Enterprise Business Technology Governance: Three Competencies to Build Board Digital Leadership Capability.

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Abstract

The competent leadership of digital transformation needs to involve the board of directors. The reported lack of such capability in boards is becoming a pressing issue. A part of leadership in such transformation is the board of director’s competence to lead Enterprise Business Technology Governance (EBTG). In this paper we take the position that EBTG competencies are essential in boards, because competent EBTG has been shown to contribute to increased revenue, profit, and returns. We update and expand on the results of a multi-method approach to the development of a set of three board of director competencies needed for effective EBTG.

Introduction and literature summary

Throughout 2013 a growing number of publications suggested that boards need to pay attention to their changing role in leading in the digital economy [e.g., 1, 2]. Further, there is growing evidence that digitally mature boards that provide competent and comprehensive digital leadership, financially outperform their peers by 9%, are up to 26% more profitable, and enjoy up to 12% greater market valuation [3, 4]. In the digital economy, the board’s role is changing from members having a primarily financial legal and compliance focus [5] to where EBTG is becoming an integral part of corporate governance [1]. However, as shown in figure 1, to provide digital leadership, we suggest an interdependent focus on the board’s role that combines a director’s duty of care, directing performance and governing conformance roles. We suggest this because technology pervades almost every aspect of modern enterprise operations. This integrated view tends to support the need for changed competency and capability requirements for boards as also suggested by Alexander, Apffel, Dawkins, Richard and Sedlock [6] and Turel and Bart [7]. However, recent research indicates that overall, board-level IT governance and leadership capabilities are ‘often too narrowly conceptualized in … corporate governance research’ [7]. While early research questioned whether technology contributed to business performance and market value [e.g., 8], the work of more recent researchers such as De Haes and Van Grembergen [2], De Haes and Van Grembergen [9], Luftman, Ben-Zvi, Dwivedi and Rigoni [10], Cumps, Viana and Dedene [11], Nolan and McFarlan [12] and Turel and Bart [13] supports the notion that building strategic technology capability at all levels with competent digital change leadership and strategic positioning from the board, contributes to organization performance and increased business value [4, 14]. It is also becoming increasingly clear that irrespective of the size or type of organization, boards can no longer afford to ignore or delegate their responsibilities relating to technology governance [1] though a large percentage continue to do so [15]. This is concerning given increasing levels of digital disruption [16] and because boards have an ethical duty to be competent [17] which, given the extent of digitization in business, would logically include competence in EBTG.

The impacts of effective board EBTG, directing, governing and digital leadership capabilities range from whether the enterprise has a culture that embraces technology, shows advanced digital change capability [14] and leverages investment value through the use of data and information for decision-making [18, 19], across all aspects of the operation [7, 20-22]. While cultural considerations are not the focus of this paper, a link between competency and board culture is important. A board’s EBTG leadership capability underpins whether the enterprise effectively oversees a range of technology-related risk [23] and whether EBTG-related topics make it onto the board agenda [24].

Fig 1: Board interdependent roles
Increasingly too, competence plays a role in whether boards meet the EBTG-oversight aspects of their duty of care [17, 25, 26]. Here board culture and leadership plays a key role in the extent to which organizations use technology and information to create and sustain business value [27] and whether the organization has sufficient digital change focus, flexibility and capability [4, 14, 28]. Yet, in a number of separate surveys, more than 90 percent of senior executives and directors identify technology as important or very important to their businesses [15, 29, 30] but less than 20 percent identify as having EBTG competent directors [15]. While this gap between knowing technology is important and having digital leadership capabilities on the board is significant it was perhaps exacerbated because no board-relevant competency set situated amid current ‘third-platform’ technologies, the cloud, mobile, social media and big data [31] could be found. Further the predominant position of directors initially engaged with in the research and in early literature was that technology was the business of the IT department, and not the business of the board [22, 32, 33]. These gaps and issues were the primary motivation for the original research [22, 34].

