SMART KM model

The integrated knowledge management framework for organisational excellence

Allam Ahmed
School of Business, Management and Economics, University of Sussex, Brighton, UK, and
Mohamed Elhag
Ernst & Young, Doha, Qatar

Abstract

Purpose – The purpose of this paper is to critically address the key issues facing organisations in implementing knowledge management (KM) initiatives and frameworks and how to develop fit-for-purpose an integrated knowledge management framework (KMF) for organisational excellence. In doing so, the paper critically review concepts, frameworks and models of KM to introduce the SMART KM model to support the successful introduction of KM to an organisation through systematic and well-defined steps. In addition to well-founded theories, SMART KM model is also driven by best-in-class KM practices from a number of industries and sectors. SMART KM contains number of business components which supports knowledge flow throughout the organisations which can be tailored to achieve the organisation-specific goals and objectives in alignment with the adopted operating model. Throughout the paper, number of key issues facing organisations in implementing KM initiatives will be introduced and discussed. The readers would also be able to realise the design principles supporting SMART KM model and how it can be used to improve performance and achieve organisational excellence.

Design/methodology/approach – The paper provides an in-depth and critical review of the literature and theories on KM. In doing so, several sources have been reviewed and consulted including various mainstream referred journals focussing on KM, change management, management, HR, social science, strategy, etc. as well as books, online databases, governmental reports and statistics, etc.

Findings – All organisations are demanding better justification for investments in any KM initiative and expected outcomes. Therefore, we must ensure that KM initiatives are directly linked to the organisation's business strategy. Moreover, we must also ensure that there are performance measurements in place to evaluate the success of the proposed KMF or KM initiative.

Originality/value – The SMART KMF is unique as it considers a number of paradigms and key organisation facets to assure successful deployment of KM practices and long-term sustainability of the associated benefits.

Keywords Knowledge management, Performance management, Information management, Business excellence, Operations management, KM frameworks

Paper type Technical paper

Introduction

Every year the debate and discussion about knowledge and knowledge management (KM) increase as our organisations become more complex. Organisational excellence with an integrated knowledge management framework (KMF) is becoming the rule rather than the exception. Through globalisation and complex work processes, KM has become an increasingly crucial success factor for both public and private sectors.

However, despite the growing emphasis on the importance of KM in enhancing the organisations' capabilities and the overall operational excellence, the failure

World Journal of Science, Technology and Sustainable Development
Vol. 14 No. 2/3, 2017
pp. 172-193

2042-5945
DOI 10.1108/WJSTSD-01-2017-0001

The authors would like to acknowledge that while this paper has the same title as their book published in 2014 entitled *Smart KM Model: An Integrated Knowledge Management Framework for Organizational Excellence*, both the paper and the book are different in their scope and focus. The book discusses the process of managing knowledge within the organisations and the current paper proposes the new SMART KM model as a tool to effectively manage knowledge within the organisations.

rate has been considerably high (see Butler, 2003; Schultze and Boland, 2000). Among the various challenges facing KM implementations, both KM researchers and practitioners agreed on the need of the establishment of appropriate KMF.

The purpose of this paper is to critically address the key issues facing organisations in implementing KMF and/or KM initiatives and how to develop fit-for-purpose KMF for organisational excellence. Moreover, the paper also aims to enhance our knowledge and understanding of the various concepts, frameworks and models of KM and how to make the case for KM within organisations.

The first part of the paper reviews some of the literature and theories on knowledge and KM as to how useful these theories, tools and models would be to different organisations that are trying to bring about change in the public and private sectors. Particular focus and emphasis will be on the practice and challenges of KM within various international public and private organisations.

In the second part we will explore the various reasons and rationale for adopting a holistic approach to successful KM implementation within organisations including the need for deeper understanding of organisational change with focus on the context and processes.

The third part of the paper will introduce the newly developed KM model (SMART KM) which presents a unique integrated solution ensuring that KM becomes part of the organisational culture through the appropriate integration with number of organisation facets such as strategy, management systems, ICT and support services.

Finally, we will provide a conclusion for a successful implementation of SMART KM model in organisations as well as a checklist table (Table I) of various key issues to be taken into consideration.

