizational capabilities, and Absorptive Capacity [20, Fig. 3]
3.2.2. Some Implications of Absorptive Capacity for BI

It is possible for BI systems to provide any of the three IT capabilities. For example, a BI system can provide an outside-in IT capability if a data mart or enterprise data warehouse has one or more data feeds from external sources (e.g. social media site data, credit score data, climate and weather data, competitor pricing). Inside-out capability might be provided by a BI system based on a data mart that supports reporting for a single department. Spanning capabilities could be provided by organization-wide BI systems supported by an enterprise data warehouse that integrates information from many disparate systems and presents it to users in an accessible, standardized and coherent format.

The framework includes two additional moderating capabilities: coordination and socialisation. Coordination capabilities refer to an organisation’s ability to manage intra- and inter-organisational dependencies. Socialization capabilities refer to an organisation’s ability to create a common culture and shared understanding of the environment in which the organization operates.

BI systems can enhance coordination capabilities in two ways. First, the integrated and standardised data provided by a BI system facilitates information sharing between the relevant internal and external stakeholders. Second, the increased access to information provided by a BI system makes it easier for the correct people to participate in the decision-making process.

BI systems can directly and indirectly influence socialization capabilities. The direct influence on socialization capabilities is provided by the standardized information language that a BI system, particularly one that is organization-wide, imposes on the users. The indirect influence on socialization capabilities can be provided by the behavioural changes when the BI system is used as the source for performance management and decision-making information. However, the influence afforded by the behavioural changes will depend more on cultural and implementation factors rather than technical factors.

The framework does not imply a linear or hierarchical relationship between the IT capabilities beyond how they are related to the dimensions of the AC construct. If, however, the BI system functionality attributed to each IT capability is reviewed in the context of the implementation of a typical BI system a pattern emerges that affects the degree and rate at which a BI system can enhance AC.

Literature on BI system success recommends that BI systems should be implemented incrementally (e.g. [21]). Moreover, early increments of successful BI systems often start small and have a narrow scope (e.g. a departmental data mart using data from one or two systems). This early increment of the BI system can only enhance the inside-out IT capability. Later increments will increase the scope of business functions and operational systems covered by BI. This will then enhance the spanning IT capability and the outside-in IT capability, assuming the scope of the system grows to include more internal systems and, eventually, external systems and data sources.

The assumption of whether the scope of the BI system will increase sufficiently within and beyond the organisation can also affect the level of impact a BI system will have on AC. It is not automatic that every BI system will mature to include the majority of an organization’s internal systems and one or more external systems [22, 23]. In fact, it is not uncommon for some BI systems to stay relatively small in scope (e.g. only supporting a few business areas and systems). If the scope of a BI system does not expand to be at least organization-wide (i.e. enhance spanning IT capabilities)
and preferably have an external focus (i.e. enhance outside-in IT capabilities) then the moderating effect the BI system can have on the organisation’s AC is limited.

The issues related to incremental development and the possibly limited scope and maturity of a BI system could significantly affect the degree to which the BI System can enhance AC. In the best-case scenario AC is progressively enhanced as the scope of the BI system expands to be organization-wide and having an external focus. In the worst case scenario there is little or no effect on AC because the BI system is small in scope and internally focused.

3.3. Summary

There is a large body of literature addressing the topic of organizational transformation, offering a rich theory base from which to understand how BI and other decision support tools can contribute to the transformation process. We have addressed two theories from the field of strategic management, but there are a large number of other potential research areas of relevance including change management, organizational learning, and leadership. This section has highlighted the potential for these theories to inform decisions regarding the adoption of BI systems, their deployment in organizations undergoing transformation and their configuration. A realistic understanding of the role of BI in organizational transformation recognizes both the opportunities offered by such technology, as well as its drawbacks and limitations.

The next section compares and contrasts the vendors’ perspective on BI-enabled organizational transformation discussed in Section 2 with the perspectives presented here in Section 3, drawing conclusions for BI vendors, customers and researchers.

