2012

Towards a Business Analytics Capability Maturity Model

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Abstract

Business analytics (BA) systems are an important strategic investment for many organisations and can potentially contribute significantly to firm performance. Establishing strong BA capabilities is currently one of the major concerns of chief information officers. This research project aims to develop a BA capability maturity model (BACMM). The BACMM will help organisations to scope and evaluate their BA initiatives. This research-in-progress paper describes the current BACMM, relates it to existing capability maturity models and explains its theoretical base. It also discusses the design science research approach being used to develop the BACMM and provides details of further work within the research project. Finally, the paper concludes with a discussion of how the BACMM might be used in practice.

Keywords

Business Analytics, Maturity, Resource-based View, Capabilities

INTRODUCTION

Business Analytics (BA) systems encompass the people, processes and technologies involved in the gathering, analysis and transformation of data used to support managerial decision-making (Negash 2004; Watson and Wixom 2007; Jordan and Ellen 2009). Decision-makers use comprehensive reporting, dash-boarding and online analytical processing (OLAP) technologies to improve and enhance their decision-making capabilities. BA also includes statistical analysis, data visualisation, predictive modelling and forecasting systems. BA is widely used as an umbrella term that includes earlier and complementary systems such as decision support and business intelligence systems (Watson 2010).

A number of case studies and industry reports have shown that BA systems can provide benefits to organisations by enabling improvement of business processes, firm performance and creating competitive advantage (Kohavi et al. 2002; Piccoli and Watson 2008). However, despite empirical evidence that BA systems provide organisational benefits, few studies provide a sound theoretical basis for understanding how and why these benefits are achieved over time. Furthermore, not all firms that have made large investments in BA systems have achieved improvements in performance and value (Davenport et al. 2010). Research and industry experience has shown that firms with perceived higher levels of BA maturity perform better than those with lower levels (Davenport and Harris 2007; Popovic et al. 2010).

This research is motivated by three factors. First, BA systems are an important strategic investment for many firms (Davenport and Harris 2007). Many organisations are making large investments in BA systems and this trend is forecast to continue (AMR Research 2008). Furthermore, BA was a chief concern globally for Chief Information Officers (Gartner 2011). Second, although much is known about how enterprise resource planning (ERP) systems bring benefits to organisations, this does not generalize to BA systems. Benefits from ERP systems are often enterprise-level and rely on process standardization and optimization (Seddon et al. 2010), while those from BA systems are distributed throughout organisations, are evolutionary in nature and rely on entrepreneurial managerial actions (Sharma et al. 2010). Third, there is a strong need for a rigorous and relevant BA maturity model that that will help organisations to scope and assess their BA initiatives. Most existing BA maturity models are practitioner-based and are not rigorously developed with a theoretical foundation (Rajteric 2010; Lahrmann et al. 2011)

This research project aims to develop a BA Capability Maturity Model (BACMM) to scope and assess BA initiatives within large-scale, for-profit Australian organisations. For the purposes of this study, a large-scale organisation is defined as one having more than 500 employees, or over $250 million in assets, or annual sales

in excess of $500 million. This research-in-progress paper discusses the development of the initial BA maturity model.

This research-in-progress paper is organized as follows. First, the background to the study is discussed; including previous work in BA, the resource-based view of the firm including dynamic capabilities and maturity models in information systems, and highlight the existing knowledge gap that shall be filled. Second, the design science research approach being used to further develop the BACMM is discussed. Third, a framework for BA capabilities, which is firmly anchored within existing theory and literature, is described. Fourth, is a description of how the framework is used within the BACMM. Fifth, is a discussion of the empirical work that will be conducted to evaluate and further refine the BACMM. Finally, the paper is concludes with a discussion of how researchers and practitioners can use the BACMM.

BACKGROUND

This section reviews three relevant areas of the literature. First, it examines previous work in business analytics. Second, it describes the resourced-based view including dynamic capabilities. Third, is a discussion of maturity models in information systems (IS), in particular BA maturity models.

