Knowledge Management in Healthcare Settings

B E Perrott and R Iedema

Abstract

Strong forces of competition and globalisation have created awareness and an urgency to focus on how an organisation controls and nurtures its intellectual capital. The knowledge concept and its management have gained currency and momentum as technology has enabled thoughts and ideas to be more easily generated and distributed. The knowledge management debate has relevance for all stakeholders involved in healthcare. As a contribution to this debate, this paper describes various knowledge domains at the different levels of healthcare organisations. The paper uses Polanyi's knowledge framework to identify issues that need to be considered to ensure knowledge can be progressively applied to the continuous improvement of health services whilst safeguarding the rights of individuals.

Knowledge management has received the attention of academics and managers over the years with varying degrees of intensity and enthusiasm. This paper will first provide a brief background on the subject. This background will provide a basis on which to examine knowledge management from a health perspective. A framework suggesting knowledge domains will be introduced to enable discussion on the issues that healthcare managers face in gaining a better understanding of the dynamics of knowledge flows in the health environment. The purpose of the paper is to provide a conceptual basis that will stimulate future research and discussion on how knowledge is managed in a healthcare setting.

Keywords: knowledge exchange; knowledge management; tacit and explicit knowledge; intellectual assets; healthcare knowledge.

Dr Bruce E Perrott BCom, MBA, PhD
Senior Lecturer
School of Marketing, University of Technology Sydney,
New South Wales, Australia

Professor Rick Iedema BA, MA, PhD
Professor of Communication and Associate Dean (Research)
Faculty of Humanities and Social Sciences
University of Technology Sydney,
New South Wales, Australia

Correspondence:
bruce.perrott@uts.edu.au

The knowledge management evolution

In the 1990s senior managers discussed knowledge management as they began to realise that the foundations of modern economies had shifted from natural resources to intellectual assets. Networked computers provided the capability to address how knowledge may be codified, stored and shared, practically and economically. [1] One estimate from this period suggested that three-quarters of the Fortune 100's total market capitalisation was represented by intangible assets such as patents, copyrights and trademarks. These intangibles make up the intellectual knowledge of organisations. Hence the responsibility of managing these important company assets must be the priority concern of senior managers as well as the corporate legal staff. [2]

A renewed interest in knowledge management is seen to be a logical extension to three basic business trends: [3]

a) An increasing amount of digitised information data that is available all the time;

b) Globalisation of business such that production can occur anywhere in the world as it is knowledge that is the true source of competitive advantage; and

c) Growing complexity of business requires new business processes that will deliver 'the right information at the right time' so as to ensure accountability and reduce the risk of mistakes.

Some academics have suggested that between 1995 and 2005 new concepts in knowledge management were emerging, including knowledge economy, knowledge alliance, knowledge culture, knowledge organisation, knowledge infrastructure and knowledge equity. [4]

When exploring the subject of knowledge in an organisational context, it is useful to make a distinction between various graduations of terminology discussed in the literature. Data are often described as the base platform in the knowledge hierarchy and are defined as facts and statistics either historical or derived from experimentation or calculation. [5] Information is the next step in terms of value and has been considered as, 'systematically organised data'. [6] Knowledge has been seen as 'actionable information' thus more effectively assisting in the decision-making processes within the organisation. Wisdom is often seen as the highest dimension on the knowledge tree where it is possible to act appropriately in a given situation with a strong element of ethical judgement. [7]

What is knowledge management?

A new focus of interest emerged in post-industrial times known as the 'knowledge economy.' [8] The management of knowledge has gained interest from both academics and practitioners with the realisation that knowledge holds the key to organisational growth and development. Research and publications have emerged from different disciplines reflecting the wide impact of this interest area on numerous functions and at different levels of the business. Some have conveniently attempted to organise contributions into those that have an information based approach, while others have looked more at the human side of knowledge creation, sharing and management.

