Intellectual capital and quality management: strange bedfellows or new insights?

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Abstract

Against a background of organisation improvement much has been discussed about how quality management processes and practices can assist. The field of intellectual capital, with its focus on better managing the organisation’s intangible assets, also has an underlying theme of improvement. Yet the research literature relatively is silent on how these two areas of research could combine or interact with each other, and so possibly lead to greater insights into how firms can improve. This paper attempts to address this gap. It first outlines the development of these fields of research, and then discusses areas in common or points of potential synergies. These common areas and potential synergies are encapsulated within the intellectual capital/quality management (IC/QM) framework. Through a case study of strategy development and strategic planning at an Australian higher education institution the paper then presents an application of this framework to show how it can lead to greater insights and better practical outcomes. This is seen as the major contribution of this paper. However as the paper also indicates, more work needs to be done. Future research activities should focus on further construct, internal and possibly external validation by completing more in-depth case studies of organisations both within the higher education sector as well as other organisations in the private, public and not-for-profit sectors of the economy.

Brief Histories of Quality Management and Intellectual Capital

Notions of quality have a long history, originally emerging with the formation of guilds in medieval Europe. The guilds ensured quality products from their member craftsmen by developing strict rules on product quality – both in terms of the physical good as well as any intangible service associated with the good. Inspection committees enforced these rules; those products that passed certain criteria these were assigned a mark of quality. The industrial revolution of the 19th century saw these craftsmen being absorbed into factories and becoming employees. Quality management still revolved around product inspection but now became the responsibility of factory and shop owners. The 20th century saw a change of emphasis from product inspection to examining processes. In the mid-1920s Walter Shewhart of Bell Laboratories, began analysing data from various industrial processes to determine if the process was stable and under control or unstable and out of control, the former presumably related to producing quality products. Shewhart’s (1931) statistical quality control (SQC) saw quality methods assume a management flavour. The next phase in the evolution of quality management occurred with the work of W Edwards Deming and Joseph Juran who participated in developing the total quality management (TQM) approach. TQM focussed on inspection, statistical quality control as well as all organisational processes (direct or indirect) and the people participating in these processes (Feigenbaum, 1983). Quality circles are but one example of this total quality approach. This period also saw the movement from competition on price to competition on quality with consumers often willing to pay more for something they perceived as having higher quality.

Although interest in TQM persisted, other developments related to quality management occurred at the end of the 20th century, such as Six Sigma created by Motorola (Harry and Schroeder, 2000), with an emphasis on minimising defects, and quality function deployment (Akao, 1990) with its emphasis on satisfying customer wants or needs. This period also saw the development of national and international quality standards, such as the ISO 9000 series. At the beginning of the 21st century quality management has moved beyond its manufacturing base into the service sectors of the economy such as health, education and government. The Malcolm Baldrige National Quality Award now has new categories of education and healthcare in addition to the original manufacturing, small business and service. From 2007 not-for-profit organisations have their own category within the award framework (NIST, 2007).
On the other hand intellectual capital is a recent area of research interest, beginning with the work of Saint-Onge (1996), Stewart (1997), Edvinsson (1997), Edvinsson and Malone (1997), and Sveiby (1998). One core issue for intellectual capital has been the difference between an organisation’s market value (where this can be calculated – which means primarily firms listed on stock exchanges) and the net asset value recorded in the organisation’s balance sheet - derived using mainly historic cost values of assets and liabilities. For example, as at 30 June 2006 BHP Billiton had a market capitalisation of $123 billion but net assets valued only $24.4 billion (BHP Billiton, 2006). The difference is considered to be explained by the presence of intangible assets and liabilities (Caddy, 2000) that are not easily monetised, the exceptions being things like brands, patents and trademarks. There is general agreement on the components of intellectual capital: namely human capital, structural capital and relational capital as shown in Figure 1 below (Bainbridge, et al., 2001; Pike, et al., 2005). As such intellectual capital is different to accounting capital, which is composed of retained earnings, shareholders equity and various reserves all of which have a monetary value assigned and so can be summed. To date no common valuation process can be applied to each intellectual capital component and so the components shown below cannot be summed.

