

# Knowledge Management Governance

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**Abstract:** As an organisation function, knowledge management needs ongoing direction and control of its activities at both strategic and operational levels. Performance management drives activities towards continuous improvement and organisation goals. Governance ensures performance management is practiced, enforced and aligned with organisation needs. This paper recommends governance should be applied to knowledge management in large organisations. A model of governance will be proposed that consists of two standards, a maturity model for direction and knowledge criteria for control, as well as a process to impose standards prescriptively. Action research was used to develop and deploy this novel combination of standards and processes in one multi-national corporation, and the empirically obtained qualitative results are discussed.

**Keywords:** governance, knowledge management, standards, maturity model, knowledge criteria.

## 1 Introduction

Governance has become an organisation priority following recent high profile corporate scandals and subsequent legislation. Business is seeking tangible returns on investment from every function (De Feo 2006), particularly since the dot-com bust and spectacular cases of corporate mismanagement (Hansen and Smith 2006). Rather than being a knee jerk reaction, governance is a valuable tool in the direction and control of almost every function within a large organisation, including knowledge management. This paper proposes that knowledge management might benefit from governance, and presents a model to do this.

Knowledge management is an extensive and diverse field, with abundant definitions and many disciplinary and theoretical approaches (Patriotta 2004). Literature reveals organisations often construct their own definitions and treatments, and these often differ from theory (McAdam and Reid 2000). To generalise and clarify research of its governance, knowledge management may be broadly regarded as *"any planned, formal or recognised management of activities and processes concerned with is known in organisations."*

Several arguments may be made that governance is necessary or useful. Knowledge management is usually practiced as an organisation function and should therefore be subject to the same controls as other functions. It bears some similarity to information technology; at least in literature (Scarborough et al. 1999), through IT being a critical success factor in knowledge management (Holsapple and Joshi 2000; Davenport et al. 1998), and the high technological focus of its implementations (Smart et al 2003). Knowledge management has tended to under-perform (Malhotra 2005; Arora 2002; Prusak 2000), so suggestions to improve that situation should be considered. Knowledge management performance management is recommended in literature (Wong and Aspinwall 2005; Holsapple and Joshi 2000; Davenport et al. 1998), as is its governance (Dobbs et al. 2005; Davenport et al. 1998). There are even published instances of applications, at least at the strategic level (Zyngier et al. 2004).

Within the organisation, governance has come to mean ensuring quality of performance management and measurement (OECD 2004). Performance management sets targets and measures execution against them. Results furnish decision makers with information necessary to control activities and guide improvement (Busi and Betitci 2006), suggesting a need for distinct targets for direction and control, and processes for feedback and learning. This may in turn lead to process improvement, which has been found to be necessary for efficiency and governance (Sussland 2004).

There are other complementary perspectives. Corporate governance refers to alignment of management and shareholder interests in a way that ensures transparency, ethics, integrity and sustainability (Grant 2003). Corporate governance is required by some legislation, such as the Sarbanes-Oxley or 'Enron' Act, and recommended in literature as being critical to managing operations and ensuring long-term performance and health (Dobbs et al. 2005). Information technology governance is more specialised. It has been identified as a critical success factor in IS

effectiveness (Mingay et al. 1998), and is variously applied as compliance procedures and rules and regulations under which the function operates through the use of frameworks and toolsets such as COBIT (IT Governance Institute 1996).

Within the context of organisation knowledge management, performance management will be defined here as "the process of directing and controlling knowledge management activities and outputs to achieve particular goals"; and governance as "the assessing, ensuring and assuring that knowledge management is managed according to acceptable standards and to achieve a desired level of performance."

## 2 A governance model

Literature shows that governance models should begin by considering implementation. Perhaps 70% of business strategies fail to be put into practice (Sterling 2003), and in knowledge management there is excessive focus on definitions, models and strategy and insufficient implementation and practice (Smart et al. 2003). Knowledge management strategies must be accompanied by sound, strong implementation (Hsieh and Yik 2005; Onions 2004), yet few practical operational level measures have been proposed (Smart et al. 2003) and 'operationalising' is proving difficult (Marr and Spender 2004).

Practical designs and deployment methods are required for implementation. A literature search revealed few discussions of knowledge management governance (Zyngier et al. 2004; Chourides et al. 2003; Wiig 1997), and these tended to be conceptual. Models from business and IT may therefore be drawn on for adoption or adaptation. Yakhou and Dorweiler (2004) note corporate governance mechanisms should consist of standards and processes, the latter comprised of communication and enforcement rules, implementation mechanisms, auditing and assessment. The COBIT framework (IT Governance Institute 1996) consists of four components; high-level control objectives, detailed control objectives with practical and implementation-oriented criteria, management guidelines and a process maturity level.