It has been suggested that knowledge management as a field of study will gain considerable momentum through dialogue and debate with multiple disciplines. Some say that this field of study will yield rich rewards as it moves into a new paradigm of work. [7]

The literature contains many definitions of knowledge management. A few are listed here in order to observe differences in perceptions of scope and emphasis:

> '.. any processes or practice of creating, acquiring, capturing, sharing and using knowledge, wherever it resides, to enhance learning and performance in organisations'. [9]

> '.. all methods, instruments and tools that in a holistic approach contribute to the promotion of core knowledge processes'. [10]

> 'Knowledge management is the identification, storage, protection of knowledge for future operational and strategic benefit of the organisation - this may be implicit or explicit.' [11]

The latter definition is used to guide this discussion as it contains a number of elements considered essential in helping the reader to conceptualise the scope and dimensions of knowledge management in organisations. [12] Firstly, it distinguishes between operational and strategic knowledge. Strategic knowledge is knowledge which is essential to major decisions an organisation must make to capitalise on priority opportunities and successfully overcome major threats. Operational knowledge is concerned with the day-to-day running of the business. Secondly, it recognises that knowledge contained in an organisation may be implicit (that is remaining in the domain of the individual), or explicit (knowledge that is available for use throughout the organisation). The third benefit of this definition is that it recognises knowledge management as process rather than an occasional or ad hoc event.

Healthcare organisations are seen to be information-rich and have an implicit capacity to create or access knowledge necessary for the successful delivery of their services. However, they have been slow to embrace the concepts of knowledge management or demonstrate visible knowledge assets. More recently others recommend that a sound knowledge management infrastructure is a critical consideration as the health industry attempts to come to terms with current challenges. [13] Healthcare stakeholders face increasing risk to assets and operations as there are mounting pressures in areas such as cost reduction, quality improvement, customer service, disease management and professional liability. Hence the realisation that there is a need for a focused attempt to effectively manage knowledge in healthcare organisations.

Knowledge dimensions

There is considerable debate in the literature about the various types and dimensions of knowledge. Here the distinction between tacit and explicit knowledge receives considerable attention. Tacit knowledge is that held in the minds of individuals while explicit knowledge is that externalised and shared with others. The discussion on when and how knowledge should be shared is a critical one in contemporary healthcare organisations. Individuals may have an opinion of what knowledge should be kept to safeguard personal worth and differentiation. This may not always align with managers' opinions on the type of

knowledge that needs to be shared for the broader benefit of the organisation and its stakeholders.

Hence a framework will be introduced that helps to explain the various dimensions and flow paths of tacit and explicit knowledge. One such framework suggests that there are four modes of interaction between these two forms of knowledge: [14]

- From tacit knowledge to tacit knowledge: the process of 'socialisation' through shared experience and interaction;

- From explicit knowledge to explicit knowledge: the process of 'combination' through reconfiguring existing knowledge such as sorting, adding, recategorising and reconceptualising explicit knowledge can lead to new knowledge;

- From tacit knowledge to explicit knowledge: the process of 'externalisation' using metaphors and figurative language'; and

- From explicit knowledge to tacit knowledge: the process of internalisation through the learning process.

Other authors [15] describe the knowledge management process as necessarily loose and collaborative because the human qualities of knowledge such as experience, intuition and beliefs are not only the most valuable, but also the most difficult to manage and maximise. Hence the knowledge management process integrates theories from at least four distinct fields; theories about organisational culture, organisational structures, organisational behaviour and knowledge-based systems leading to theories about knowledge support infrastructures. [4]

Other research emphasises the importance of context in the knowledge conversion process [16] suggesting that knowledge should be seen as a cultural process situated in and inextricably linked to the material and social circumstances in which it is produced and consumed. [17] A balanced environment of power, control and trust is seen as an essential condition for a successful, knowledge-oriented culture. Allee [18] suggests that if people do not trust each other, they do not exchange knowledge and ideas. Here trust helps build and sustain valuable networks and rewarding relationships while a lack of trust erodes knowledge leadership, creation and transfer.