**Figure 1. Components of Intellectual Capital**

<table>
<thead>
<tr>
<th>Intellectual capital</th>
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<tr>
<td><strong>Human capital</strong></td>
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<tr>
<td>→ Recruitment, e.g. corporate image, selection</td>
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<tr>
<td>→ Retention, e.g. career planning, motivation, commitment</td>
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<tr>
<td>→ Training, e.g. induction, skills improvement</td>
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<td><strong>Structural capital</strong></td>
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<tr>
<td>→ Policies and procedures, e.g. knowledge of, compliance to, relevance of</td>
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<tr>
<td>→ Internal systems, e.g. intranets/extranets, ERP, data warehouses</td>
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<tr>
<td>→ External systems, e.g. e-mail, SCM, CRM, SRM, GRM</td>
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<tr>
<td><strong>Relational capital</strong></td>
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<tr>
<td>→ Suppliers, e.g. large suppliers, small suppliers, trade associations, selling franchises</td>
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<tr>
<td>→ Customers, e.g. large customers, small customers, buying franchises</td>
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<tr>
<td>→ Owners, e.g. large shareholders, small shareholders, shareholder associations</td>
</tr>
<tr>
<td>→ Regulators, e.g. ASX, APRA, ASIC, ACCC, ATO, industry associations</td>
</tr>
<tr>
<td>→ Competitors, e.g. same industry, vertically integrated, horizontally integrated, local, overseas</td>
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**Common Issues and Themes: Quality Management and Intellectual Capital**

From the above one could conclude: strange bedfellows indeed! However, this paper will argue that there are common themes within quality management and intellectual capital. For instance both have an underlying theme of organisation improvement at either a strategic or an operational level. Both approaches also see measurement as an important element. Better measurement of intellectual capital should mean that the organisation is better able to manage itself and so lead to higher levels of performance and achievement. A significant theme for total quality management, Six Sigma and quality function deployment is also developing appropriate measurements and metrics. Although both of these themes are seen as equally important in achieving the ultimate goal of an improved and more effective organisation, this paper will focus on strategy development and strategic planning activities.

**The Strategic Focus of Quality Management and Intellectual Capital**

Quality management has long been recognised by organisations as important for both short-term and long-term organisation success (Peters and Waterman, 1982; Calingo, 1996; Yeung, et al., 2003; Fuentes Fuentes, et al., 2006). Shani and Rogberg (2004) see quality management initiatives as strategic as they
normally involve long planning horizons, become embedded in the organisation’s culture, and involve large resource commitments. Beer (2003) reports on studies by Hendricks and Singhal (1997, 2001) which compared the performance of firms that had received quality awards with a control group that had not. In the 1997 study quality firms reported higher operating income and revenues over a ten-year period. In the 2001 study quality firms showed superior long-run stock performance, particularly in the latter five years of the study period. That is, quality management as a set of activities should not be seen merely as a control system but more as a management function. As Yeung, et al., (2003, p.46) state:

Quality management literature nowadays suggests that the QMS has developed into an important part of corporate strategy; and that only those organizations with an advanced QMS achieve superior organizational performance and remain competitive in the marketplace.

However, more work on linking quality management practice and business strategy should be done. Fuentes Fuentes, et al., (2006) claim that the relationship between TQM and business strategy has been much discussed in theory (Pruett and Thomas, 1996; Wilcox, et al., 1996; Srinidhi, 1998) but there is little applied research demonstrating how this theory is put into practice (Barclay, 1993; Dansky and Brannon, 1996). The case study discussed below helps address this gap in the research. Yeung et al., (2006, p.156) provide the following comments on the successful adoption of quality management:

... are managed as a system, employees are empowered, focus is placed on customers, and a set of effective management techniques is adopted (Garvin 1991; Bounds, Yorks, Adams, and Ranney 1994). Senior executives in leading organizations are ‘absolutely convinced that TQM is a fundamentally better way to conduct business and is necessary for economic well-being’ (Robinson III, Akers, Artzt, Poling, Galvin, and Allaire 1991: p. 94). Scholars (Bounds, Dobbins, and Fowler 1995; McConnell 1995; Amsden, Ferratt, and Amsden 1996; Hodgetts, Luthans, and Lee 1998) declared that the fundamental change induced by TQM is a paradigm shift. In the paradigms of TQM, customer needs and expectations are fully focused upon, employees are wholly empowered, and each part of the organization is enabled to contribute to continuous improvement. Eventually, learning, values, creativity and sustainability (Miller 1993) are achieved in TQM firms, and they are managed in a highly efficient manner.