Business Analytics Systems

Within organisations, decision-makers at all levels use BA systems to improve decision-making and optimise business processes by utilising 'evidence-based management' (Pfeffer, and Sutton 2006; Watson and Wixom 2007;). In many industry sectors, significant benefits are reported through BA use. These include optimising order delivery in manufacturing and production planning (Kohavi et al. 2002), reducing customer attrition and increasing customer profitability (Kohavi et al. 2002) and in remote diagnostics (Allmendinger and Lombreglia 2005). These studies have shown that BA is used widely throughout organisations, involving multiple users from many functional areas. Benefits are being achieved by organisations that implement BA as part of their business processes. Periodically, new BA opportunities are identified and used to renew organisational capabilities and enhance business processes to increase benefits. Whilst these studies show the benefits of BA to organisations, they fail to offer theoretical explanations of the reasons these benefits occur. This paper argues that the resource-based view of the firm provides this theoretical base.

Resource-based View and Dynamic Capabilities

The resource-based view (RBV) proposes that organisational resources are the basis for improved firm performance and sustainable competitive advantage (Barney 1991; Wade and Hulland 2004). To provide sustainable competitive advantage, resources should be (VRIN):

Valuable: enable an organisation to implement a value-creating strategy;
Rare: are in short supply;
Inimitable: cannot be perfectly duplicated by rivals;
Non-substitutable: cannot be countered by a competitor with a substitute.

Information technology (IT) resources have become increasingly commoditised and normally do not satisfy the VRIN criteria (Gartner 2011). However, IT-based non-VRIN resources may be synergistically combined with existing organisational resources, to form other VRIN resources (Nevo and Wade 2010). The RBV conceptualises organisational resources as static, neglecting changes due to turbulent environments. Dynamic capabilities were conceptualised in response to this criticism.

Dynamic capabilities focus on 'resource renewal': reconfiguring and renewing resources into new organisational capabilities (Teece et al. 1997). They comprise two organisational routines: search and select and asset orchestration (Helfat et al. 2007). Search and select involves the identification of new BA-enabled business opportunities (search) and prioritizing them (select). Asset orchestration involves implementing newly selected BA-enabled business opportunities and creating new combinations and co-alignments of assets.

The RBV in Information Systems Research

The RBV has been used extensively in IS research to explain how IT assets provide value and sustainable competitive advantage to organisations. While conceptual studies propose a link between IT assets and value, most quantitative studies provide empirical evidence of this link and qualitative studies provide rich, detailed explanations of how and why the link exists. Some studies found a direct link between IT assets and value (Aral and Weill 2004) but most found that IS capabilities and the interaction of IT assets with other organisational resources, lead to business value (Wade and Hulland 2004).

IS capabilities are created through combining IT assets with other resources including people, routines and processes. IS capabilities develop and mature over time as organisations learn (Barney 1991). BA capabilities are a specific and important type of IS capabilities, and currently research focusing on BA capabilities is rare. BA capabilities will also mature over time and this paper argues that this will lead to greater business value and competitive advantage. BA capability maturity is an area with very little current research and this paper aims to address this gap in knowledge by developing the BACMM.

Maturity Models in Information Systems

IS maturity models are instruments that facilitate the assessment of the level of development of organisational capabilities (de Bruin 2009), processes (Paulk et al. 1993) or resources (Nolan 1973). There are over 130 different IS maturity models in both the academic and practitioner literature (Mettler and Rohner 2009). Two maturity models that have been widely used by researchers and practitioners are Nolan's (1973) stages of growth model and Paulk et al.'s (1993) Capability Maturity Model (CMM).

Three distinct types of maturity model have been defined: staged, continuous and contextual (de Bruin 2009). In staged maturity models each stage builds on the previous stage and is characterised by a set of criteria that must be fulfilled in order to achieve that particular level of maturity. Nolan's (1973) stages of growth maturity model and the CMM (Paulk et al. 1993) are examples of staged maturity models. Continuous maturity models are similar to staged models except the different components at each level may mature at different rates. This type of maturity model is more flexible than a staged model and provides multiple paths to achieve maturity. Contextual maturity models are similar to continuous maturity models except they allow for non-linear progression to maturity. Different components within these maturity models may move either forwards or backwards, allowing context to be taken into account. With contextual maturity models a flexible and non-linear path to maturity may be explained. This more closely relates to organisational reality but is more complex (de Bruin 2009).

Maturity models have several purposes that build on each other including descriptive, prescriptive and comparative (de Bruin 2009). A descriptive maturity model is used to assess the as-is maturity situation within an organisation (Maier et al. 2009). A prescriptive model also includes guidelines for improving maturity at each level, and enables organisations to identify desirable future levels of maturity (Becker et al. 2009). Nolan's (1973) stages of growth model and the CMM are prescriptive maturity models. A comparative maturity model is a prescriptive model that has been used in a large number of organisations so that historical data can be used for comparative purposes (de Bruin 2009).