The knowledge management process is seen to begin with the formulation and implementation of strategies for the construction, embodiment, distribution and use of organisational knowledge. Other strategies include those for the basic management functions to monitor and measure the knowledge assets and processes. [19]

Organisation context is critical to effective knowledge management. The ideal structure has been described as 'N-form' rather than the traditional 'M-form'. M-form is a hierarchical structure where communication is primarily vertical with top management as the critical layer and the competitive scope is based on economies of scale and diversification. By contrast in the N-form, communication is lateral where middle management is the critical layer and competitive scope focuses on specialisation.

Knowledge management in health

As early as 1997, knowledge management was forecast to become a hot topic in healthcare. [20] However, progress in this area has been slow. By 2001 another author [21] observed that knowledge management was not a well known discipline in the healthcare industry. In the United Kingdom, the National Health Service has embarked on a wide-ranging program of change and reform to address pressing issues on health service delivery with mixed results. Here it has been suggested that knowledge management concepts and practices could positively contribute to more effective reforms in that health system. [22]

More recently another academic has recommended that a sound knowledge management infrastructure is a critical consideration as the health industry attempts to come to terms with the current challenges of escalating costs and the shift to disease management. From the human perspective, it has been noted the exit of knowledge workers is causing a major problem for Canada's healthcare organisations as they have been impacted with corporate memory loss from senior executives. [23] This observation highlights the need for more focused discussion on how healthcare knowledge is collected, managed, stored and disseminated.

Healthcare organisations are seen to be information rich and have an implicit capacity to create and access knowledge necessary for the successful delivery of their services. However, they have been seen to be slow to embrace the concepts of knowledge management or demonstrate visible knowledge assets. To stimulate discussion of the issues surrounding knowledge flows in a healthcare setting, a general schema of knowledge domains is attempted in Figure A.
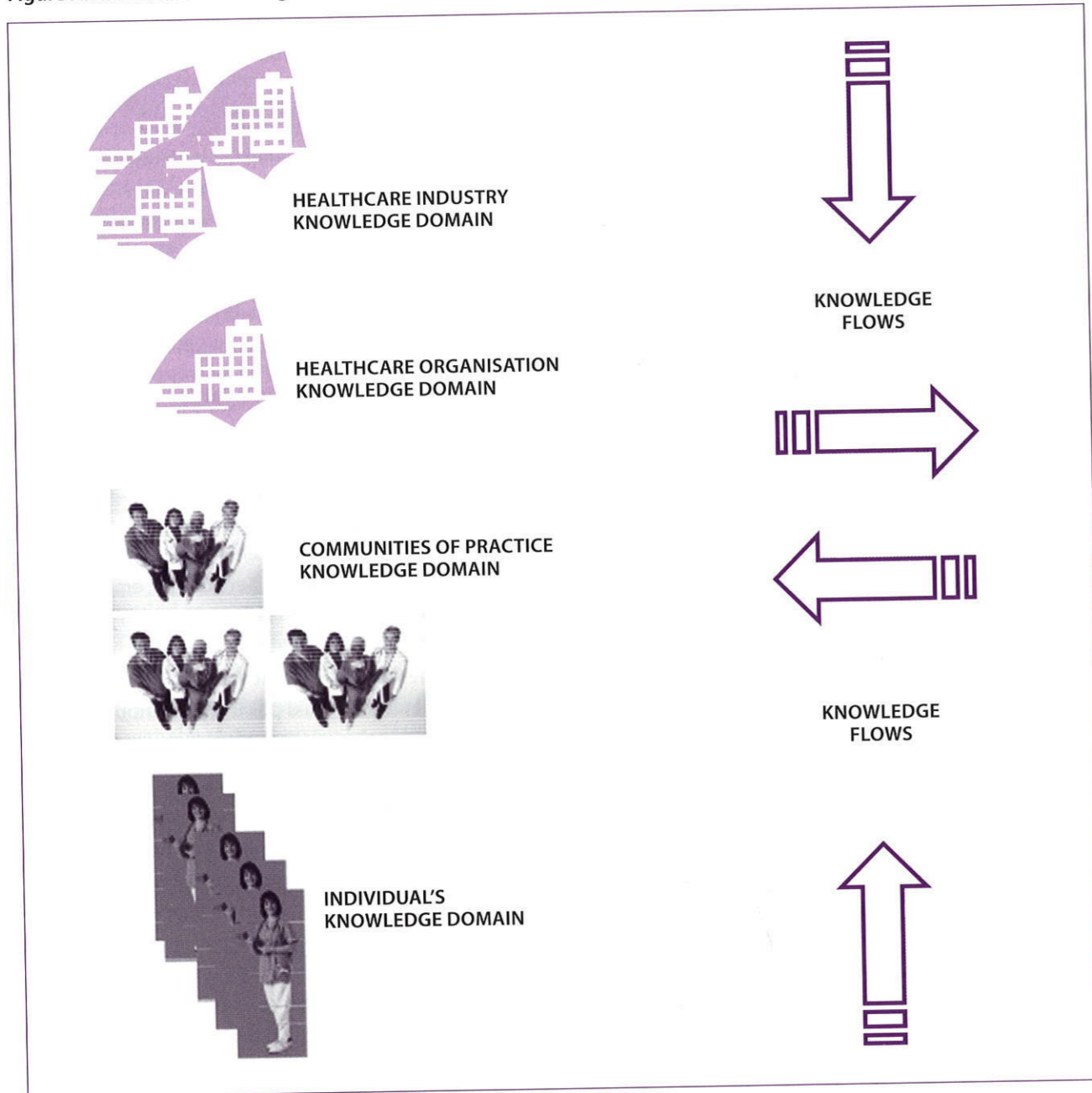
Figure A: Healthcare knowledge domains

