New development: towards a collaborative competency framework to enhance public value in university-industry collaboration

David Noble  
_Southern Cross University_, david.noble@scu.edu.au

Michael B. Charles  
_Southern Cross University_, michael.charles@scu.edu.au

Robyn Keast  
_Southern Cross University_, robyn.keast@scu.edu.au

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Towards a collaborative competency framework to enhance public value in university-industry collaboration

David Noble, Michael B. Charles and Robyn Keast

David Noble is a doctoral researcher and lecturer in the School of Business and Tourism at Southern Cross University (SCU), Australia.

Michael B. Charles is an associate professor in the School of Business and Tourism, SCU, Australia.

Robyn Keast is a professor in the School of Business and Tourism, SCU, Australia.

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Summary:

Despite the increasing attention paid to university-industry research collaborations (UIC) to drive national innovation agendas, little is known about to what degree the collaborative competence of participants is considered before the award of contracts. This discussion proposes that a definition of collaborative competence is required, that collaborative competence should be acknowledged when evaluating UIC proposals, and that an evaluative framework for collaborative competence is needed to enhance public value outcomes for UICs. (72 words)

Impact statement:

Throughout the developed world, and increasingly in developing countries, university-industry collaborations (UICs) are being promoted as a means to increase national innovation. However, with collaboration failures reported to be upward of 50%, billions of dollars are potentially not being invested appropriately. A public value improvement of just a few percentage points means that more money is available to nations for infrastructure and social improvement. This discussion proposes that more attention should be afforded to the collaborative competence of the participants in UIC ventures in an attempt to improve the overall effectiveness of UIC ventures worldwide. (95 words)

Introduction:

Despite the increasing emphasis on the importance of promoting collaboration between industry and academia as a means to foster innovation and create greater public value, this has not been matched by highly-developed procurement or grant-awarding methodologies, as evidenced by the plethora of reviews, reports and fine-tuning of so-called ‘triple helix’ policy frameworks in Australia,
the United Kingdom, and elsewhere. Through programmes such as the United Kingdom’s Innovate UK or the European Union’s Horizon 2020 Framework, governments are seeking to deliver more innovation by encouraging industry and academia to enter into collaborative research arrangements. Indeed, collaborative research and development (R&D) is one of the four ‘pillars’ of Australia’s recent National Innovation and Science Agenda. Yet the public service management of collaborative research has also been subjected to many structural changes at an oversight level, through various bodies charged with managing the process nationally and internationally. While this could be seen as evidence of an evolutionary process, or continuous improvement, the ‘rules’ surrounding the various programmes have also undergone continual change, with a resultant discontinuity of decision-making.

With respect to procurement, governments are required to manage the expenditure of public funds and meet the highest standards of governance, performance and accountability. In this environment, the emphasis is clearly upon managing for results and maintaining a focus that is performance oriented (Hawke, 2007; Scheers et al., 2005). Financial accountability and transparency also demand that public procurement provides value-for-money solutions that meet government objectives, all the while maximizing value for money for the citizenry. The premise of these principles is firmly rooted in the concept of ‘public value’, which encapsulates service quality, outcomes and trust (Kelly et al., 2002). In short, modern democratic governments aim to achieve as much value for their citizenry as possible, at the same time as achieving the government’s strategic priorities.

To assess public value outcomes, evaluative frameworks are used when procuring goods or services, with these having evolved over time to reach a high degree of sophistication. Yet government grants awarded for the purpose of UICs operate within a financial allocation framework that differs markedly from that of general procurement. In particular, the way in which applications for collaborative research are evaluated diverges from normal government procurement processes, with the procurement of R&D being subjected to less-sophisticated processes compared to, say, the procurement of a new bridge or railway line. Regardless, there is an underlying expectation that grants will also be administered wisely on projects benefitting the nation, as is supported by the UK Wakeham report, which focuses upon “efficiency and cost effectiveness” in the “context of constrained public funding” (Wakeham, 2010, p. 29).

The problem space

To maximize public value, public funding of UICs would ideally lead to long-term financially sustainable, high-quality, research collaborative relationships that reduce the need for substantial ongoing public investment. They should also provide shorter-term R&D innovation and solutions to ‘wicked’ problems, all of which would help to improve national economies. However, previous research indicates high failure rates for collaborative ventures of various types, while the results of collaborative research often fall below expectations. Indeed, the failure rate of collaborations is estimated to be between 50-60% (Buchel, 2003), while, in a 2016 survey commissioned by the peak body for Cooperative Research Centres (CRCs) in Australia, participants self-reported that they operated at a mediocre level when it came to collaboration (Stone et al., 2016).
Thus, while collaborative research may provide public benefit, it is by no means a fait accompli. A review of the combined R&D budgets of Australia, the US, the EU and the UK, for example, suggests that, for FY2016-2017, approximately USD66.6 billion was allocated, much of it being spent on collaborative research activities such as UICs. At the conservative end of the failure estimation, this suggests that R&D investment worth approximately USD33 billion might not eventually yield the expected results. An improvement of just a few percent would therefore result in a substantial global public cost savings, which prompts us to wonder whether public decision-makers are appropriately equipped to ‘pick winners’ when it comes to collaborative research between industry and academia.