The various iterations of the first published set [34] were developed through a rigorous mixed-methods (MM) [35] approach. As shown in figure 2, the first phase produced a draft competency set based on available literature and guided by the researcher’s considerable experience in industry-wide technical competency development. This process used open and axial coding applying both a strategic job modeling lens [36] and capturing the initial set under four Enterprise Architecture (EA) headings: business architecture; information / data architecture; application / integration; and infrastructure [37]. This first phase was also used to establish the means to demonstrate rigour in the competency development process using Schippmann et al.’s 10-dimension Level of Rigor Scale [38].

The first set was then initially scrutinized in phase two as part of a revelatory case study in a single organization [39]. The case study was used to inform assumptions about the need for EBTG competencies and to observe an intact elaborate governance structure through a board competency and risk oversight lens [34]. The third phase entailed a short survey to quantitatively and quantitatively check assumptions about the felt need for EBTG competencies and to obtain comment data about what types of competencies were considered a priority. Quantitative data revealed that 74.42% participants agreed (19.77%) or strongly agreed (54.65%) with the statement ‘it is now very important that boards include directors with IT governance knowledge, skills and experience among their ranks, so that they can ask the right questions of management and advisors’ [34] pp. 5. Phase three led to a particularly important major change, based on industry feedback. The use of EA headings was considered by multiple participants to be a potential technology-jargon barrier to board directors. This might be explained by the dearth to technology savvy board members, reported in multiple industry surveys where only one percent of Fortune 500 companies reported IT expertise within the board [37]. After engaging with more than 400 directors, senior IT and non-IT executives and industry practitioners and three years of research, three new EBTG competencies for boards of directors were published using a multi-method approach [34]. Competency one covered the skills, knowledge and experience to govern technology for strategic advantage and firm performance. Competency two covered making technology decisions and governing risk. Competency three addressed using technology to achieve returns and demonstrate value. The review and redevelopment of the competency set contained in this paper is shown in Figure 2 as a final review phase.

Figure 2: Mixed methods design overview

In this paper we provide an overview of our review methodology and how our ongoing applied research has contributed to the development of the final version of the competency set. Each of the three original competencies is amended as appropriate and detail added. This detail was considered important to further clarify the board’s role in EBTG as well as the knowledge, skills and experience that support board level digital leadership and competent directing and governing to ensure the board’s fiduciary responsibilities (Figure 1) are met.

Methodology

Because of the complexity of developing technical competencies and to help overcome
common problems associated with validity in mixed methods (MM) design [40], the review phase continued the MM design as shown in Figure 2.

According to Venkatesh, Brown and Bala [40], MM research design is the third methodological paradigm, along with qualitative and quantitative methods as the first and second movements. This competency development research required a depth of issues and comment-related insights not usually available through quantitative research alone [35]. Yet it also required the factual, statistical measures afforded by quantitative methods [40] to help overcome the limitations of either quantitative or qualitative approaches. The MM design in the review supported three underlying design considerations: 1) the need to more comprehensively validate the competency set; 2) how to view the importance of the set from the participant’s world [35]; and 3) to ensure the set was deemed fit for purpose by participants. To validate the set, review phase research questions were: RQ1: In what ways do perceptions of enterprise technology governance competency needs and priorities vary between industry types? RQ2: What improvements, changes or additions to the competencies are required?

To stress the understanding of the participants world an epistemological view [35] of participant role and skill requirements [41, 42] in relation to EBTG was employed. This is particularly important in technical competency development where the end users must be able to both understand [43] as well as be able to apply the competencies [42]. SurveyMonkey™ was used to ask a total of 15 questions, most of which provided the opportunity to add qualitative feedback (RQ2) and to underpin fitness for purpose. A minimum of 150 participants were sought from the potential target audience of chairmen/women, directors and experienced IT and non-IT executives and consultants. Comprehensive use of the affordances of selected ICTs was made in the review to overcome major challenges in reaching suitably knowledgeable and experienced participants [44].

Results

This paper reports on RQ2 and how the qualitative responses and updated literature informed the changes made to the original set, summarizing the influences and decisions made to refine the competency set. Quantitative results (RQ1) are reported elsewhere, [45] though touched on in 3.2.