Figure A proposes a hierarchy of knowledge domains with individual healthcare workers fundamentally responsible for the tacit knowledge they hold, build and share. This layer of knowledge is shown as the 'Individual's Knowledge Domain' at the base of Figure A.

The next level of knowledge hierarchy is the 'Communities of Practice Domain'. Communities of practice are groups of individuals working together in a common cause and with a particular charter within the healthcare organisation. Emergency, spinal care, oncology, psychiatry and obstetrics are possible examples of community domains. There is

synergy in knowledge sharing here as individuals contribute knowledge so that the objectives of a particular community can be achieved.

Collectively, communities of practice make up the healthcare organisation which will be responsible to stakeholders for achieving agreed objectives. This is shown in Figure A as the 'Healthcare Organisation Knowledge Domain'. Effective tacit and explicit knowledge flows will be critical if the organisation is to be judged as being successful in maintaining its charter.

Taken collectively, organisations will make up an industry. This is shown as the 'Healthcare Industry Domain' in Figure A. The degree of cooperation in knowledge transfer at the industry level will vary greatly. For example an industry association may have the support of its members to share specific knowledge across the industry as well as groups external to the industry such as the press, suppliers, government units and other specified organisations.

Two case study investigations of healthcare providing organisations are summarised here to demonstrate the possible wide variation in knowledge perspectives within healthcare settings. Two cases were researched, one in Canada, the other in Australia. [24] Both cases were seen to have similar macro operating environmental challenges in health service delivery. However, the Australian palliative care organisation operated in a care environment and hence knowledge was flexibly and implicitly managed through people. By contrast, the Canadian spinal case operated in a cure environment, which was heavily reliant on technology using explicit and clearly communicated directions for knowledge processing procedures.

These two cases demonstrate widely differing knowledge management strategies according to the demands of the different healthcare operations and type of risks that need to be managed. Authors Wickramasinghe and Davidson [24] propose the use of a knowledge management infrastructure made up of a number of components, namely; organisational memory, human resource infrastructure, knowledge transfer network, business intelligence infrastructure and infrastructure for collaboration. The authors point out the usefulness of this infrastructure model in making decisions about resourcing, possible difficulties and risks to be incurred, and timelines necessary in evolving explicit knowledge management capability in healthcare organisations.