Business Analytics Maturity Models

This study identified fourteen unique BA maturity models in the BA literature. One of the earliest was Watson's (2001) staged, prescriptive data warehousing maturity model. It included three stages covering people, processes and technology. Davenport and Harris (2007) defined a staged, prescriptive BA maturity model with five stages. Other BA maturity models have been developed by vendors (for example Teradata and Gartner) based on consulting experience, but these are not theoretically grounded. Recently, Lahrmann et al. (2011) defined a continuous, prescriptive BA maturity model. While it is theoretically grounded, it focuses more on the impact of BA capabilities than the capabilities themselves.

In general, BA maturity models lack strong theoretical grounding and focus too much on the data warehousing aspect of BA (Becker et al. 2010). Becker et al. (2010) recommend that a RBV, and in particular dynamic capabilities, has the potential to provide a sound theoretical base for BA maturity models. This study aims to fill this gap by developing a theoretically based BACMM that provides a holistic view of BA, including technology, people, culture and governance. It will be a contextual maturity model as this is the most flexible type of maturity model and is well suited to the evolutionary and distributed nature of BA innovations within organisations (Shanks et al. 2012). Additionally, contextual maturity models take into account the impact of organisational context on maturation paths (Mettler and Rohner 2009).

RESEARCH APPROACH

This study adopts a design science research approach for developing the BACMM (Hevner et al. 2004). More specifically, it adopts the design science approach to building maturity models proposed by Becker et al. (2009). This comprises eight steps and meets all the design science guidelines defined in Hevner et al. (2004). It is also consistent with the approach used in developing other maturity models (eg. de Bruin 2009). Becker's (2009) approach may be divided into three broad phases. In the first phase (steps 1-3) the overall problem is defined, compared with existing work and a development strategy is defined. In the second phase (steps 4-6) the initial version of the maturity model is developed iteratively and documented using appropriate media for different stakeholder groups. In the third phase (steps 7-8) the maturity model is used and evaluated in practice and

continuously evolves until it is no longer required. In this research-in-progress paper, the first phase (steps 1-3) has been completed and the second phase (step 4) has partly been completed, as follows.

Step 1 - Problem Definition: The need for a BACCM for large scale, for-profit Australian organisations has been identified. It has also been shown that BA is of great interest to CIOs and that BA maturity is highly relevant.

Step 2 - Comparison with Existing Maturity Models: An analysis of existing BA maturity models found that few were theoretically based or contextual. This study aims to fill this gap in knowledge with the BACMM.

Step 3 - Determine Development Strategy: The BACMM will be developed as a new, contextual maturity model, inspired by de Bruin (2009), and uses a design science research approach (Becker et al. 2009).

Step 4 - Iterative Maturity Model Development: The BACMM will be a three level hierarchical model developed through several iterations including a synthesis of capabilities identified in the literature, interviews with industry experts, a Delphi study involving BA experts, and a series of in-depth case studies of BA development and use in large Australian organisations. The BACMM will be evaluated for comprehensiveness, consistency and adequacy in addressing the initially problem after each iteration (Becker et al. 2009).

Initial BACMM Development

Within step 4 a systematic literature analysis to develop the initial BACMM has been completed. This began with a search of the major IS journals (the AIS senior scholars basket of 8) and conferences (International Conference on IS and European Conference on IS) and the most highly cited papers in all outlets (using Publish or Perish which draws on Google scholar) between 1991 and 2011. Three searches were conducted: the first for business analytics and other similar terms including data warehousing, executive IS and business intelligence: the second for maturity models: and the third for resource based view in IS. This was followed by searching more widely in recent IS journals and conferences. This was especially important with respect to the IS maturity model literature, since most of the papers published on this topic do not appear in the premier journals (Becker et al. 2010). After locating relevant papers from the search, a thematic content analysis was used to categorise BA capabilities identified in the papers (Smith 1992). Other iterations in the development of the initial BACMM within Step 4 and subsequent phases of the research approach are discussed below as future work.