A model for knowledge management governance is synthesised from these to consist of:

- **Standards** for direction and control. Standards could inform performance targets, and express the changing requirements of stakeholders.
- **Processes** for implementation, enforcement and learning. Standards alone tend to be merely suggestive and descriptive, without effect or ability to induce change. Prescriptive governance applications would require standards are appropriately quantified, qualified or expressed, and coupled with processes for deployment and enforcement of compliance.

### 2.1 Governance standards

Governance standards should perform two functions, providing targets and providing measures. Since there are few clear, measurable, industry-accepted performance standards for knowledge management (Darroch 2005, p103), standards will have to be developed or modified rather than adopted based on the following factors:

- Prescriptive application can preclude more descriptive approaches, such as the Australian Standards for Knowledge Management (2005) and Housel and Bell's (2001) standards.
- Intangible measurement can preclude the financial approaches of business performance management and business governance.
- Measurement should be management oriented, since "*measurement is essential to making the value of knowledge accessible to managers and others who need to justify expenditures in some concrete way*" (Iftikar et al. 2003) and knowledge management is dependent on managers appreciating its intangible benefits (Bailey and Clarke 2001).
- Knowledge management outcomes and benefits are difficult to quantify in economic and financial terms (Strassman 2001), so measures have to be meaningful and useful and not based exclusively on value (Stewart 1997).
- A homogenous approach is often not possible (van den Berg and Popescu 2005; Yoo and Ginzberg 2003), so localisation should be supported. Whilst industry-wide standards may not be

available, organisation-wide measures should be prepared to ensure consistent management objectives, with latitude to adapt to specific conditions.

These factors suggest that two sets of standards should be proposed, a maturity model for targets for activity and knowledge criteria to measure output quality.

### **2.1.1 Knowledge management maturity**

Multi-stage models, a group to which maturity models belong, demonstrate several characteristics that suggest they are useful in setting performance targets:

- Designed for evolution or growth, they provide an ascending series of goals to work towards and aspire to (Dayan and Evans 2006).
- Literature suggests the use of multi-stage models for performance management and governance purposes. Maturity has been used to assess growth in IT, with models such as Nolan's early (1973) model and the influential 'CMM' Capability Maturity Model (SEI 1993).
- Empirical observation suggests their suitability as a set of benchmarks for strategic and tactical direction, as rationale and justification for projects, risk reduction through more consistent and tangible planning, measures for review, measures for control and reporting purposes and even a mutually supportive learning cycle resembling continuous improvement.
- Knowledge management maturity models have been proposed, mainly as a descriptive tool (Hefke and Trunko 2002; Housel and Bell 2001) although they have been used to guide process development (Dayan and Evans 2006).

Selection of an appropriate scale may be critical. CMM and IT maturity scales tend to be outcomes-based and therefore suited to control and direction setting. Activity and culture-centric scales, such as Housel and Bell (2001) levels of "*know-aware-enterprise sharing systems-enterprise sharing culture*", appear more difficult to align directly with organisation outcomes. Scales should accommodate both tacit and explicit knowledge and the often-intangible nature of outputs by applying a flexible results-oriented focus, ordinal ranking rather than strict ratios or intervals which could attempt to demarcate the intangible, and expressing each level in a way that measures qualities of knowledge rather than quantities.

A theoretical scale will not be proposed as the need for localisation and inputs from all stakeholders suggests this should be done at an organisation or project level. An example of one such project scale will be described in the case study.

### **2.1.2 Knowledge criteria**

Measurement requires standards to measure against, to guide design and appraise output quality. Standards are needed for direction and control at the operational level to ensure knowledge management, processes and outputs are effective, optimal and measurable.

It has been shown that knowledge management and knowledge are difficult to measure. Measuring instead the knowledge outputs and knowledge product quality may alleviate this. Quality standards have long been used in operations management for control purposes and to establish 'direction' in the form of product design criteria (Schonberger and Knod 1997). Quality standards have also been used in decision-making, with a cyclical mechanism for process industries achieving performance management and informing decision-making (Schuman and Brent 2005). These quality standards will be termed knowledge criteria.

The same constraints of prescriptive and descriptive application, measurability and flexibility that were applied to maturity levels should be applied here. Organisation and project specific technical requirements, performance targets and strategy should inform criteria. An example of knowledge criteria will be provided in the case study.