That is the following questions should be addressed:

a. What level of commitment to quality management processes is shown by senior management within the organisation?

b. How does the organisation focus on customer needs and expectations?

c. What evidence is available to show that employees are empowered?

d. What processes exist that allow individuals or groups to make contributions that may lead to improvements in the way the organisation operates?

e. What processes exist that foster learning and creativity or allow development of a sense of values within the organisation?

In the field of intellectual capital there has also been research effort directed to integrating the organisation’s intellectual capital with strategy development, strategic management and strategic planning activities (Vöpel, 2002; Das, et al., 2003; Brown, et al., 2005; Miller, 2007). For example Miller (2007, p.415) claims that: “... school of strategy that is attracting a wide degree of attention is the knowledge-based view of the firm, with its typology of exploration and exploitation knowledge strategies”. Brown, et al. (2005, p.34) claim that, “sustaining the global competitive edge provided by your IC depends on developing and implementing an integrated business strategy”. Harreland, et al., (2007) discuss the transformation of IBM under the leadership of Leo Gerster and how this CEO was able to leverage IBM’s intellectual capital (or what these authors refer to as IBM’s ‘dynamic capabilities’) to redefine the organisation. Finally Pike, et al., (2005) discuss the application of an intellectual capital framework, similar to the one outlined in Figure 1 above, to strategy
and strategic issues. A major contribution made by Pike, et al., (2005) is their recognition that interactions between intellectual capital components occur, as shown in the analysis of strategy for each of the three case study organisations discussed in their paper. Figure 2 below provides a diagrammatic representation of these interactions:

**Figure 2. Intellectual Capital Components and Their Interactions**

As examples of issues arising from the interactions between intellectual capital components with respect to strategy development and planning, organisations should consider questions such as:

a. How do we achieve better relationships with our suppliers, customers or clients, and regulators using the people we currently have, the organisation’s current reputation or the efficiency and effectiveness of the organisation’s current systems?

b. How do we attract and retain better people into our organisation through our organisation’s reputation and its underlying systems, or the strengths of our relationships as perceived by current or potential employees?

c. How do we improve the organisation’s current reputation or improve existing systems through the people we have and the relationships we either have or are developing with our suppliers, our customers or clients, and our regulators?

The discussion above indicates that there are synergies between quality management processes and practices and intellectual capital theory to the strategy development and strategic planning. Quality management at a strategic level was concerned with:

a. the level of commitment of senior management to quality processes – human capital;

b. a focus on customer needs and expectations – relational capital;

c. the level of empowerment by the organisation’s employees – human capital;

d. the ability of employees to make contributions that lead to improved processes – structural capital; and

e. the processes that foster learning and creativity or allow development of a sense of values within the organisation – human capital.

On the other hand intellectual capital at a strategic level is concerned with ways in which:
a. the organisation’s human capital can be improved – through greater commitment by employees participating in total quality management activities such as quality circles;

b. the organisation’s structural capital can be improved – through introducing Six Sigma practices to ensure removal or minimisation of defects in either the organisation’s business processes or products; or

c. the organisation’s relational capital – through a better understanding of customer or client expectations and needs through using quality function deployment processes.

One important difference between quality management processes and practice and intellectual capital is the existence of an overall framework for the latter and an absence for the former. Using the arguments outlined above, Figure 3 below shows how quality management processes can be integrated with the intellectual capital framework shown in Figure 2 above: the name of this new framework, the IC/QM framework, encapsulates this integration.

**Figure 3. The Intellectual Capital/Quality Management (IC/QM) Framework**

The next section discusses a case study regarding quality management practice at the University of Western Sydney (UWS) and the application of the IC/QM framework. The case study also indicates how new insights emerge when analysing strategy development and strategic planning through this framework.

**Case Study - UWS Quality Management and Application of the IC/QM Framework**

All information used to develop this case study has been obtained from publicly available information, either hard copy documents or through from publicly available web pages on the UWS web site (www.uws.edu.au).