Future strategies for healthcare knowledge

Polanyi's four modes of knowledge interaction cited above [14] provide a useful basis for a summary discussion of some of the knowledge issues to be resolved in healthcare organisations. Figure B shows, diagrammatically, issues to be considered in planning knowledge management strategies for healthcare settings. This framework is intended to stimulate discussion on the subjects of research, possible strategies and future directions of knowledge management in healthcare organisations.

A healthcare enterprise memory has been proposed which has the functionality to acquire, share and operationalise the various modalities of healthcare knowledge. [25]

This proposal includes an architectural specification which would enable more effective use and leverage of knowledge to improve healthcare delivery. Figure B provides a basis for further discussion on such an interim specification.

From tacit knowledge to tacit knowledge: This is the process of sharing an individual's healthcare knowledge with others. For an individual there may be conflict regarding which knowledge to share and which should be retained for personal use and differentiation. Management in healthcare organisations needs to decide which policy on strategies it should use to encourage the sharing of important healthcare knowledge among individuals.

Knowledge sharing between healthcare workers:
Location 1 in Figure B
Issues to be considered:
- What knowledge is currently shared?
- What knowledge should be shared in the future?
- What are the desirable strategies to encourage knowledge sharing?

From explicit knowledge to explicit knowledge:
This is the process of looking to add value to stores of knowledge existing in various parts of an organisation. Synergies can be found by filtering, sorting and analysing existing explicit healthcare knowledge which can lead to the creation of new knowledge to then be used to the advantage of key stakeholders. Healthcare organisations are heavily focused on dealing in the day-to-day knowledge dimension. Planning for synergies under this knowledge domain would require a special focus and resource dedication over and above everyday operational knowledge demands.

Building healthcare knowledge value:
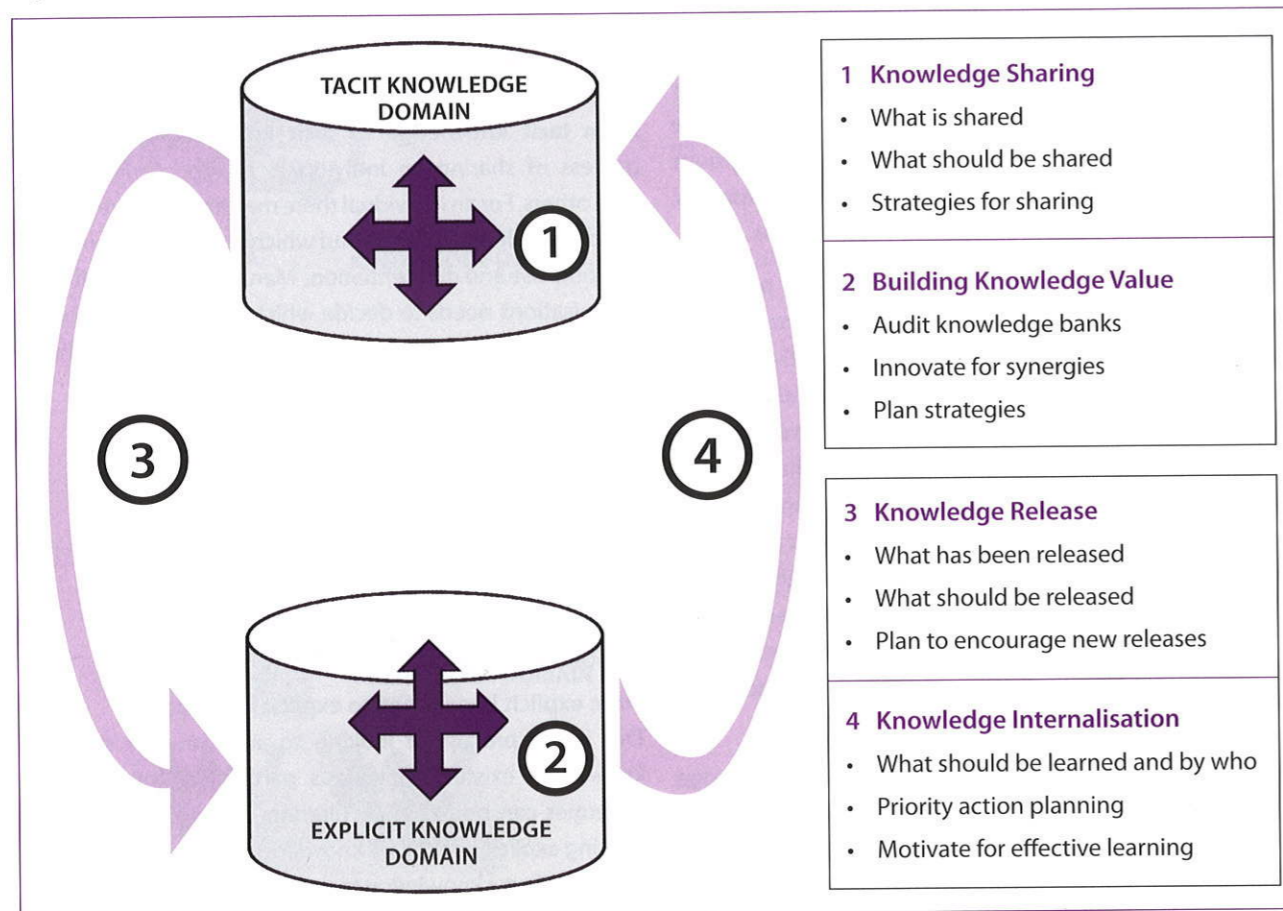Location 2 in Figure B
Issues to be considered:
- Understand and audit existing organisational knowledge banks;
- Look to where value can be added – innovate for synergies; and
- Plan and action knowledge value adding projects.