A FRAMEWORK FOR BUSINESS ANALYTICS CAPABILITIES

For the purposes of this study a BA capability is defined as 'the ability to utilize resources to perform a BA task, based on the interaction between IT assets and other firm resources.' A BA task is an activity undertaken within an organisation that makes use of organisational data, varying from operational activities to management decision-making. An IT asset comprises technologies including data warehousing, reporting, dashboards, OLAP technologies, data visualisation, data mining and other hardware and software assets. Other firm resources, both tangible and intangible, include people, skills knowledge, culture, and governance. The interaction of IT assets with other firm resources leads to capabilities that are greater than the sum of the individual capabilities of the components (Nevo and Wade 2010).

Capabilities may be conceptualised as hierarchies with high-level capabilities comprising lower level capabilities (Pavlou and El Sawy 2006, Davenport and Harris 2007). First, sixteen low level BA capabilities were identified from an analysis of the IS literature. Next, four BA capability areas were established by identifying similarities and commonalities between each of the lower level BA capabilities. The initial framework for BA capabilities is shown in Table 1 below. Detailed definitions for each of the lower level BA capabilities are provided in Table 2. The framework for BA capabilities is a Type 1 theory for analysis (Gregor 2006). It is similar in structure to de Bruin's (2009) business process management capability model, and the four capability areas are quite generic, however the lower level capabilities are specific to BA. Below are the definitions for each of the BA capability areas.

Table 1. Framework for Business Analytics Capabilities

Governance	Culture	Technology	People
Decision Rights	Evidence-based Management	Data Management	Technology Skills and Knowledge
Strategic Alignment	Embeddedness	Systems Integration	Business Skills and Knowledge
Dynamic BA Capabilities	Executive Leadership and Support	Reporting and Visualisation BA Technology	Management Skills and Knowledge
Change Management	Flexibility and Agility	Discovery BA Technology	Entrepreneurship and Innovation

Governance: is the mechanism for managing the use of BA resources within an organisation and the assignment of decision rights and accountabilities to align business analytics initiatives with organisational objectives (Weill and Ross 2004). It also involves continuously renewing BA resources and organisational capabilities in order to respond to changes in dynamic business environments (Collis 1994; Shanks et al. 2011), and mitigating resistance to change (Williams and Williams 2007).

Culture: is the tacit and explicit organisational norms, values and behavioural patterns that form over time and lead to systematic ways of gathering, analysing and disseminating data (Leidner and Kayworth 2006). It influences the way decisions are made (e.g. ad-hoc or fact-based), the proclivity for key performance indicators and quality measurement, the degree to which BA is enmeshed in daily business activities, the level of management support for BA (Davenport and Harris 2007), and receptivity to change (Hopkins et al. 2010).

People: refers to all those individuals within an organisation who use BA as part of their job function. BA initiatives are considered to be knowledge intensive and require technical, business, managerial and entrepreneurial skills and knowledge (Davenport et al. 2010).

Technology: refers to the development and use of hardware, software and data within BA activities. It includes the management of an integrated and high quality data resource (Davenport and Harris 2007), the seamless integration of BA systems with other organisational information systems (Kohavi et al. 2002), the conversation of data into information through reporting and visualisation systems (Watson et al. 2001), and the use of more advanced statistical analysis tools to discover patterns, predict trends and optimise business processes (Negash 2004).

Table 2. Detailed Definitions of Lower Level Business Analytics Capabilities

BA Capability	Definition
Decision Rights	The assignment of decision rights and accountabilities, by determining those who are responsible for making each kind of decision, those who will provide input for the decision and how these people will be held accountable. This will ensure that the right decision is made by the right person at the right level at the right time, and ensure desirable behaviour with respect to the way BA is used throughout the organisation (Weill and Ross 2004).
Strategic Alignment	The alignment of an organisation's BA initiatives with its business strategy (Williams and Williams 2007). It is largely determined by the level of understanding that exists between the managers responsible for an organisation's BA initiatives and those responsible for shaping the organisation's overall strategy. The level of understanding is predominantly determined by the quality of communication that takes place between these parties and the level of trust that exists between them (Luftman 1990).
Dynamic BA Capabilities	The continuous renewal of an organisation's BA resource base and organisational capabilities in order to respond to changes in dynamic business environments (Collis 1994; Shanks et al. 2011). It involves identifying potential BA opportunities (*Search*), prioritising those opportunities based on business need, risk and technology maturity (*Select*) and then funding and implementing the opportunities (*Asset Orchestration*) resulting in new and unique resource combinations (Shanks and Sharma 2011). Dynamic capabilities are organisational routines that are enhanced over time through the learning and experience (Pavlou and El Sawy 2006).