The UWS Office of Planning and Quality (OPQ) has overall responsibility for quality management at UWS, with both a strategic and operational focus as indicated on this office’s initial web page. For example, access to the UWS ‘strategy pyramid’ is through the link ‘Quality management at UWS’ on the UWS home page. In a description of its major functions, OPQ provides advice and co-ordination on planning and strategy review. Furthermore, although the PIRI cycle of planning, implementing, reviewing and improving has its origins in statistical quality control and TQM, OPQ has adapted this method and embedded it as part of the organisation’s strategic management as indicated in Figure 4 below (UWS, 2007a):
Documents such as *Strategic planning and review* (UWS, 2007b) reinforce this embedding of quality management into the strategic thinking at UWS. The document *Quality management framework* links UWS strategic directions with concrete plans and resources to ensure that these directions have an outcome. As shown in Figure 4 above there are also linkages between the central or strategic elements and the PIRI cycle activities in which the interactions are ‘focussed, synchronised and mutually reinforcing’. There are some issues with the model shown in Figure 4 above. First, these linkages are not explicitly defined or discussed in terms of actual examples. Second and more importantly, little is said publicly about what happens within each of the central activities or processes. For example, how is ‘Direction Setting & Resourcing’ achieved? What criteria are used to identify ‘Core Activities’? How frequently are core activities reviewed? Do ‘Enabling Areas and Infrastructure’ apply to all core activities? Could ‘Enabling Areas and Infrastructure’ directly, rather than indirectly, affect ‘Direction Setting and Resourcing’?

UWS was the subject of an Australian Universities Quality Agency (AUQA) audit with the audit report released in January 2007 (Australian Universities Quality Agency, 2007). This audit report recognised UWS’s strategic planning efforts in terms of the processes and the plans created. However, this effort was qualified by the following affirmation (Australian Universities Quality Agency, 2007, p.10):

**Affirmation 1**

AUQA affirms UWS’s efforts to develop an integrated framework for coordinating and streamlining all levels of university planning, and facilitating the monitoring of performance against plans.

The issue of integration is raised again in the discussion of quality assurance through the PIRI cycle. Whilst stating that their support for current UWS quality assurance methods, AUQA noted that (Australian Universities Quality Agency, 2007, p.11):

... implementing these principles will not be easy for UWS, given the complexity of the University and the multiple layers of plans in place. The proposed integrated strategy will be essential in implementing these principles successfully across the University.

One possible solution to resolve this affirmation would be to apply the IC/QM framework. To demonstrate how this framework could be used, three examples are considered, viz.: the strategic initiative *Our People 2015* (affirmation 7 - Australian Universities Quality Agency, 2007, p.41); developing an evaluation framework for offshore course delivery (recommendation 6 - Australian Universities Quality Agency, 2007, p.38); and assessing the impact of using more blended learning within teaching delivery (affirmation 4 - Australian Universities Quality Agency, 2007, p.23).

*Our People 2015* recognises that UWS’s ageing staff profile raises significant issues for the organisation such as the careful management of succession planning (Australian Universities Quality Agency, 2007, p.40). Anderson, *et al.*, (2002) demonstrate this issue is faced by many Australian universities and covers a range of
issues and management strategies. For example, there is continuity of higher degree research supervision, use of pre-retirement contracts to manage succession, and considering retired academics as a resource (Anderson, et al., 2002, p.111-117). From an intellectual capital perspective there is also the issue of a decrement in human capital, mainly through the tacit and possibly explicit knowledge that these retiring staff possess. Using the IC/QM framework what other sorts of insights can be developed concerning the issue of an ageing staff profile? The discussion below presents examples of the sorts of interactions that this human capital issue has with either structural or relational capital:

a. **Interactions between human capital and structural capital.** Loss of human capital can lead to significant issues in terms of compliance with organisation policy. New academic appointments may not be familiar with the organisation’s policies and procedures and so deliver incorrect advice to others or make incorrect decisions, say on advanced standing for a student. Total quality management practices such as appropriate induction of new staff should minimise the chances of mistakes occurring (Australian Universities Quality Agency, 2007, p.40). Another strategy would be to embed as much as possible the explicit (and to a lesser extent the tacit) knowledge of retiring staff into the organisation’s structural capital. This can occur through the development of intelligent information systems in which explicit knowledge is incorporated through facilities such as rules modules, or through developing intelligent interfaces or data collection forms. The UWS AUQA report indicates two areas where the former has occurred, viz.: the On-line Course Approval System (OCAS) and the Student Complaints Systems (commendations 3 and 6 - Australian Universities Quality Agency, 2007, pp.19, 25). Finally, other Six Sigma systems could be developed that report on instances of errors in academic advice. The evidence collected through these processes could then be used to further refine existing intelligent information systems and forms, or establish gaps where new structural capital developments are required.