Phase	Template name
Initiation	Formal business case
	KM project scope identification
	Project plan
	Best practice report
	KM gap analysis reports
	Recommendation for KM strategic options
	KM strategy
	Benefits map
Development	Quick wins plan
	Process/procedure presentation templates
	Detailed project
	KM system specification
	Alignment with quality/excellence practices/management systems
	KMO operating model
	HR policies
Deployment	KM deployment plan
	Change management strategy
	Change management plan
	Communication plan
	Training and coaching plan
	communications campaign package
	Stakeholders engagement plan
Sustainability	KM sustainability strategy
	KM technology roadmap
	Performance management framework

Table I.
SMART KM model development checklist

Literature review

In this part of the paper, we will provide an in-depth and critical review of the literature and theories on KM. In doing so, several sources have been reviewed and consulted including various mainstream referred journals focussing on KM, change management, management, HR, social science, strategy, etc. as well as books, online databases, governmental reports and statistics, etc.

What is knowledge?

There is a large amount of literature about knowledge with different views and opinions (Alavi and Leidner, 1999, 2001; Holsapple and Joshi, 2002; Joshi *et al.*, 2007; Kettinger and Li, 2010; McQueen, 1998; Nonaka, 1994; Zack, 1999a, b, etc.); however, the nature of knowledge and defining knowledge is not a simple undertaking (Purvis *et al.*, 2001). According to Gebba (2013) knowledge first began with ancient Egyptians, Greeks and Romans, who developed several mechanisms to record and transfer knowledge to next generations. Al-Yahya and Farah (2009) characterised knowledge as "intangible and difficult to measure; volatile; predominantly embedded in people's minds; not consumable and can increase over time; it can have a variety of impacts within organisations; it cannot be bought, as it accumulates over time; and it can be used by different processes at the same time".

For Drucker (1998), knowledge is simply information that changes something or somebody – either by becoming grounds for actions or by making an individual (or an institution) capable of different or more effective action. This definition addresses both the individual and corporate aspects of knowledge.

However, from a management perspective, Nonaka and Takeuchi (1995) argue that the key difference between information and knowledge is that information is much more easily identified, organised and distributed. Knowledge, on the other hand, cannot really be managed because it resides in one's mind. And whilst there are various typologies, in its simplest form there are two main types of knowledge – tacit and explicit. Explicit knowledge may be expressed and communicated relatively easily; tacit knowledge tends to be personal, subjective and difficult to transmit (or sometimes even to recognise). Thus, while some explicit knowledge may lend itself to codification and commodification in knowledge management systems (KMS), tacit knowledge is very strongly embedded in the mind of the individual and is highly context sensitive (Barnes, 2002). Alavi and Leidner (2001) define KMS as a class of information system applied to managing organisational knowledge. A key challenge of KMS, therefore, is to make appropriate tacit knowledge explicit and portable (Swan, 2001).

What is KM?

In their book entitled *Learning to Fly: Practical Knowledge Management from Leading and Learning Organisations*, Collison and Parcell (2004) argue that knowledge cannot be managed but you can manage the environment in which knowledge can be created, discovered, captured, shared, distilled, validated, transferred, adopted, adapted and applied.

Various definitions of KM show that KM includes many dimensions. Alavi and Leidner (1999) refers to KM as a systemic and organisationally specified process for acquiring, organising and communicating both tacit and explicit knowledge of employees so that other employees may make use of it to be more effective and productive in their work.

Lai and Chu (2000) provide a similar definition for KM as a systematic and organisational process in which individuals undertake a significant role in acquiring, organising, storing, sharing, utilising and renewing both implicit and explicit knowledge, using resources such as technology to leverage organisational performance and knowledge assets.

Snowden (2000) defines KM as the identification, optimisation, and active management of intellectual assets, either in the form of explicit knowledge held in artifacts or as tacit knowledge possessed by individuals or communities. However, Leonard and Sensiper (1998)

criticised the definition of KM as broad and vague as to have little meaning and implies that knowledge can be managed.