3.1 Updated literature

One noticeable change in the space of 12 months since the first competency set was developed and published [34] is the shift in business language to the use of the term ‘digital’, especially digital leadership and digital disruption. This includes an increasing number of scholarly [28, 46, 47] as well as government and industry publications [4, 14, 48, 49], a growing number of which include discussion of the role of the board of directors in EBTG. A further shift is growing evidence that EBTG does need to be considered as part of a director’s duty of care responsibilities [25, 50] as shown in Figure 1. There is also empirical evidence of positive business impacts and significant organizational advantage in not only understanding digital intensity, but doing this in parallel with significant competence in digital change leadership [4, 14]. These shifts in emphasis are reflected in the revised competency set.

3.2 Quantitative and qualitative survey

Descriptive statistics from the review survey are summarized in Table 1. A total of 199 qualified participants took part in the survey, of which 177 surveys were complete and useable. Table 1 also shows demographics. Interestingly, in Q15, participants ranked all three competencies between 4.3 and 4.6 out of 5 where 5 is extremely important. This indicates substantial agreement to the importance of all three competencies (n=177).

Table 1: Summary of descriptive statistics

<table>
<thead>
<tr>
<th>Category</th>
<th>Results</th>
<th>Other info</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number (150 = sufficient)</td>
<td>Total n = 199</td>
<td>Fully complete n = 177</td>
</tr>
<tr>
<td>Gender</td>
<td>Male 78%</td>
<td>Female 22%</td>
</tr>
<tr>
<td>Age ranges</td>
<td>73% 1950 - 1969</td>
<td>11% “40 – 49”, 13% “50 – 59”</td>
</tr>
<tr>
<td>Qualifications</td>
<td>78/199 had IT-related qual’s</td>
<td>128/199 other</td>
</tr>
<tr>
<td>Industries</td>
<td>25</td>
<td>Rationalized to 7 industry clusters</td>
</tr>
<tr>
<td>Roles</td>
<td>58% Board experience</td>
<td>32% senior execs 10% consultants etc</td>
</tr>
<tr>
<td>Org size</td>
<td>76% SME (&lt;2500 FTE)</td>
<td>20% ≤,50,000 4% &gt;50,000</td>
</tr>
</tbody>
</table>

Bivariate analysis in SPSS showed only minor variation in perceived importance of the rank-ordered descriptors evident between industries. This and the lack of significant variation amongst the multiple industry participant’s responses to Q15 where they were asked to rate the three competency groups overall, also indicates that participants largely agreed with the competencies and their descriptors. In competency development, a lack of variation is significant. Lack of variation provides strong evidence that the set is considered ‘fit for purpose’. This term is used in national qualifications’ frameworks to show industry review as determined relevance and the competency has achieved the desired industry outcome1.

1 For example the New Zealand Qualifications Authority makes frequent use of the term ‘fit for purpose’ in the review of unit standards. http://www.nzqa.govt.nz
3.3 Refining the competency set

To review the qualitative data about each of the three competencies and the associated behavioral descriptors, coding categories were established. NVivo10 software enabled each statement to be coded to categories. Found categories were: endorsement of the competency; considerations for review; (whether the focus was too) operational; (reinforcement of a) board capability; and improvement suggestions. Improvement suggestions generally fell into four categories: clarify, rationalize, include or consider. While one participant indicated concern about descriptors relating to architecture, systems and design (R10), others indicated that boards do need to understand the fundamentals of design and architecture (e.g., R23) and another suggested that some would ‘struggle with the subtle differences between the descriptors in the survey’ (R163). Some extracts demonstrate the importance of EBTG:

‘Most Boards do not have a clue about any of the issues surrounding technology investment and are, effectively, totally in the hands of management. Management frequently over-estimate their ability and it is therefore no surprise to see the constant write offs or inadequate performance in pretty much every field’ (R199). ‘Many companies are still very immature in [EBTG] skills and do not understand the benefits’ (R44).