## **2.2 Governance processes**

Descriptive standards alone will not ensure governance. Governance requires prescriptive implementation. For standards to be used prescriptively, processes are required that implement and enforce standards.

Knowledge management governance literature (Zyngier et al. 2004) and knowledge management control literature (Dayan and Evans 2006; Hefke and Trunko 2002; Housel and Bell 2001) do not discuss necessary processes in depth. Corporate governance processes may also not be useful, due to the incompatibility of auditing oversight and management adherence to statutory requirements (Rezaee et al. 2003) with intangible benefits. In designing governance processes, literature and definitions of governance suggest the following process objectives should be borne in mind:

- There should be integration of governance, performance management and strategy into a simple management framework that supports rapid monitoring of key issues and interactions between business enablers and results (Sussland 2004).
- Governance should integrate into existing control structures, not impose new ones, for several reasons. Horizontally disconnected organisation functions (silo's) can adversely affect long-term initiatives (Dobbs et al. 2005), distinct horizons of vertically separated groups (Anthony 1965) tend to produce different management outlooks, dual reporting to both project or knowledge manager and line manager potentially can cause contention, confusion and conflict (Kerzner 2003), and mandatory compliance with externally driven, operated and imposed management tends to diminish success, at least in information systems (Whyte and Bytheway 1996).
- There should be direction, through using standards for decision-making and design.
- There should be control, through imposing standards and followed by monitoring and measurement.
- There should be learning and continuous improvement, through correction and review.

The Shewhart (1939) cycle (input -> process -> output) has long been used as basis for management control systems design. As a crude skeleton of management activity, it provides process design with a cyclic model reiterating the stages of control. This paper will adapt this control cycle to reflect issues discussed and describe the governance processes necessary to achieve the above objectives:

- Set standards:
  - Quantify, qualify or express standards, providing specific targets and accurate predictable measurement for management and teams to rely on.
- Deploy and operate:
  - Conceptualise projects, using maturity to consider current maturity and agree on new targets, and criteria to design deliverables.
  - Inform major decisions using maturity levels, and minor decisions using criteria.
  - Schedule realistic milestones, to ensure project success (Kerzner 2003).
  - Impose standards early, lessening resistance to change and improve direction of projects and design.
  - Apply governance to each project phase.
  - Let different groups work towards different maturity levels.
- Measure against standards:
  - Measure on delivery of project outputs, project milestones, during regular review of initiatives, when determining rewards and recognition.
  - Report management information constructively, with:
    - A criteria checklist for project deliverables, to team leaders or project managers.
    - A project progress report against knowledge criteria, to team leaders or project managers.
    - A monthly or quarterly progress report against knowledge criteria and maturity levels, to stakeholder management including unit managers and sponsors.
    - An annual report on average or aggregate maturity levels, provided to knowledge management sponsors and department heads.
    - Regular review of knowledge management governance efficiency and effectiveness, to the knowledge management practice and relevant management.
- Take corrective action:
  - When planned or when triggered by deviation.
  - Corrective action is planned and undertaken by the knowledge manager and line manager.
  - Amend standards and processes if necessary.
  - Recommend and implement changes.

### 3 Research methodology

Research aims to '*investigate thoroughly*' in an '*active, diligent and systematic*' manner (Wikipedia 2006), to build broader understanding and pave the way for change (O'Leary 2004), and improve learning through teaching or generating new knowledge and theory (McNiff and Whitehead 2006). A research methodology appropriate for this model should:

- Evaluate whether governance can provide benefits to knowledge management.
- Evaluate the model's suitability for knowledge management governance.
- Evaluate whether the model performs as intended.
- Determine the transferability of the model to other organisations.

Researching in the field can be difficult. Whilst commercial pressures and exigent circumstances often prevent practitioners from employing formal research methods, research aims are nevertheless still important to clients and the professional practice. Action research is one of the more frequently used and appropriate methods in professional practice for the following reasons:

- There is considerable precedent for its use; "*action research is about practitioners creating new ideas about how to improve practice, and putting those ideas forward as their personal theories of practice.*" (McNiff and Whitehead 2006, p5)
- Governance in knowledge management is intended to be practical, offering situational improvements and outcomes that would be of significance to the organisation. This favours action research (O'Leary 2005).
- Problem and solution are often tangible and capable of articulation, and there is a need for and presence of political support. These too favour action research (O'Leary 2005).
- Knowledge management has a sociological nature (McAdam and Reid 2000), favouring qualitative research, a paradigm to which action research belongs.
- Solutions are usually developed and implemented as project deliverables, requiring immersion and time constraints, which favour action research (McNiff and Whitehead 2006).
- Development and implementation tends to be investigational.
- Cause-and-effect relationships may be difficult to determine given the organisation complexity and many influencing factors (Wong and Aspinwall 2005; Chourides et al. 2003). This again favours action research (O'Leary 2005).
- Balance must be reached between commercial delivery, organisation learning and incidental academic outcomes.