b. **Interactions between human capital and relational capital.** Take the hypothetical situation of a key administrative staff member who has substantial experience in the area of articulation arrangements retiring. An incorrect interpretation of these agreements by experienced senior staff (the people most likely considering articulation issues), could lead to serious issues in the organisation’s relationship with another higher education institution. Training in quality function deployment (in particular the focus on customers and service delivery) could address this issue. From the human capital viewpoint, discussion and knowledge exchange of articulation issues could also occur through forums of senior staff such as the UWS HOP (Head of Program) Network (commendation 4 - Australian Universities Quality Agency, 2007, p.22), which is seen as an important TQM initiative. Finally, in recruiting new staff, this human capital decrement could be addressed by specifically targeting applicants that demonstrate knowledge and experience in relationship management with overseas institutions: the successful recruitment of these staff provides the increment to human capital as well as risk management against possible future decrements in relational capital.

The second example of a strategic initiative was to develop an evaluation framework for offshore course delivery. For UWS this relational capital issue involved a recommendation in its AUQA audit report (recommendation 6 - Australian Universities Quality Agency, 2007, p.38). It is interesting to compare this recommendation with the commendation received by the University of South Australia in their AUQA audit report (commendation 8, Australian Universities Quality Agency, 2004, p.29), although this report also stated that further work was needed to ensure greater equivalence between offshore and local assessment practice (affirmation 5, Australian Universities Quality Agency, 2004, p.29). The discussion below presents examples of the sorts of interactions that this relational capital issue has with either structural or relational capital:

a. **Interactions between relational capital and human capital.** For human capital there would need to be an assessment of those staff involved in trans-national education to ensure that suitable knowledge of problems in offshore teaching delivery (such as lower levels of English language competence compared to domestic students) as well as experience in the various cultural differences of students enrolled in offshore courses. TQM approaches could be applied to the recruitment and training functions to ensure that the organisation has access to suitable staff. One interesting comment from the University of South
Australia AUQA audit report is the recruitment of Mandarin speaking academics to support offshore course delivery in Taiwan (Australian Universities Quality Agency, 2004, p.29).

b. **Interactions between relational capital and structural capital.** Interactions between these two intellectual capital components would address questions such as: does the organisation have in place appropriate policies, procedures and systems that allow the effective delivery of courses offshore? For example, does the organisation have in place suitable linkages between its student administrative information system and its finance information system that allow overseas student to both enrol and pay the fees associated with their enrolment? In situations where this link does not exist, the offshore provider may collect revenue on behalf of their partner: delays in remitting this revenue to their Australian partner could lead to tensions in the relationship. Another example of an interaction between relational and structural capital is the reference in the UWS AUQA audit report to International Strategy and Policy Committee which was established in July 2005 (Australian Universities Quality Agency, 2007, p.36) to provide overall oversight for UWS in this area (a structural capital increment).

The third and final example of a strategic initiative is to assess the impact of using more blended learning in teaching delivery; this area received an affirmation as part of the UWS AUQA audit (affirmation 4 - Australian Universities Quality Agency, 2007, p.23). It could be argued that this example is more operational than strategic; the fact that this area received an AUQA affirmation would argue against this assertion. Furthermore, the greater use of this structural capital enhancement should be seen against a background of increasing student staff ratios and financial pressures in the higher education sector (Anderson, et al., 2002, p.3). The discussion below presents examples of the interactions that this structural capital issue may have with either human or relational capital:

a. **Interactions between structural capital and human capital.** An obvious interaction between these two components concerns the ability of staff to use the technology as well as ensuring that suitable staff are recruited and retained to support and enhance on-line or blended learning environments. Whilst the UWS AUQA audit report notes the contribution made by the Education Development Centre to ensuring that staff have appropriate knowledge to effectively use these systems (Australian Universities Quality Agency, 2007, p.21), it also noted that an often overlooked staff category in terms of training are casual and sessional staff (Australian Universities Quality Agency, 2007, p.4). Although the delivery of training is commendable, it is considered that additional Six Sigma processes be developed to ensure that errors in using these technologies are monitored and appropriate solutions developed to remove these errors.