Comments relating to lack of board capability to competently provide EBTG confirmed perceptions from earlier research [34]. It may also indicate that the relationship between an organization’s digital leadership, strategic success, operating structure and enterprise architecture is not well understood. It might infer, especially in the latter comment, that bridging the identified gap [15, 22, 34] between knowing technology is important and increased EBTG competency within boards may need to be underpinned by significant awareness building. Further, in demonstrating the efficacy of the epistemological approach taken, such comments highlight the importance in applied research of presenting findings (i.e., the competencies) using language that promotes understanding and usability to those who might use such a competency set for professional development and recruitment. Other participants provided examples of how emerging digital maturity categories [14] can be found in current practice. These include the need to understand ICT dependency in an emergency (R150). One reflected a beginner, more internally focused IT department view [14] where ‘IT is a cost to be minimised’ (R181). One chairman commented that the board had technology on the radar, but as far as the descriptors were concerned ‘board ability is in the very early stages’ (R80), also confirming ITGI, 2011 global research and Valentine and Stewart [22, 34] findings of the existence of a gap between knowing technology is important, and boards acting to build competence. Other participants (e.g., R150) suggested that boards would be forced to review their accountabilities under the amended Australian Privacy Act, while another (R2) confirmed Van Grembergen and De Haes’ [38] assertions that boards can no longer afford to delegate technology governance to management.

Comments of this nature tend to confirm research in areas such as data security, that boards may be courting a range of risks [22] and in breach of their duty of care [24] in not paying closer attention to and being competent [14] to govern and direct when it comes to digital responsibilities. An example of how this can be seen in current practice is in the ‘need to differentiate between tactical and strategic risk [where we] back up servers but still don’t incorporate technology in long-term planning’ (R181). In the review phase, all competency titles were amended but not all descriptors required change. 7/23 required no change, 4/23 required small changes while 12 had significant edits. The largest changes were in the reduction of descriptors in C2 and C3 through combining or deleting descriptors to reduce duplication. Judgments for amendment were made in each case based on participant feedback. Where opinions between participants were opposed, either a majority view prevailed and/or new literature was checked and the most recent available research guided the choice of change. All descriptors have additional material to help clarify the board’s role in EBTG and to further focus the revised set.

Reviewed competency set

The following pages show the evolution of the three competencies. The changes highlighted are shown in Table 2. The original competencies and descriptors are shown column one, and the updated version in column two. In column three a brief summary of edits and changes is shown in italics, with the addition to all descriptors of a summary of the clarifying statements added. The descriptors have been rank-ordered to reflect participant’s review-phase perceptions of the future importance of each to their industry sector.

Discussion

Digital and EBTG-focused organizations that demonstrate the right balance of change leadership and digital intensity oversight have been found to out-perform others [4]. The governance board must have the competence to not only ask the right questions of management and advisors, they must also be competent to challenge their responses. Such boards are more likely to ensure that technology-related strategy, opportunity and risk information makes it onto the board agenda [51].
Table 2: Evolution of the competency set showing changes and clarifications based on industry feedback.