BA Capability	Definition
Change Management	To manage people who are impacted by BA initiatives to accept and embrace technological and process changes (Anderson-Lehman et al. 2004). This includes the mitigation of risks and pitfalls associated with such changes, including resistance and workarounds (Williams and Williams 2007). It also includes the provision of training to demonstrate the value and utility of new practices resulting from change, in order to encourage people to adopt them in their daily work (Negash 2004).
Evidence-based Management	A culture where formal authority, reputation, intuition and ad-hoc decision-making are superseded by decisions based on data and quantitative analysis (Pfeffer and Sutton 2006). It requires key decision-makers to have an open predisposition to the data-driven insights of their subordinates (Davenport and Harris 2007). It also requires them to encourage their subordinates to actively participate in the development of a data-driven environment to support their own decision-making and problem solving endeavours (Carte et al. 2005).
Embeddedness	The extent to which BA has permeated the social fabric of the organisation and has become ingrained into people's values and daily work habits (Davenport and Harris 2007). It is reflected in the extent to which people value quantitative analysis and data-driven insights, as well as the extent to which they seamlessly and routinely apply BA systems and tools in their daily work habits to solve problems and make decisions (Shanks et al. 2012).
Executive Leadership and Support	The ability of the senior managers within an organisation to infuse a passion for BA and data-driven decision-making throughout the organisation (Laursen and Thorlund 2010). This involves advocating the use of BA systems and data-driven decision-making throughout the organisation's constituent business units. It also involves promoting the increased use of discovery BA technology, rather than simply relying on reporting and visualisation BA technology (Davenport et al. 2010).
Flexibility and Agility	The level of change readiness within an organisation. More specifically, it relates to how ready and how receptive an organisation's non-managerial BA personnel are to respond to changes in the business environment (Cheese 2005). A culture of change readiness is especially important in rapidly changing business environments, particularly those which employ the use of real-time BA technology, to deal with problems and capture fleeting opportunities in an efficient and timely manner (Anderson-Lehman et al. 2004).
Data Management	Management of an integrated and high quality data resource is crucial to the success of BA. Data management involves i) extracting data from operational systems and transforming it to meet information requirements (Watson and Wixom 2007); (ii) capturing data from multiple channels from various business functions and external third party sources (Howson 2008); and (iii) integrating the data with existing historical data in a central repository e.g. data warehouse (Watson and Wixom 2007).
Systems Integration	The seamless integration of BA systems with operational systems in order to exploit the capabilities of both systems (Myerson 2002). BA systems should not be seen as isolated and independent capabilities: they should be an integral part of an organisation's information systems to facilitate their use (Shanks and Sharma 2011).
Reporting and Visualisation BA Technology	The development and utilisation of reports, dashboards, scorecards, online analytical processing (OLAP) and data visualisation technologies to display the output information in a format that is readily understood by its users, including managers and other business decision-makers (Watson and Wixom 2007; Ramaamurthy et al. 2008). These technologies are usually used to address routine problems, where decision-makers understand the nature and structure of problems well and have specific questions in mind (Shanks et al. 2012).
Discovery BA Technology	The development and utilisation of sophisticated statistical and data mining software applications to explore data and identify useful correlations, patterns and trends and extrapolate them to forecast what is likely to occur in the future (Negash 2004). The users of this technology are typically technical specialists rather than business decision makers (Davenport et al. 2010). These technologies are usually used to address less structured problems, where decision makers don't have specific questions in mind and outcomes can be surprising (Shanks et al. 2012).