The real problem lies in the ‘messy’ nature of collaboration itself. Collaborative research can be defined by a number of factors, including research’s speculative nature, definitional vagueness about what collaboration entails, the ambiguity of ‘success’, and the uncertainty surrounding what constitutes sustainability. All these make it is difficult to predict research outcomes. In this sense, a UIC can be differentiated from the procurement of a road or a building, which uses precise specifications and an easily measured (and visible) outcome. In these circumstances, procurement generally takes place in a principal-agent relationship. Here, evaluation criteria normally place an emphasis on the ability of tendering project management firms to undertake a contract; requires several years of audited financial statements, together with appropriate qualifications and experience; and also ascertains experience with work of similar type and scale. While the procurement of infrastructure or public services and R&D are similar given that factors such as capacity to deliver, management capability (governance) and previous experience are highly privileged, public investment in R&D differs because of the factors introduced above, along with the collaborative aspects that are, in many cases, being increasingly mandated by government granting bodies.

Collaborators continue to experiment with collaborative methodologies and practices to optimize outcomes; that said, many policy makers and bureaucrats continue to judge deliverables by conventional standards (Keast et al., 2004). The traditional approach of judging the success of a project by performance against pre-determined outcomes or milestones is often inappropriate for collaborations. Here, outcomes may differ significantly compared to what was expected at the outset (Thomson et al., 2006), all complicated by government, university and industry having different perceptions about what constitutes a successful outcome (Barnes et al., 2002). In any case, a completely different tangible outcome might occur upon project completion, or serendipitous discoveries might emerge (Lee, 2000). At the same time, the team, even if the research fails to do what was contractually stipulated, might develop collaborative competence and relationships that encourage them to tackle other ‘wicked’ problems. Conversely, the pre-determined outcome may be achieved, but occurs in spite of or at the cost of the relational quality of the team or network involved (Shrum et al., 2007). It might therefore be suggested that intangible outcomes, such as enduring relationships between industry and academia, are just as important as the tangible outcomes.
Collaborative competence and capital as national assets

The last thirty years have seen a push towards greater collaboration. While there is limited scope here to undertake a review on collaboration, it is worth defining what is meant by the word. In this discussion, we use Keast and Mandell’s (2014) definition that collaboration is characterized by dense, interdependent reciprocal connections, and frequent communication. In a triple-helix configuration, this involves the three players developing strong, enduring, trusting relationships that facilitate the collaborative atmosphere.

But there is evidence that collaborative competence is in short supply, thus increasing the risk for any organization relying upon collaboration to achieve an outcome. The development of collaborative competence is clearly vital because, if governments continue to see collaborative research as a driver of their national economies, it follows that the development of these competencies, alongside the professional skills fundamental to research, will be paramount to both the successful development of research output, and the development of collaborative competencies to be harnessed for other research. In other words, without the ability to collaborate, all the academic and technological know-how in the world will not generate innovation efficiently or develop a pool of competent collaborators.

In addition, if a nation is trying to stimulate innovation by procuring R&D through UICs, the more collaborative competence it can engender in the nation, the more collaborative capital will be available for tackling problems that might not yet have emerged. So, an important focus of governments should be to encourage the definition and development of the very foundation of the current drive towards enhancing a nation’s ability to innovate and thereby stimulate positive economic and social outcomes: collaborative competence. Yet there seems to be limited recognition of the importance of enduring relationships when trying to ‘pick winners’, or how to measure the potential for industry and academia to achieve such relationships.

The quality of relationships in collaborative ventures is important, especially in serial collaborations, with the key to collaborative sustainability residing in the depth of relationship between individuals rather than the organizational structures that aim to facilitate it. A relationship is built up over time, with repeated collaborations enhancing trust among participants. If governments wish to leverage this density in collaborative research ventures, collaborative competency emerges as a mechanism crucial for creating public value. Where collaborative competency exists, the depth of an enduring relationship provides the foundation for the density of relationship and interdependence when new collaborative opportunities arise. Collaborators who have engaged in successful R&D on previous occasions, and who remain aware of each other’s continuing research activity, are thus far more likely to seek further opportunities to collaborate again. As far as we are aware, there is currently no evaluative framework for collaborative R&D that accounts for the continuity and density of relationships so critical to successful collaboration.

Towards a new framework

As noted earlier, procurers of public goods use sophisticated frameworks for determining which proposals are more likely to provide greater public value. But robust frameworks for procuring R&D
via UIC research have not reached the same degree of maturity. While rudimentary assessment frameworks might exist, they devote more attention to the track record of the individual collaborators and often overlook the existence of relationships (and other elements) that can be used to deliver socially and economically valuable outcomes over the longer term. Preference is usually given to the measurement or delivery of outputs, and the individual qualities or track record of individual researchers. The collaborative competence of the team that will undertake the venture is too often afforded marginal weighting, and instead relies upon a traditional management-for-results assessment regime.