From tacit knowledge to explicit knowledge:
This is the process of releasing personal knowledge for use in other parts of a healthcare organisation. From the organisation's perspective, there are decisions to be made regarding personal knowledge that is needed for use beyond individual concerns and priorities. An organisation will consider knowledge from a broader perspective for strategic and operational advantage. This domain can be the most controversial in terms of which knowledge should remain in personal possession, and which should be made available for organisational use.

Figure B: Knowledge issues in healthcare settings

1 Knowledge Sharing
- What is shared
- What should be shared
- Strategies for sharing

2 Building Knowledge Value
- Audit knowledge banks
- Innovate for synergies
- Plan strategies

3 Knowledge Release
- What has been released
- What should be released
- Plan to encourage new releases

4 Knowledge Internalisation
- What should be learned and by who
- Priority action planning
- Motivate for effective learning

Knowledge release to healthcare workers:

Location 3 in Figure B

Issues to be considered:

- What knowledge has been released?
- What knowledge should be released in the future?
- What are the desirable strategies to encourage knowledge release in the future?

From explicit knowledge to tacit knowledge:

This is the process of knowledge internalisation through the learning process. One important dimension to this domain is that the process of internalisation gives way to the generation of new tacit knowledge created using the characteristics of each individual healthcare worker with their unique backgrounds, experience and healthcare insights. The question for the healthcare organisation is how this new and regenerated knowledge should be harvested and made available for broader use.

Healthcare knowledge internalisation:

Location 4 in Figure B

Issues to be considered:

- What knowledge should be learned and by who?
- Develop strategies for learning to individuals and communities of practice?
- Motivate healthcare knowledge workers for effective learning?

Conclusion

The effective management of intellectual assets in the form of knowledge will be an important aspect of building the capability to deliver continuous improvements in health service delivery. For this to be achieved, healthcare managers need to better understand where critical knowledge is generated, stored and circulated through the various organisational levels.

Effective proactive knowledge management will involve a sensitivity to the rights of individuals who are the owners of tacit knowledge and the organisation's need to create and share explicit knowledge, for the benefit of the organisation and other stakeholders.

Perhaps the time has come for organisations to include knowledge management in their strategic thinking and planning. This seems reasonable considering the role and importance of intangible assets on the balance sheets of healthcare organisations. The challenge for senior management is to decide how and when the knowledge that generally resides in the heads of healthcare workers in tacit form, should be made explicit using an effective mix of technologies and management strategies such as leadership and rewards.

Competing interests

The authors declare that they have no competing interests.

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