Practitioners often intuitively follow action research's iterative action-reflection cycle of *observe-reflect-act-evaluate-modify* (McNiff and Whitehead 2006, p9). This paper's case study involved development of the governance model, and the following sequence was followed:

- Review literature for relevant techniques
- Design model using theory and input from organisation experts
- Define standards
- Design a pilot implementation with project team participation.
- Communicate designs to project participants and stakeholders and set localised targets.
- Participate in project implementation.
- Assess project outcomes and analyse adoption and performance.
- Adjust the model and make any recommendations.

#### 3.1 The case study

Sasol Synfuels in Secunda South Africa approached consultants The Knowledge Studio in 2005 to rebuild knowledge management. Sasol Synfuels is a division of Sasol Limited, a global petrochemical firm producing synthetic fuels, plastics and chemicals. Listed on two stock exchanges, the organisation employs 30000 people in almost 50 corporate entities on several continents in the production of innovative products from coal and other hydrocarbons (Sasol Annual Report 2005).

### 3.2 Setting standards

Governance requires alignment of performance management with stakeholder interests. To do this, definitions for five maturity levels were prepared by analysing strategic requirements in the organisation and reviewing various IT maturity models:

- *None*: no knowledge management activity.
- *Basic*: knowledge is identified, listed and perhaps codified or mapped.
- *Managed*: knowledge is mapped, codified, linked, expertise located and tools implemented.
- *Sustainable*: knowledge that improves or enables efficiency is being reused, best practices are identified and reused, and knowledge management has a measurable contribution in achieving cost savings and achieving productivity.
- *Innovative*: knowledge that improves effectiveness is being generated, reused, synthesised; enabling and assisting in achieving a measurable revenue or functional improvement.

Information technology standards, quality standards (Schonberger and Knod 1997) and knowledge management standards (Curley and Kivowitz 2001; Davenport and Prusak 1998, Stewart 1997) were then consulted whilst preparing knowledge criteria that propose knowledge outputs and 'products' be: *sufficient, reused and reusable, accurate, up to date, prompt and punctual, shared, available, accessible, usable, useful and extendable.*

Analysis followed by consultation with management confirmed these criteria were suitable. Time constraints during the engagement prevented immediate definition of each criterion. Criteria were later enhanced so as to be expressed in common terms, published and communicated so as to become ubiquitous and integrated, quantifiable or measurable, relevant, actionable, applied equally, predictable and objective.

Designs for governance processes were analysed by the knowledge management team, then assessed and accepted by management. Processes were then prescribed to each new initiative. To reduce resistance to change, control overall was light and lenient deployment relied more on selling the concept than on directives.

### 3.3 Preliminary outcomes and findings

Initial outcomes and findings were documented in consulting notes. Subsequent findings were documented by the knowledge manager. These notes are summarised here according to project phase:

- Concept phase; during which projects are planned:
  - Standards facilitated the practice roles of champion and strategist; by providing guidelines to for project direction, identifying improvement areas and suggesting solutions.
  - Standards tended to improve knowledge management credibility, project motivation and feasibility by offering technical design criteria, more rigour and precision, more focussed tangible and unambiguous goals, and lowering perceptible risk through precision.
  - Maturity levels helped guide and motivate adoption by demonstrating the clear path that other teams have successfully negotiated to lower apprehension.
  - Senior management received more reliable and detailed resource allocation, budgeting and strategic information than before.
  - Illustrative examples included reuse of safety knowledge from areas with higher knowledge maturity levels, motivating safety knowledge consolidation efforts, and use in new project proposals for staff morale programs and an expertise locator.
  - Findings from this phase show the model can improve setting of direction, alignment with stakeholder requirements and transparency of outcomes.
- Project phase; during which projects are designed and developed:
  - Standards facilitated the practice role of architect, instead of developer or administrator.
  - Criteria clarified goals, informed selection of templates and made project requirements more explicit.
  - Maturity levels helped manage expectations, such as for 'web sites' where they recommended iterative development rather than a 'big-bang' approach.