<table>
<thead>
<tr>
<th>C1</th>
<th>C1 V1: Govern technology for competitive advantage and business performance. (earlier version)</th>
<th>C1 V2: Direct and govern technology-enabled strategy and planning to maximize the advantages of technology and enhance performance at all levels of the organization. (reviewed)</th>
<th>Clarifying additions from phase four review and industry comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Knowledgeable about current and emerging business technologies and their potential to add competitive, customer and stakeholder value</td>
<td>Knowledgeable about current and emerging digital business technologies and their potential to add organizational, customer and stakeholder value</td>
<td>Top ranked descriptor from C1. No change. Focus changed from competitive to organizational value as comments reflected the need for the descriptor to be relevant to public &amp; private organizations. This competency develops understanding of the external and internal digital technology environments and the impact of new and emerging technologies. The focus is on increasing organizational (product, service, customer, staff, financial) value.</td>
</tr>
<tr>
<td>2</td>
<td>Skilled in business, environmental and competitive analysis including how industry sector and competitors are using new and emerging technologies</td>
<td>Skilled in business, environmental and competitive analysis including how industry sector and similar organizations are using new and emerging technologies</td>
<td>Little change except changing competitors to ‘similar organizations’ to make the descriptor more relevant to public and private sector organizations. This competency helps the board understand the organization’s level of IT maturity in relation to the external technology environment [e.g., 10, 12]: how others are using technology, and how this might benefit the organization and their specific industry sector/s [4, 52]. This includes how suppliers, alliance partners, competitors or similar sized organizations are using new and emerging technologies.</td>
</tr>
<tr>
<td>3</td>
<td>Knowledgeable about how to incorporate current and future technologies into the organization’s business strategy, plan development and performance measures</td>
<td>Skilled in over-seeing the inclusion of current and future technologies into the organization’s strategy, business plan development, organizational performance measures and management Key Performance Indicators.</td>
<td>Management KPIs added. Considered important to reinforce how enterprise governance and management planning and performance systems fit together and are interdependent. This competency helps boards act on any analyses of the external and internal environment (C1, 1 – 3) and to drive timely reporting. It enables the board to not only ask questions of management or advisors, but to critically review reports and proposals and technology-related discussions.</td>
</tr>
<tr>
<td>4</td>
<td>Knowledge of the business processes that underpin peak performance and their relationship to enterprise business and info. systems technology architecture</td>
<td>Knowledgeable about the business processes that underpin peak performance</td>
<td>Edited down as it was felt that this version was too operational. With the proliferation of business software and applications, this competency is about understanding the internal relationship between key business processes throughout the organization and whether they are integrated into an efficient and effective technology enabled digital eco-system [46].</td>
</tr>
<tr>
<td>5</td>
<td>Knowledgeable about and skilled in evaluating the level of technology dependency the organization has now, and may need in the future.</td>
<td>Knowledgeable about and skilled in evaluating the level of technology dependency the organization has now, and may need in the future.</td>
<td>No change. Key clarifying information added to include digital leadership aspects. This competency focuses on analysis of the internal operating environment. It brings clarity to what technology exists, it’s effectiveness in helping achieve strategy and in adding value [1]. When skilled, directors are better able to understand current technology approaches in terms of future strategy, capability development, change leadership and investment priority [4, 7].</td>
</tr>
<tr>
<td>6</td>
<td>Experienced in selecting, implementing and monitoring technology governance mechanism effectiveness</td>
<td>Experienced in selecting, implementing and monitoring the effectiveness of enterprise business technology governance mechanisms (systems and processes)</td>
<td>Important clarifying information added, little change to descriptor. Boards need basic knowledge of: the features and benefits of common operational governance frameworks (such as TOGAF, ITIL, COBIT5 etc); how any board governance mechanisms (such as board ICT, risk or audit committees) inform board reporting; whether governing enterprise technology by exception (i.e. via board reporting and current mechanisms) is effective for all types of IT risk.</td>
</tr>
<tr>
<td>7</td>
<td>Able to oversee IT acquisition, implementation, maintenance and disposal to meet board’s fiduciary, regulatory, compliance, ethical, contractual and legal obligations</td>
<td>Able to oversee IT acquisition, implementation, maintenance and disposal to meet the board’s fiduciary, regulatory, compliance, ethical, contractual and legal obligations</td>
<td>No change to descriptor as it reflects the ISO 38500 standard. This competency is about understanding the changing role of the board in relation to the ethical and legal requirements [e.g., 17, 25, 26] of being a board director, chairman or their equivalent. Directors need a good knowledge of: technology security and risk; technology-related regulatory and compliance requirements for their organization / industry / country in relation to all aspects of the life-cycle of major technology systems and assets.</td>
</tr>
<tr>
<td>C1 V1:</td>
<td>C1 V2: (reviewed)</td>
<td>Clarifying additions from phase four review and industry comments</td>
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<td>-------</td>
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<td>---------------------------------------------------------------</td>
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<tr>
<td><strong>8</strong></td>
<td>Understands the design and use of business technology performance scorecards. Knows what to measure and monitor and how to interpret performance data against plans and policies to derive expected benefits; ensures strategic intent is achieved.</td>
<td>Edited down. First sentence considered too operational. Understands what (in relation to technology projects, technology use, investment returns and value creation) is being measured and reported on to provide digital leadership, ensure strategy achievement, to oversee IT risk and achieve returns. This helps provide assurance of IT department effectiveness and how this is measured against a digital strategy scorecard [e.g., 54].</td>
<td></td>
</tr>
<tr>
<td><strong>9</strong></td>
<td>Knowledgeable about enterprise technology architecture in relation to infrastructure investment to achieve the business goals of the enterprise.</td>
<td>Edited because participants commented that boards only needed an overview understanding. This competency requires the ability to critically review business and technology-related analyses and oversee their translation into the technology architecture (overall IT system design) and a cohesive yet flexible enterprise level IT plan. The board understands the ways in which the current or future enterprise IT architecture supports strategy achievement, business performance and conformance, risk (e.g. infrastructure, business continuity, information security or project risk [21]) with the current or proposed enterprise IT architecture.</td>
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<tr>
<td>C2</td>
<td>Make quality technology-related judgments and decisions.</td>
<td>C2 Lead and govern business technology investment and risk. (reviewed version) (C2 wording changed in the review to reflect digital leadership of investment and governance of risk. Descriptors rationalized from 8 to 6.)</td>
<td></td>
</tr>
<tr>
<td><strong>1</strong></td>