4. Concluding Discussion

The preceding two sections present two very different perspectives on the factors involved in organizational transformation. The content analysis of the vendor literature shows a focus on two areas: the decision task itself; and the information that contributes to the process. The two main benefits put forward by vendors resulting from the use of BI in organizations with regard to the decision-making process are improved decision outcomes (“better decisions”) and increased speed (“faster decisions”). Little is said about why or how decisions will be better, or in fact, why a faster decision is necessarily a better decision. The implicit assertion is that faster decisions relying on more information are inherently better decisions. While this may be the case for some decision tasks, it is not clear that this is necessarily true for all decisions, especially strategic decisions.

The idea that giving decision-makers more insight into business problems is beneficial is, at face value, reasonable. However, the technical focus of BI vendors on sourcing data from across heterogeneous data sources and organizational units, and enforcing data homogeneity across the enterprise is a very narrow focus. A strategic decision-maker may or may not be hindered by a lack of insight into internal business functioning, and even if so, the problem may not necessarily be one of inconsistent data formats or other problems in the data. A key organizational capacity for transforming organizations is the ability to assimilate external as well as internal information. Again, while the implicit assumption of BI vendors regarding internal information access may hold for some decision tasks, it is not necessarily true for all. The data-oriented view of
problems facing decision-makers held by BI vendors does not necessarily address the knowledge-oriented problems decision-makers may actually face.

Organizational transformation is a challenging issue for firms in competitive environments, with a rich mix of complex factors at play. The two theories presented in Section 3 provide different but complementary lenses that highlight a range of factors that influence the success of competitive organizations. In the case of dynamic capability theory, BI can be considered a second or third-order dynamic capability. BI provides an expanded set of ‘paths’ for decision-makers to follow. It suggests that the kind of BI system (operational versus more traditional strategic BI) depends significantly on the ‘velocity’ of the market in which the firm operates. While the vendor literature partly addresses the concept of ‘paths’ with its focus on information access, it does so in a data-centric way. In terms of market type, the vendor literature is silent, advocating the use of operational BI without consideration of the market.

In the case of AC, there is a clear role for BI to play in incorporating, integrating, and applying external knowledge to allow transformation to occur. BI can be an enabler of an organization’s outside-in, spanning and inside-out IT capabilities. However, the vendor treatment of information management issues largely ignores external data sources—a key component of AC. Arguably, when an organization is undergoing significant transformation, external information is more important and relevant than historical internal information. It is therefore perhaps more important for BI vendors advocating their technology as enablers of organizational transformation to address the problem of external sourcing and assimilation of information than internal data management issues such as master data management, information silos, and access.

There is a range of possible reasons for the narrow, technical content of the BI vendor literature. It would be tempting to assert that it is written, in the main by vendor marketing departments, in a way contrived simply to sell software and consulting services and that the content is therefore to be simply dismissed as advertising copy. While the publication of the material certainly has sales as a primary motivation though, vendors do go to a significant effort to base the content on the experience and expertise of their consulting staff and customer experiences. This expertise has been developed, in some cases, over many decades of providing IT-based support to managers. It is more likely, rather, that the message communicated by vendors is shaped by their expertise with their products, both in its development and consulting on its deployment in customer organizations. The challenges faced in deploying the technology—access to data, data heterogeneity, etc.—shapes their understanding of what the core customer problems are. However, BI deployment problems are not necessarily the same problems that customers wish solved through the use of BI—namely, being able to make sound strategic decisions in novel, complex, and rapidly changing contexts. While the core strengths of many BI tools such as information retrieval, integration, and analysis are often useful, these core strengths are not the only relevant considerations in the provision of decision support for organizational transformation. It is possible that while advocating and working with the strengths of BI technologies, vendors become blinkered to the wider issues. Their message becomes one of equating the solving of a narrow technical aspect of organizational transformation with solving the entire problem.

This would not be a problem, however, if it were not for the fact that the vendor literature is relied on so heavily by BI customers. This therefore presents an engagement problem. If the BI market is to see a more reasoned, nuanced treatment of organizational transformation and the role BI technology, it is important for both
vendors and customers to be engaged with sources such as the management theory literature. This is an engagement problem that it seems is the responsibility of academia to address. Rather than relying on vendors and customers to change the discourse, it is the job of academia to engage with them and to bridge the gap between rich, but sometimes esoteric, theory and the problems of day-to-day BI practice.

References