According to Liss (1999), KM is a formal, directed process of determining what information a company has that could benefit others in the company and then devising ways to making it easily available. Meanwhile, KM is also viewed as the comprehensive management of the expertise in an organisation and it involves collecting, categorising and disseminating knowledge (Turban *et al.*, 2002, p. 777).

For Turban and Aronson (2002), KM is a process that helps identify, select, organise, disseminate, and transfer memory that resides in the organisation in an unstructured manner. A KM system captures this process to make it available within an organisation.

According to The IBM Institute for Knowledge-Based Organizations, the term KM conjures up a number of images: a customer service representative accessing a database of frequently asked questions; a team of consultants collaborating on a new salary study; or a facilitator capturing the lessons learned from a major marketing initiative (Fontaine and Lesser, 2002).

For the UK Improvement and Development Agency (I&DeA or IDeA) for local government, KM is about building organisational intelligence by enabling people to improve the way they work in capturing, sharing and using knowledge. It involves using the ideas and experience of employees, customers and suppliers to improve the organisation's performance. Building on what works well leads to better practice, strategy and policy.

He and Wei (2009) argue that KM research has yielded extensive explanations regarding the individual's motivation to share knowledge, each with different sets of factors but yet the study of continued knowledge sharing is rare.

Wasko and Faraj (2005) examine how individual motivations and social capital influence knowledge contribution in electronic networks. In doing so, they evaluate the activities of one electronic network supporting a professional legal association by using archival, network, survey and content analysis data. Wasko and Faraj empirically tested a model of knowledge contribution and argue that people contribute their knowledge when they perceive that it enhances their professional reputations, when they have the experience to share, and when they are structurally embedded in the network. Moreover, Wasko and Faraj's study reveals that knowledge contributions occur without regard to expectations of reciprocity from others or high levels of commitment to the network.

In his famous book, *The Age of Unreason*, Handy (1989) argues that the world of work is changing because the organisations of work are changing their ways. At the same time, however, the organisations are having to adapt to a changing world of work. Moreover, he argues in future, organisations will be a knowledge based, run by a few smart people and populated by a host of smart machines.

Huber (1991, p. 89) argues that an entity learns if, through its processing of information, the range of its potential behaviours is changed. Organisational learning is a concept used to describe certain types of activity that takes place in an organisation and therefore a learning organisation is one which is good at organisational learning (see Tsang, 1997, p. 74).

According to Probst and Buchel (1997, p. 15), organisational learning is the process by which the organisation's knowledge and value base changes, leading to improved problem-solving ability and capacity for action. Organisational learning occurs through shared insight, knowledge and mental models and builds on past knowledge and experience, that is, on memory (Stata, 1989, p. 64).

A learning organisation is an organisation skilled at creating, acquiring and transferring knowledge and at modifying behaviour to reflect new knowledge and insights (Garvin, 1993, p. 80). For Fiol and Lyles (1985, p. 803), organisational learning means the process of improving actions through better knowledge and understanding.

In concluding this part of the paper, it is evident from the literature review that knowledge is intangible and that is why many organisations find it difficult to see a clear

business outcome from any KM processes and activities. Despite the importance of KM for various organisations, organisations' senior executives continuously ask for justification for any investment in KM initiatives within the organisation.

Strategic alignment and integration

Building sustainable fit-for-purpose KMF requires fair amount of integration with the various organisational units throughout the knowledge lifecycle. Abou-Zeid (2002) describes the knowledge processes organisation as the K-manipulation process. K-manipulation is based on collection of sub-processes which cater for knowledge generation, knowledge identification, knowledge preservation, knowledge mobilisation, knowledge evaluation, knowledge presentation and knowledge elaboration. In doing so, K-manipulation focusses on the knowledge lifecycle, but still fails to integrate the lifecycle within the furious facets of the organisation. Moreover, Becerra-Fernandez and Sabherwal (2001) argue that the context influences the suitability of a KM process and this can be used to develop a contingency framework.