<td>Able to champion the strategic use of business technologies, and data and information use for decision-making.</td>
<td>Further amended to reflect the board’s leadership role in leading a digital-savvy culture. Understands emerging digital trends and how the organization is evolving the capability of its workforce to remain viable in the future. Ensures that board attitudes, beliefs and culture [27], enhance rather than are a barrier to digital opportunities.</td>
<td></td>
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<tr>
<td><strong>2</strong></td>
<td>Able to evaluate risk to ensure the continued operation of the business.</td>
<td>Duplication removed; two rationalized to one. Reporting on digital risk includes: the security of the organization’s data and information, and how privacy is maintained; the effective design, integration and implementation of technology projects; the current and future integrity of technology hardware and systems and how this effects business continuity; the effectiveness of current board-level approaches to technology risk oversight and emergency response; whether the board and senior executives have the right competencies to derive value and manage risk;</td>
<td></td>
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<tr>
<td><strong>2a</strong></td>
<td>Knowledgeable about information and data security, privacy risks and their mitigation</td>
<td></td>
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<tr>
<td><strong>3</strong></td>
<td>Demonstrates an understanding of the technologies for identifying, tracking, mining and exploiting the data and information relevant to the organization’s needs.</td>
<td>No change to the descriptor Demonstrates knowledge of: types of data and information critical to good decision-making, its various sources, including big data, and its currency; how, after implementing a new business technology system, expected value can be derived; the extent to which cross-organizational data sharing occurs and how this facilitates timely risk identification and decision quality.</td>
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<tr>
<td><strong>4</strong></td>
<td>Knowledgeable about the unique issues associated with competitive advantage and IT user experience</td>
<td>Minor change to digital. Some duplication removed from the clarifying statement. Demonstrates: knowledge of all major stakeholders and the ways in which technology can enhance communication and engagement with them to add value to stakeholder engagement.</td>
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<tr>
<td><strong>5</strong></td>
<td>Able to oversee the governance of IT acquisition, implementation, maintenance and disposal balancing risk &amp; opportunity, and supports retention of intellectual property and organization memory</td>
<td>No change to the descriptor Understands the board oversight role in: all phases of technology project life-cycle from inception to measuring post-implementation value; ensures that operational IT governance and IT governance frameworks (e.g., ValIT, Cobit5, ITIL, TOGAF) form an integral part of the organization’s business planning, performance monitoring and board reporting system.</td>
<td></td>
</tr>
<tr>
<td>C2V1:</td>
<td>C2V2: (reviewed)</td>
<td>Clarifying additions from phase four review and industry comments</td>
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<tr>
<td>6 Skilled in the design and use of technology performance scorecard measures. Knows what to measure &amp; how to interpret performance data.</td>
<td>Knows what to measure and how to interpret performance data to create.</td>
<td>This was perhaps the most contentious descriptor with a number of participants suggesting that it was too operational and not the board’s role to design scorecards or glean intelligence. However, there were other participants who considered aspects important. The solution was to edit the descriptor, but reflect the changes in an amended version of the clarifying statement.</td>
<td></td>
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<tr>
<td>6a Knowledgeable about how to glean intelligence from big data and translate the findings into business advantage</td>
<td>Understands what needs to be measured in a technology performance scorecard. Knowledgeable about types of intelligence from big data and can relate to strategy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C3 C3 Oversee technology use to achieve returns and demonstrate value.</td>
<td>C3 Direct and govern technology-enabled innovation and value creation. (reviewed)</td>
<td>(C3 wording changed in the review to reflect directing and governing aspects of digital leadership. Descriptors rationalized from 6 to 4.)</td>
<td></td>
</tr>
<tr>
<td>1 Understands how to derive business value from technology investments</td>
<td>Understands how to derive business value from technology investments</td>
<td>No change to the descriptor.</td>
<td></td>
</tr>
<tr>
<td>2 Experienced in the governance oversight of large scale IT project investments such that IT assets are acquired, implemented and monitored with risk and value balanced throughout</td>
<td>Experienced in board-level governance of large scale IT project investments. Digital assets are acquired, implemented and monitored with risk and value balanced throughout.</td>
<td>No change to the descriptor. Demonstrates: understanding of their oversight role and responsibilities in project, product and service life-cycles from inception and proof of concept to implementation and post-completion review; they understand the relationships and differences between operational IT governance frameworks and board governance mechanisms and how these support project reporting and success throughout; they ensure that governance and audit processes support the dynamic balance between risk oversight and value.</td>
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<tr>
<td>3 Knowledgeable about or experienced in technology asset management to achieve expected returns</td>
<td>Knowledgeable about value creation through digital product, system or service development. Oversees technology asset life-cycle to derive expected returns.</td>
<td>Two combined; duplication removed. Demonstrates knowledge about rapid technology change, how this affects asset life-cycles, business and technology strategy and investment priorities and decisions. Understands the competitive implications as well as any emerging risk relating to current assets. Requires and understands: a comprehensive overview of the organization’s technology maturity [e.g., 12, 14] and the extent to which current assets support the organization’s strategic goals.</td>
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<tr>
<td>3a Experienced in technology cost optimization in product, system, process and service development to provide good returns on investments and assets</td>
<td></td>
<td></td>
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<tr>
<td>4 Knowledgeable about system and infrastructure components such as software, applications and hardware and cloud-based services, and the implications, costs and benefits of use. Knowledgeable about the use of mobile and social media in product and service delivery.</td>
<td>Demonstrates knowledge of the implications, costs and benefits of digital infrastructure components such as software, applications and hardware, mobile and social technologies; and cloud and outsourced services, and of their uses.</td>
<td>Two combined. This board oversees strategy and requires reporting on all key areas of technology risk and value creation relating to: overseeing the security of the organization’s data and information and understanding how privacy is maintained; monitoring how new and emerging technologies are changing the ways in which all stakeholders can engage with their organization and the risks and opportunities this presents. They understand: how mobile technologies can support and enable the performance of frontline staff, assist in compliance data capture and reporting and in product and service; how to discover/evaluate new models of digital business.</td>
<td></td>
</tr>
<tr>
<td>6 Evaluates industry trends in new and emerging technologies relevant to meeting business or industry needs</td>
<td></td>
<td>Deleted as covered in C1. Duplication removed.</td>
<td></td>
</tr>
</tbody>
</table>