BA Capability	Definition
Technology Skills and Knowledge	The skills and knowledge of BA technology specialists, including statistics, data management, reporting and visualisation and discovery BA technologies and information technology in general (Davenport and Harris 2007). These people typically have tertiary qualifications in statistics and computing, and should also have some level of BA business skills and knowledge (Anderson-Lehman et al. 2004).
Business Skills and Knowledge	The skills and knowledge of BA business specialists, including sales, finance, marketing, supply chain and production business systems (Davenport and Harris 2007). These people typically have tertiary qualifications in business and commerce, and should also have some level of BA technology skills and knowledge (Anderson-Lehman et al. 2004).
Management Skills and Knowledge	The skills and knowledge of management specialists, who are responsible for BA initiatives and projects, both enterprise-wide and in local business units (Davenport et al. 2010). This involves setting goals, establishing metrics and key performance indicators, using the output from reporting and visualisation technology to monitor performance, and taking the necessary action to ensure that project goals are met (Watson and Wixom 2007).
Entrepreneurship and Innovation	The skills and knowledge of technology, business and management personnel to use BA technologies to develop innovative and more effective processes and products that result in better organisational performance and create competitive advantage (Sharma et al. 2010). It frequently involves risk taking and is enhanced through learning that results from experience, trial and error and experimentation (Eisenhardt and Martin 2000). It is enhanced through the provision of authoritative autonomy and financial independence, giving the freedom to pursue value-creating actions (Sharma et al. 2010).

THE BUSINESS ANALYTICS CAPABILITY MATURITY MODEL

The BACMM combines the framework for BA capabilities described above with a five level maturity scale used in many maturity models (de Bruin 2009; Paulk et al. 1993). The maturity scale is applied to each of the sixteen detailed BA capabilities defined in the framework for BA capabilities. The five-level maturity scale is initially defined as follows:

Level 0 – *Non-existent*: the organization does not have this capability.

Level 1 – *Initial*: the capability exists but is poorly developed.

Level 2 – *Intermediate*: the capability is well developed but there is much room for improvement

Level 3 – *Advanced*: the capability is very well developed but there is still a little room for improvement

Level 4 – *Optimised*: the capability is so highly developed that it is difficult to envision how it could be further enhanced. At this point the capability is considered to be fully mature.

These initial definitions will be enhanced and refined for each of the sixteen BA capabilities as the BACMM is iteratively developed. When maturity levels have been assigned to each of the sixteen lower-level BA capabilities, they can be aggregated to provide a measure of maturity for each of the four high-level BA capabilities and finally an aggregated measure for overall BA capability.

The structure of the initial BACMM is shown below in Figure 1. It clearly illustrates the three-level structure for BA capabilities and the theoretical base of the maturity model. Essentially, the maturity model proposes that the more mature the *BA capability* the more *value and sustainable competitive advantage* is achieved by the organisation. BA maturity is shown as a composite with three levels. The first level is the overall BA capability. The second level comprises the four capability areas and the third level comprises the sixteen lower-level BA capabilities. Each of the sixteen lower-level BA capabilities can be assessed independently for maturity. Maturity assessments are then aggregated up through each of the levels for an overall BA maturity assessment.