- Illustrative examples include applications that recognised whether explicit knowledge must be shared (codified and stored) or tacit knowledge must be shared (the knower identified), and faster and better quality portal 'web site' development. 'Clients' were informed how criteria would affect page design, pages were developed to more consistent and higher quality, and content and style guidelines more promptly and even automatically complied with.
- Phase findings show that direction and control can be established early, the model does assist in delegation and monitoring, and alignment with strategy is possible. Suggested modifications include planning of maturity goals to reflect resource availability, risks and contingencies, and introducing a surprise element to ensure freshness and reduce monotony.
- Transition phase; during which the practice transfers ownership and control to the 'client':
  - Use of knowledge criteria to test outputs and performance allowed the knowledge manager to consult rather than manage or participate, enabling practice oversight, quality control, efficient use of resources and skills transfer.
  - Teams used knowledge criteria to better manage themselves, determine own readiness and evaluate own need for assistance.
  - Maturity levels have been used to suggest future iterations, functionality, unresolved requirements and help manage budgets and expectations.
  - Performance measured in the first few months against the maturity levels provided more specific, communicable feedback to management.
  - Use of criteria such as 'sufficient' and 'accurate' is illustrated in a request for assistance in completing web pages prior to publication.
  - Findings include that the model enabled performance management and governance, with monitoring and control of operational activity and team management possible. More stringent management of knowledge management may improve compliance and formalisation of performance management, but at the possible cost of adoption and resistance to change.
- Practice phase; during which teams manage knowledge independently:
  - Standards allowed the practice to delegate rather than participate. Monitoring project criteria found a best-practice initiative's knowledge to be organised, accurate, usable, punctual, up to date and accessible, but requiring audits to confirm capture and storage in one area.
  - The model fostered progress. Evaluation at an aggregated level during a management review found the knowledge management practice had matured from *none* to *basic* in eight months and was expected to achieve *managed* within a further six months.
  - Information supported management decisions. Progress helped justify a plan to select and train appropriate people to act as knowledge management coordinators, and performance information has justified a decision to survey validity and usefulness of portals every six months.
  - Findings are that the model enables output and process improvement, decision making, rapid monitoring of key issues and interactions, learning and review of the knowledge management practice.
- Other areas in which standards and governance have had a contribution:
  - Promoting individual contribution has inspired a series of reward and recognition initiatives that use criteria to judge entries. The first, a "Day of Collaboration", provides a forum for twelve exhibitors to share best practices with other employees in an informal atmosphere, and awards one plant-related and one people-related winner and four runner-ups. A second bi-monthly challenge receives peer nominations for employee knowledge sharing. Winners from both of these initiatives are entered for the Sasol Knowledge Sharing Luminous award, a prestigious company-wide gala evening.
  - Knowledge sharing reward-and-recognition was chosen as a company wide Best Practice
  - The knowledge manager has been appointed a member of the benchmarking team.
- Other factors may have contributed to knowledge management performance and governance:
  - Renewed organisation impetus and attention may have encouraged compliance.
  - Organisation predisposition to knowledge that may have eased adoption, lowered resistance, encouraged participation and reduced the need for knowledge management 'marketing'.
  - Previous knowledge management failure may have predisposed managers towards these more quantitative or rigorous approaches.

- Light levels of control exercised by knowledge management may have reduced resistance and encouraged participation.

## 4 Conclusions

This paper has proposed a model for governance that consists of standards for direction and control and processes to apply these standards to knowledge management throughout its lifecycle.

Knowledge management outcomes in the case study organisation cannot be ascribed solely to governance. Environment and research methodology prevent confirmation of cause and effect relationships. However outcomes, positive management feedback and comparison with previous efforts suggest that governance has been of benefit to knowledge management in the case study organisation.

Findings suggest this model is strongly performance management oriented. It has successfully contributed to knowledge management direction and control with little modification since first introduction. The model has been applied to governance in reviewing of knowledge management performance and standards themselves, and improving alignment with strategy, transparency, delegation and monitoring. Issues related to organisation, tangibility of knowledge and measurability of knowledge management have been minimised. These confirm the model is capable of governance and suited to knowledge management governance.

Assessment of the model's performance is hampered by availability of similar projects to compare against, no quantitative performance audit, a qualitative research methodology and the short test duration. Overall results however suggest most intended outcomes have been achieved.

It may therefore be concluded that governance has been beneficial to knowledge management in Sasol Synfuels, the model has subjected knowledge management there to governance, and has performed satisfactorily. Limitations do restrict transferability of the model to other organisations, and further research is warranted before making overly optimistic claims (Storey and Barnett 2000).

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