Understanding change and implementation of KM benefits from a holistic treatment, which allows divergent paradigms and perspectives to co-exist and ultimately contribute to analysis (Dufour and Steane, 2007, p. 78). According to Dufour and Steane, this holistic approach to KM implementation will allow researchers to address change in a variety of situations, increasing the value of knowledge about KM implementation as a guide to action as well as contributing to debate on the robustness of change and implementation issues overall. Moreover, Dufour and Steane (2007, p. 77) argue that the diffuse and inconclusive nature of literature on KM implementation arises, in part, due to lack of attention to context and process. Accordingly, Durfor and Steane propose the needs for holistic view of KM and calls for radical changes in the way KM being studied and implemented. Durfor and Steane's work highlights the need for deeper understanding of organisational change with focus on the context and processes. Moreover, the KM debate and its implementation is that context and processes are not attended to in any coherent manner. As a generalisation, theoretical contributions have tended to overlook the phenomena, whether it be ideas, contexts, processes or relationships, that eventually determine priority and importance in decision making.

Integration is key to support the organisation in utilising the knowledge assets and determining the interfaces between the business processes supporting KM (see Salisbury, 2008, p. 216). Salisbury's central argument is that KM integration will aid organisations to be able to solve problems by utilising disseminated knowledge through the organisation. In this way, each knowledge life-cycle phase provides an input for the next phase – creating an ongoing cycle.

With various interpretations to what is included as a part of KM initiatives, the standardisation of the KM business components would assist in maturing the KM as management field which will result in speeding up the implementation cycle. According to Handzic (2011, p. 199), there is a growing demand from the management research to determine the key elements of KM and their interactions, and provide KM practice with effective KM initiatives to improve the organisational performance in an ever-changing global environment.

The developed business process related to KM should be in alignment with the KM strategy. Lee *et al.* (2011) argue that providing the appropriate KM supports to decision making and business operation required understanding of the end benefits. Therefore management needs to invest in suitable and relevant alignment enablers to align KM strategy and workgroup KM processes (see Bosua and Venkitachalam, 2013, p. 340).

Integration with excellence and quality standards

Many organisations adopt various quality and excellence standards for both improving and demonstrating their excellence status. Number of these standards and frameworks can

affect KM and vice versa. According to Molina *et al.* (2004) there is a relationship between both TQM and ISO on one side and knowledge transfer on the other side, it was argued that collaboration and knowledge transfer between partners can be improved significantly at the presence of these standards. Some standards such as the European Foundation for Quality Management have specific requirements for KM to be in place. The KMF in organisations can therefore benefit from some of the quality process to support the knowledge cycle such as corrective actions process from the ISO 9001 being integrated with the KM lessons learned process to utilise the learning from the past experiences. Using Nonaka's theory of knowledge creation, Linderman *et al.* (2004) propose an integrated view of quality and knowledge arguing that quality practices can lead to knowledge creation and retention. Moreover they suggest a knowledge-based view of the organisation will provide a deeper understanding of why some organisations are more successful at deploying quality management practices than others. Moreover, Ribière (2004) argues that there are communalities between KM and total quality management (TQM); it was also proposed that integration between KM and TQM can benefit both fields; however, it would be greater added-value for KM as TQM is more established. It was also argued that a combination between the two would support the overall organisation excellence.

Integration with human resources

Any organisation hoping to enhance the creation and development of organisational knowledge should pay attention to its HRM practices (see Jimenez-Jimenez and Sanz-Valle, 2013, p. 43). In particular, the organisation should emphasise the implementation of HRM systems that enhance individual learning and the motivation for sharing and transfer knowledge within the organisation. According to Jimenez-Jimenez, KM requires that the company offers broad and planned career paths, enhances the mobility of employees across divisions and functions and bases promotions on qualitative criteria such as adaptability to changes, creativity and risk taking. Perez and De Pablos (2003) argue the need to put forward an integrative approach for KM, intellectual capital and strategic human resource management and such integrated approach would eventually lead to competitive advantage. Incentives play a vital role in motivating employees to share knowledge and consequently have a positive impact on the utilisation of the organisational tacit knowledge (see Nan, 2008). For Van Winkelen and McDermott (2010, p. 568), introducing a KM perspective to coaching programmes starts with an initial knowledge audit to set priorities. Examples of these priorities include responding to demographic trends or turnover patterns; to make sure that there are not areas of expertise that have not yet been recognised as such and which could disappear before the organisation has thought about them; or to manage risk by identifying the reliance of the organisation on individuals who hold expertise on behalf of the organisation.