Discussion continued. These boards understand that there is risk in delegating EBTG responsibilities down to management without having appropriate governance mechanisms in place to monitor those delegations [50, 55].

The nub of competency one revolves around the pervasiveness of technology in almost every aspect of modern business, including its design, delivery and measurement. Digital leadership and EBTG considerations become integral to overall corporate governance [1]; strategizing, planning and decision-making. EBTG is not something separate [1], nor separated from the board. To be effective in overseeing an enterprise’s use of IT, boards do not need to understand the detail of technology as much as they need to better understand business technology governance and how management should be dealing with and reporting on technology investment, risk and value creation [56]. It is unlikely that every board member may need all three competencies. However, we suggest that directors from each of the traditional disciplines such as finance, legal and marketing and human resources may also need to up-skill to understand the impacts of digital technology in their areas of expertise.

This is perhaps born out in competency two, where technology is a major factor in the competitive, strategic, security, risk and investment decisions governance boards should now be leading and governing as shown in Figure 1. As Martyn [50] recently commented, ‘It is insufficient for a board to say 'they delegated to the CEO' when projects fail - the board has a responsibility to monitor delegations and seek assurance that delegated responsibilities are being implemented as envisioned. Whether it be IT, collective employment negotiations, restructuring, or any other project/programme that is critically (strategically) important to the organisation, the board’s role is to oversee the successful implementation by setting measurable indicators of progress and success, then diligently and regularly monitoring the results. Anything less is a failure of governance.’ When it comes to competent board oversight of digital business strategy, IT investment and risk, EBTG is part of a board’s fiduciary duty of care whether they realize it or not [34], and has impacts for all technical disciplines.