b. **Interactions between structural capital and relational capital.** Again an obvious interaction between these two capital components is student use of these technologies. With respect to student learning experiences UWS has developed the Tracking and Improvement System for Learning and Teaching (UWS, 2007c). This system received a commendation in the UWS AUQA audit report (commendation 3 - Australian Universities Quality Agency, 2007, p.19) and consists of a collection of quality function deployment (QFD) tools that gather information on course experience, student satisfaction, as well as specific feedback on subject content and teaching of subjects by UWS academic staff. UWS student satisfaction with the use of WebCT within teaching delivery is obtained through the ‘Student Satisfaction Survey’ although data collected is limited to a simple Likert score of satisfaction. Neither the course experience, student feedback on units (subjects) or student feedback on teaching surveys explicitly address the use of on-line or blended learning technologies in teaching delivery. To better understand the impact of these technologies on UWS relational capital the current QFD tools could be enhanced to obtain information on satisfaction with particular on-line learning components such as on-line assessment, as well as feedback on the effectiveness of integrating face-to-face and on-line learning activities within a blended learning teaching delivery.

c. **Interactions between structural capital and structural capital.** This example also demonstrates that interactions can be recursive, as delivery of on-line or blended learning requires the support of a reliable and efficient information technology infrastructure. It should be noted that information and communication technology (ICT) service delivery was the subject of a recommendation in the UWS AUQA audit report (recommendation 8 - Australian Universities Quality Agency, 2007, p.45). Issues
concerning the interactions of structural capital with itself would focus on linkages between information systems such as: the transfer of enrolment information from the student administration systems to the on-line learning technology; the transparent transfer of assessment information from the on-line learning technology to the student administration information system; the capacity of the current ICT infrastructure to cope with future enhancements of on-line learning or blended learning technologies; or the impact of introducing new ICT infrastructure such as the implementation of a wireless network architecture (Australian Universities Quality Agency, 2007, p.45) on on-line or blended learning technologies. The use of enhanced or new Six Sigma processes would also have a role to play in terms of ensuring that errors due to any enhancements are logged and resolved as quickly as possible.

These examples of how the IC/QM framework can be applied do provide some validity for this framework. The case study also demonstrates the relevance of the IC/QM framework to those activities of strategy development and strategic planning: first as an assessment tool of capacity and capability of the organisation, and second to focus on the quality management practices that should either be enhanced or put in place to ensure that successful outcomes flow from new initiatives. Finally the IC/QM framework and its practical application as shown through this case study, also addresses a major concern of Harreld, et al., (2007) in how organisations often go about performing the activities of strategy development and strategic planning. Often lack of attention of implementation detail is ignored, leading to failure of the overall process; furthermore, “timely strategic insights often go unrecognized by those line executives responsible for execution” (Harreld, et al., 2007, p.25).

**Future Research**

As a first step further development and refinement of the IC/QM framework and its underlying methodology needs to be completed. Although there are seen to be strong linkages between Six Sigma practice and managing structural capital, more work is considered necessary to strengthen the linkages between total quality management practice and human capital management (Tonnessen, 2005), as well as quality function deployment practice and relational capital management. Furthermore if there are interactions between each of the intellectual capital components then work should also be undertaken to identify the interactions between Six Sigma, total quality management and quality function deployment as well. Finally although it is considered that the IC/QM framework does address continuous innovation (Boer, et al., 2001; Cole, 2002; Soosay, 2005; van Looy, et al., 2005) further work should be done to see how this framework can address the area of discontinuous innovation (Macher and Richman, 2004; Schwery and Raurich, 2004; Birkinshaw, et al., 2007; Sandberg, 2007). In addition to further refinement of the IC/QM framework additional case study research should be conducted with higher education institutions both in Australia and overseas to strengthen construct, internal and possibly external validity of the framework. Other case study research in organisations located in the private and the not-for-profit sector, as well as other public sector organisations should also be conducted to improve the framework’s validity.

**Conclusion**

Although strange bedfellows with different research backgrounds and histories, this paper shows there are synergies between these two research areas and that new insights can emerge by their alignment or integration. Areas of common interest were: an underlying commitment to overall organisation improvement; a strategic focus; and a focus on measurement. The synergies identified were: the interactions of various quality management practices with the intellectual capital framework, in which there was considered to be an alignment of human capital and total quality management, structural capital and Six Sigma, and relational capital and quality function deployment. These synergies were used to build the intellectual capital/quality management (IC/QM) framework. A case study was presented to show the practical application of this framework, which also provided initial construct validity of the framework through the examples discussed as part of the case study. Future research in terms of more validation of the framework is felt necessary both within and beyond the Australian higher education sector.
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