Integration with performance management framework

Using empirical research on the knowledge creation processes, Lee and Choi (2003) argue that knowledge creation is positively related to organisational creativity, which is positively related with organisation performance. It is therefore evident that the knowledge creation process can provide a platform for organisations to be creative and innovative which in turn will form the basis for achieving a knowledge-based economy. Meanwhile, the empirical work of Darroch (2005) presenting KM as a coordinating mechanism provides evidence to support the view that a firm implementing KM practices will use resources more efficiently and so will be more innovative and perform better. The performance of KM initiatives, processes and the associated activities should be measured in alignment with the organisational performance management framework.

De Gooijer (2000) defines the following as assumptions for establishing KM performance management framework:

- performance framework is in alignment with the business performance management framework;
- a proper cascading of the overall organisation results all the way to the individual plans via team and business unit planning;
- clear and measurable performance indicators; and
- KM embedded into the various aspects of the organisation.

Integration with technology enablers

Technology enablers play a vital role in supporting KM initiatives; KM technology should be developed in alignment with the organisation's ICT strategy, logical architectures and the associated product maps. Handzic (2011, p. 206) identifies several examples of where technology can be successfully used to facilitate knowledge processes including:

- linking all members of the firm to one another and to all relevant external parties;
- creating an institutional memory that is accessible to the entire organisation;
- linking the organisation with its customers and partners;
- supporting collaboration amongst employees;
- fostering human-centred;
- real-time integration; and
- smart systems.

Integration with the project management office (PMO)

Projects come with wealth of information and knowledge, learning from previous projects would significantly improve the organisation performance in new projects. The two premier project management methodologies highlighted the role of lessons learned in project management excellence. Lessons learned and other KM components should be developed in alignment with the PMO guidelines and processes. Knowledge model of project management could support project managers in their decision making throughout the project lifecycle which requires the necessary knowledge base for information intelligence (see Taylor, 1991). Integrating KM with the various project management processes should enhance the overall maturity of the project management practices in organisations. Massingham (2010, p. 465) argues that knowledge risk management is an emerging field which offers a solution to the problems associated with conventional risk management methods. However, adopting KM as a tool to enhance the organisations risk management would provide managers with deeper understanding of the nature of the organisational risks and subsequently better management of risks (Massingham, 2010). Meanwhile, Handzic (2011) investigates the positive leadership effect which is probably attributed to management's recognition of the central importance of managing knowledge to organisational strategy, encouraging learning, supporting existing and creating new competencies, developing human resource plans and reward schemes based on the contribution to the development of organisational knowledge.

Governance

Governance of KM is critical for common understanding and agreement of the goals and objectives of the KM as well as for the effective and efficient implementation of KM initiatives

within organisations. Therefore it is important for all organisations considering KM initiative to develop proper and efficient structures and processes to organise the wide range of different KM activities. Gebba (2013) argues that KM governance is a new research focus but empirical research in this area so far has been limited and, therefore, the term KM governance has been discussed differently in the research literature with respect to its conceptualisation. KM governance includes authority, strategy development, risk management, organisational culture and evaluation and measurement (Wiig, 1997). KM governance is viewed from a strategic context to reflect the association between KM strategy and its implementation (Zyngier and Venkitachalam, 2011). Therefore governance of KM will help to ensure the delivery of KM strategic benefits through leadership, risk management and feedback mechanisms. For Schroeder and Pauleen (2007), KM governance integrates the theoretical concepts of KM and the organisational governance. Schroeder *et al.* (2012) argue that despite the deployment of KM across number of organisations, the level of integration is fairly low to the various practices; in addition, there is no common clear/structured guidance on implementing KM initiatives. Therefore, there is a need for fitting the technological dimension with the mainstream organisational, cultural and resource-focussed KM methods and approaches in KM (see An *et al.*, 2013, p. 323). Integrated management model would provide basis for implementing, supporting and sustaining KM. Moreover a concise integrated model of KM is needed to provide researchers with a holistic view, common ground, consistent terminology and units of analysis across a variety of research settings (see Handzic, 2011, p. 200). Practitioners also need such a conceptual model to help them to better understand the sorts of KM initiatives or investments that are possible and to identify those that make sense in their context. However, despite the various attempts to create such an integrated model, there is still a gap between the model and supporting framework with holistic view. Detailed and systematic procedures regarding the organisational knowledge protection need to be in position at the operational level (Lee *et al.*, 2011, p. 34).