The requirement for boards to lead strategy and value creation, to create and lead a culture that embraces digital innovation and to monitor technology risk and investments to derive promised returns (C3) is now being suggested as essential for future oriented enterprises and the evolving business models they are creating [28, 57]. However, many organizations still regard IT departments and technologies as intrusive expenses. The board leads this mind-set and such an orientation can lead to very costly outcomes [27]. Consider the leadership role of the board and the executive team in the many failed IT projects [49]. While boards continue to ignore or delegate IT governance responsibilities to management [1], sometimes several layers down in the management structure there can be dire consequences [57]. Equally, with the right balance of understanding between the competitive and performance enhancing use of digital technologies and an organization’s capability to lead business transformation, results can outstrip others in all industries [4, 14]. As McKendrick points out [58], the IT department and the CIO or consultants are blamed when, in the absence of competent digital leadership of technology-related change, the culture at the top perpetuates practices that prevent value creation or achieving returns from IT investment [4, 14]. These leaders sign off on projects to drop, often isolated, technology solutions on top of a dysfunctional or disconnected area of the business expecting that the solution will fix the organization’s product, customer and productivity woes and make the organization more profitable [14]. Digital savvy organizations recognize the future importance of long-term investments in and support of technology. Technology is used to innovate, and failure tends to be used as part of the learning and improvement. CIOs and IT leaders are viewed as valued partners and advisers as they digitize their organization and lead and manage the associated business transformation skillfully in parallel with digital transformation [4, 14].

Digital leadership-focused boards have a strategy matching mix and range [4, 59] of competencies including EBTG to ensure they are capable of asking the right questions and critically evaluating responses. In demonstrating a range of EBTG competencies they are much more likely to ensure that technology-related opportunity, strategy and risk information makes its way onto the board agenda [24, 51].

Conclusion and further research

This paper presents a revised version of the first known EBTG competency set, validated and updated in the review phase through a questionnaire and qualitative survey involving 177 participants. This research contributes to clarifying and further articulating the emerging role of boards of directors in digital leadership and the urgent need to build competence in effective EBTG in the boardroom.

Contribution: While competency sets are most commonly used for recruitment and professional development, boards can use this set to discuss their digital leadership role, their role in directing performance and governing conformance, and whether they are meeting technology governance areas of their overall duty of care. The research also provides a foundation, industry validated, generic competency set for those involved in the formal
education and professional development of senior executives and governance boards. It signals the importance of considering how management processes and operational governance frameworks need to seamlessly become integrated with business planning and reporting through established as well as revised board-level governance mechanisms.

While this applied research (the objective of which was to make a contribution to practice) is somewhat limited by the absence of other EBTG competency sets for comparison, it paves the way for further research by having 177 qualified and experienced participants. It is also limited by the challenges of replicating the qualitative aspects of this research [35], and by the relatively small sample size.

Further research could include action or multi-case research of organizations that use this EBTG competency set in situ. A theoretical lens or lenses such as Chaos, Resource, Contingency and/or Agency Theory could be applied to explain and test the impact of these competencies and further contribute to the body of knowledge. A study evaluating the presence or absence of a deliberate move to align board competency requirements with a digital leadership strategy or in-depth research into the positive and negative impacts of board culture in digital leadership, as well as the critical role and competence of the Chief Executive Officer could provide further invaluable contributions to practice.

In conclusion, Enterprise Business Technology Governance is an important and still too often neglected activity for boards. Boards that do not effectively shape their digital future and lead, direct and govern strategy, investment and business technology risk may have an uncertain future. This is because ill-focused, uncoordinated or inadequate investment that results from a lack of digital leadership competency including EBTG in the board can significantly increase fiduciary, performance and conformance risk. This revised and updated set of competencies should assist boards in developing or recruiting the people with the knowledge, skills and experience required for effective governance as organizations digitize.

References