Conventional forms of procurement processes therefore seem ill suited to delivering the expectations and processes involved in collaborative R&D, even though one Australian government purchasing guide acknowledges that “conventional contracts have proven to be unsuitable for the effective delivery of projects with very high risk and complexity” (Queensland Government, 2008, p. 6). This undoubtedly applies to the procurement of complex collaborative R&D, but finding an effective way to negotiate this risk and complexity remains elusive. In the United Kingdom, evaluative guidance provides only brief acknowledgement of collaborative competence and sustainability (Natural Environment Research Council, 2016). Queensland Government selection guidelines identify somewhat vague selection criteria for funding UIC ventures (Queensland Government, 2015), while Australian federal guidelines use unequally weighted criteria privileging those elements of applications focusing upon operational matters (management arrangements or individual’s qualifications, for example), rather than the proposed research team’s collaborative competence (Australian Government, 2015).

Overall, there appears to be minimal emphasis on the capacity of the collaboration team to morph into high-class research collaborations that endure long after public funding has ceased. Moreover, the original goal of the public seeding the development of these ongoing interactions between industry and academia has been replaced by an emphasis on facilitating shorter-term, transactional practices (O’Kane, 2008; Sinnewe et al., 2016). An example of this is the current mission of the Australian CRC programme, which omits any reference to long-term objectives and takes a project-based approach to collaborative research, with the stated goals being to:

- improve the competitiveness, productivity and sustainability of Australian industries, especially where Australia has a competitive strength
- deliver outcomes in line with government priorities, which are to encourage and enable small and medium enterprise (SME) participation in collaborative research
- foster high quality research to help solve industry specific problems through collaborative research partnerships between industry entities and research organisations.

(Department of Industry Innovation and Science, 2016).

Preliminary discussions with public servants indicate that officials managing research procurement contracts are aware of the limitations of the procurement system within which they work. To progress research ventures, some tend to rely on informal relational elements to keep collaborations on track. While this may be acceptable as an interim activity in the absence of a more fit-for-purpose framework, it is likely to cause problems over the longer term as this practice is not aligned with formal procurement processes. In addition, it potentially exposes public servants to claims of malpractice, and does not create transparency for applicants, or participants.
There is also additional evidence that officials managing the R&D procurement process are not well trained in procurement generally, and certainly not in the newer forms of ‘relational procurement’, where more emphasis is placed upon the relationship’s nature than on the content of the contract. These contracts are being used increasingly for high-value procurement, and are extensively used for procurement that is “either long term or complex or both, require extensive personal interaction and interdependence, require sophisticated management and measurement of performance, and fail without extensive co-operation” (Quick, 2007, p. 19). On another side of the triple-helix contract, academic institutions have their own set of requirements and guidelines, which are often not well aligned to the nature of existing UIC contracts. This leads to an inconsistent set of practices and measures, with the perceived benefits of UIC being lost and the projects returning sub-optimal public value.

The way forward

If it is accepted that a) research in a collaborative context is hard to define, b) that measuring success for collaborations is far from straightforward, and c) assessing collaborative sustainability is problematic, further exploration of this area is likely to be beneficial for public decision-making. UICs undoubtedly have the potential to provide excellent outcomes, but an improved evaluative framework could provide greater certainty with respect to ‘picking winners’ and thus securing greater public value. Indeed, such research could provide the tools to reduce the number of UICs that do not fully capitalize on the opportunity provided by public funding. To express it in more prosaic terms, a better evaluative framework could provide greater return on investment for taxpayers.

There is a need to acknowledge the importance of non-tangible prerequisites – in particular collaborative competence – for effective collaborative research. To account for this, a procurement framework is required that caters to the complex nature of research, and what success and sustainability means for UICs. The procurement framework could balance traditional criteria like individual track record and previous success in procuring funding with more relationally-based criteria, such as evidence of:

- having transformed a contract-based collaboration into an ongoing relationship with research partners;
- having been involved in a collaboration that led to additional outcomes beyond those promised in the contract; or
- having previous research output demonstrably applied by industry.

Such a framework has the potential to strengthen the assessment process for UIC funding applications, and the measurement of the effectiveness of the collaboration upon completion, thereby improving public value outcomes.

This leads to some obvious future research topics, including an examination of the degree to which collaborative competence factors are privileged in published grant selection criteria, or how the practice of selection panels adheres to – or differs from – the published criteria used to evaluate collaborative competence. In addition, a better understanding of the degree to which the reviewers
of applications are cognizant of the need for collaborative competence is required, together with their insight into what an effective multi-criteria framework incorporating collaborative competence might look like. When these questions are examined in detail, we may be in a better position to help public decision-makers make more-informed judgements about which applications to support, and which ones to reject.

References