In the next part of the paper, the SMART KM integrated KMF will be introduced which is based on the traditional organisational transformation pillars discussed earlier.

SMART KM model

The SMART KM model is developed to support the successful introduction of KM to an organisation through systematic and well-defined steps. As illustrated in Figures 1 and 2, the SMART KM model aims to integrate KM with the facets that influence the organisation. The integrated approach focusses on:

- integrating KM with the organisation's strategies and policies;
- integrating people with the process, information and technology;

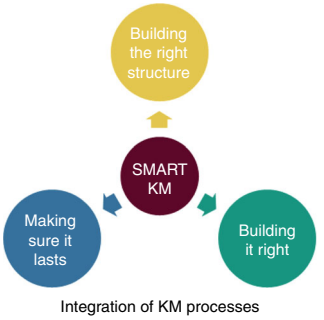


Figure 1.
SMART KM model development

- integrating KM with the adopted excellence and quality arrangements; and
- integrating KM with external stakeholders.

The SMART KM model (Figure 3) requires good development and integration of KM processes in addition to KM activities with the wider organisational processes (e.g. KM activities within the PMO project management processes). The model also influences the way information is managed across the organisation. It promotes better classification and management of the organisational knowledge assets whilst adopting the existing information security/management governance. Information architecture is critical in enhancing the knowledge assets search-ability and find-ability.

SMART KM leads practitioners to align technology to business processes; this includes both the utilisation of existing technology and the introduction of new methods. People's behaviour towards knowledge sharing and the associated HR levels are some of the most important factors in any KM initiative. SMART KM takes into consideration the human aspects and the deployment of the various schemes to ensure employees adopt the KM initiative.