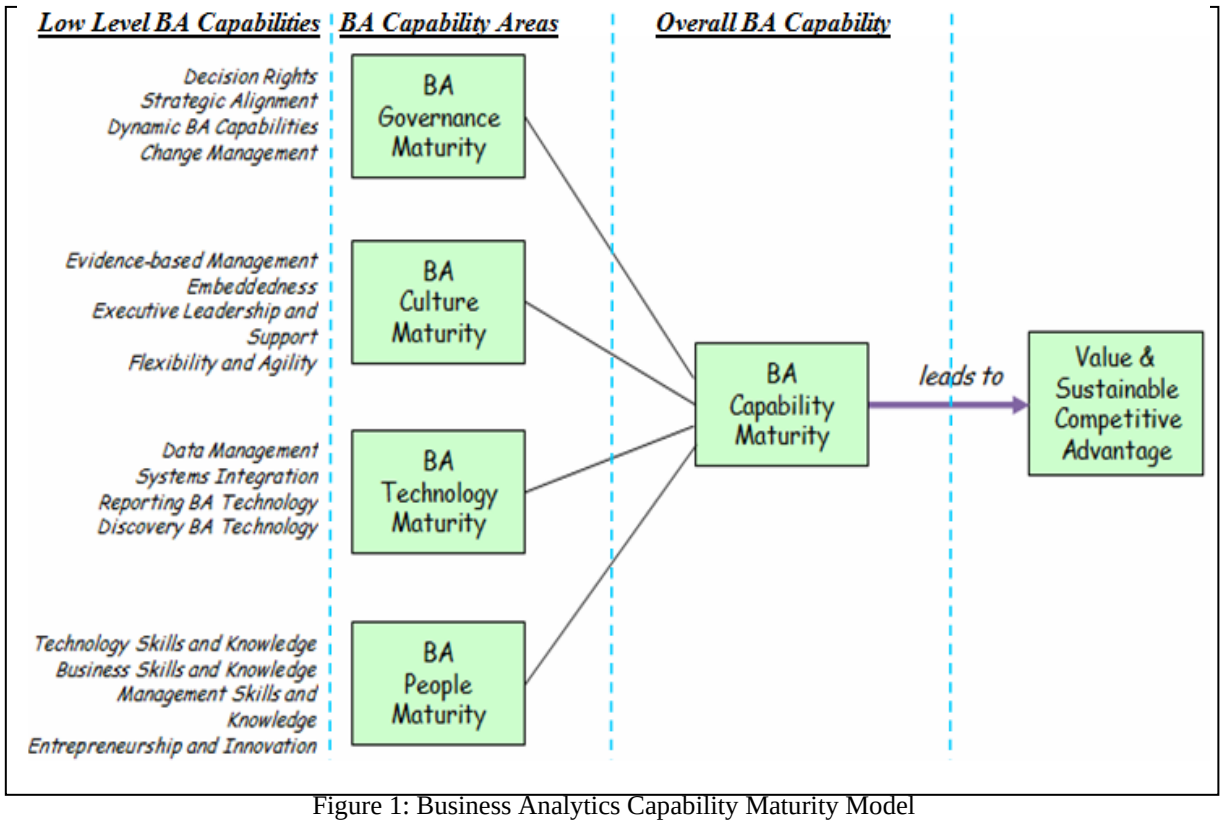

Figure 1: Business Analytics Capability Maturity Model

DISCUSSION

The initial BACMM is well grounded in resource-based view theory, but needs further enhancement and refinement. In particular, the definitions of each of the sixteen BA capabilities and their maturity levels need to be evaluated using empirical studies, and subsequently refined. Furthermore the overall structure of the framework with four capability areas needs to be evaluated. Several iterations of empirical work are planned for this process including interviews with industry experts, a Delphi study involving BA experts, and a series of in-depth case studies of BA development and use in large Australian organisations.

First, interviews with industry experts will be conducted to evaluate the face validity of each of the BA capabilities and their definitions, and the overall structure of the BACMM. Expert practitioners from a variety of industry sectors with extensive experience in BA and academic BA experts will be interviewed. Second, a Delphi study will be conducted. Delphi studies are strongly recommended in the development of maturity models (Becker et al. 2009; de Bruin 2009). They offer participant anonymity, participants can respond at their convenience, it is relatively free from the influence of dominant personalities and social pressure, and participants can be sourced from a wide geographical area (Linstone and Turoff 1975; Edmunds 2000). It is expected that three rounds including about fifteen participants should be sufficient to achieve a consensus among the participants (Powell 2003). In-depth case studies of large Australian organisations will be used to further evaluate and refine the BACMM.

The BACMM will then be further developed using Steps 5–8 of the design science approach to building maturity models proposed by Becker et al. (2009). This includes designing the documentation of the maturity model in different media types for different stakeholder groups. The documentation should use appropriate media including manuals, check lists, web pages, academic papers, white papers and software tools.

In the second phase (steps 4-6) the initial version of the maturity model is developed iteratively and documented using appropriate media for different stakeholder groups. In the third phase (steps 7-8) the maturity model is used and evaluated in practice and continuously evolves until it is no longer required. The maturity model is then used and evaluated in practice, comparing actual use with the goals of the maturity model (Becker et al. 2009).

CONCLUSION

This research-in-progress paper has discussed the development of a BACMM. It has described the initial BACMM, developed from an analysis of relevant literature in the areas of BA, resource-based view and IS

maturity models. The initial BACMM is an important contribution to knowledge as it is grounded in theory, and is a descriptive, contextual maturity model. It will provide a sound base for further empirical research to enhance and refine the structure, definition and maturity measures. The steps that will be used in this ongoing research process have also been discussed.

The BACMM has several important implications for practitioners. First, it provides organisations with a means of assessing their BA capability maturity at a point in time. Organisations can then determine where to focus their efforts in developing their BA capabilities. Second, the BACMM may be used to assess BA capabilities at regular time intervals and better understand the impact of their efforts to develop BA capabilities and also better understand their maturation process. Third, if many organisations assess their BA maturity using the BACMM then it will provide valuable benchmarks so organisations can compare their maturity with other organisations.

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