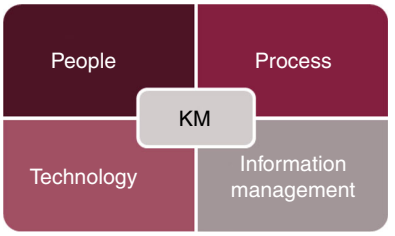


Figure 2.
SMART KM model integration of KM processes

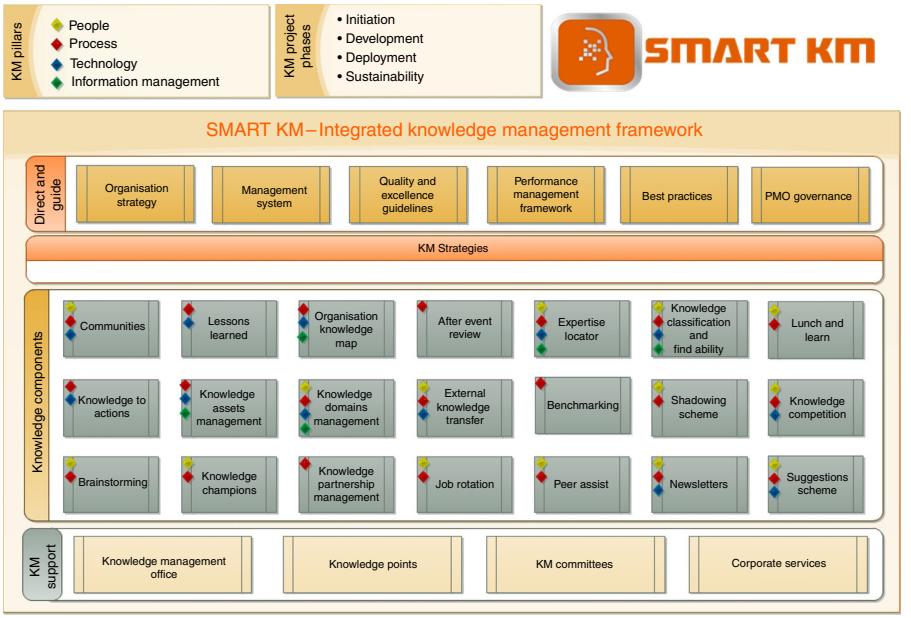


Figure 3.
SMART KM model

KM lifecycle

The delivery of KM initiatives is fairly challenging, as are other organisation transformation initiatives. However, the level of the challenge might exceed the norm due to the lack of awareness of the KM as a management field in the majority of organisations. The quality of project management and execution should be above the average indicators for the particular organisation. Stockholder management and other business-changing activities should be planned and executed to a very high standard.

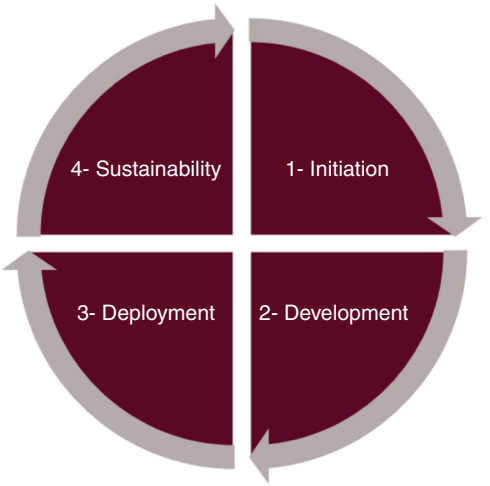
The SMART KM model defines four phases for the KM life cycle in organisations (Figure 4); these phases aim to provide structure and gradual introduction of KM into the organisation.

Stage 1: initiation

The initiation stage is the initial stage in any KM initiative. In this stage the organisation would form an initial basis for why they need KM, what are their objectives and how they are going to implement it. At this stage the organisation might also make some decisions with regard to the allocated investments and if it is appropriate to seek external professional help from consultants, subject matter experts and/or other type of organisations.

Initial environment scan

The environment scan should be structured around the organisation strategy and the four KM pillars. The scan aims at gathering the necessary information on the



Notes: Initiation: at the initiation stage of each KM initiative, the organisation should build a formal business case to adopt KM and highlight the associated benefits for the organisation based on organisational goals and the various influencing factors. Development: the development of the KMF starts with establishing the KM strategy. The organization should develop a framework which translates the strategy into actions via processes, systems and people. This is critical in order to deploy a fit-for-purpose KMF. Deployment: this phase aims to deploy and embed KM practices, systems and standards into the ways of doing business within the organisation. Change management has a key role in this phase, as ways of working will be changed significantly. Sustainability: post-deployment, the organization would need to ensure continued adoption and buy-in to the KM processes. This requires provision of the necessary support for people, processes and technology. knowledge management offices (KMOs) play a vital role in ensuring the sustainability of KM practices

Figure 4.
SMART KM model lifecycle

KM maturity within the organisation and the associated gaps and areas for focus, the scan should also look at vertical and horizontal relationships across the business units. The findings from the environment scan shall support the future stages of developing the organisation KMF. This scan is a key enabler to form a business case for investing in KM.

Formal KM business case

Business case normally is required to secure investment and allocate budget. The business case should demonstrate information related to the scope of the project, duration and cost. This is also a key step in gaining early buy-in from the senior management. It is therefore critical that the business case demonstrates support to the various strategic objectives via the appropriate management of the organisation knowledge assets. The key benefits could be demonstrated around the areas of:

- appropriate support to succession planning and capability building via the introduction of effective processes for internal and external knowledge transfer;
- more effective utilisation of shared resources across the organisation, this apply to both knowledge assets and human resources;
- better utilisation of strategic partnerships; and
- support the organisational excellence initiatives.

AS-IS assessment

Performing detailed assessment of the effectiveness of knowledge sharing based on the pillars of people, processes, information and technologies. The AS-IS assessment is the key input for formulating the organisation's KM strategy.

Develop KM strategy:

The KM strategy (see Figure 5) is an important document and should be developed and formatted based on the organisation guidelines for strategies formation, it should also have clear links to the organisation objectives to demonstrate how it will support these objectives. The KM strategy would guide the future KM activities by providing a number of objectives, guiding principles, high-level plans deployment approaches and aimed benefits.

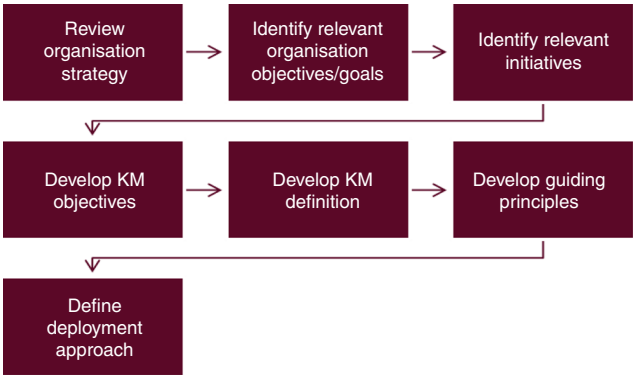


Figure 5.
KM strategy formation

Stage 2: development

SMART KMF provide comprehensive basis for developing fit-for-purpose KMF (see Figure 6). Developing the KMF should be informed by the KM strategy and should be designed to support the organisation objectives while seamlessly integrated to the day-to-day activities.

Select SMART KM business components

The SMART KM library of components (see Table II) reflect the best practices in KM. Based on the organisation strategy, a number of key components should be selected, following the selection of these components all the relevant mandatory components should also be selected and this should be repeated till all mandatory components in place.

The portfolio of selected components shall be presented to the key stakeholders before proceeding to the next stage.

Tailor and integrate business components

Once the set of business components has been approved, the SMART KM components description should be used to develop the new KM processes and changes to the existing organisation processes.

Note: the KM processes should be developed using the existing procedures development guidelines and process modelling conventions.

Design technical requirements and conceptual architecture

Based on the selected KM components, you should be able to shortlist components with technology enablement opportunities and with a focus on collaboration and effective content management. Based on the identified components, the appropriate IT function should formulate the technology requirements from the set of business processes and other sources going through following phases:

(1) review and evaluate the KM processes;

(2) identify the automation and reporting opportunities;

(3) define KM technology requirements;

(4) review the AS-IS system assessment;

(5) identify technology gaps; and

(6) define KM technology roadmap.

Note: it is critical to utilise the existing technology assets and to plan KM technology projects in alignment with the organisation ICT strategy and plans.

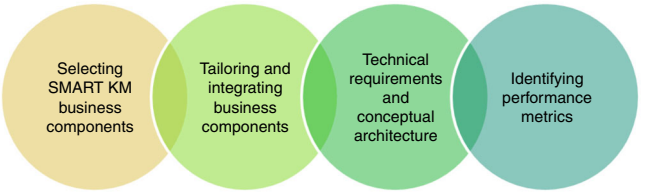


Figure 6.
High-level KMF development phases

Table II.
SMART KM cross-component integration chart

	After event review	Brainstorming	Knowledge classification and find-ability	Communities	Organisation knowledge map	Lessons learned	Lunch and learn	Expertise locator	Knowledge assets management	Knowledge to actions	Knowledge domains management
After event review						X	X				
Brainstorming						X				X	
Knowledge classification and findability						X		X	X		X
Communities							X				X
Organisation knowledge map											X
Lessons learned	X	X	X					X	X	X	X
Lunch and learn	X			X							
Expertise locator			X			X					X
Knowledge assets management			X			X					
Knowledge to actions		X				X					
Knowledge domains management			X	X	X	X		X			
Suggestions scheme			X					X		X	
Knowledge competition			X								X
Knowledge champions											

(*continued*)

Shadowing scheme										
External knowledge transfer			X				X			X
Benchmarking			X			X		X	X	X
Job rotation			X							
Peer assist				X						
Newsletters						X				
Knowledge partnership management			X			X	X		X	X

	Suggestions scheme	Knowledge competition	Knowledge champions	Shadowing scheme	External knowledge transfer	Benchmarking	Job rotation	Peer assist	Newsletters	Knowledge partnership management
After event review										
Brainstorming										
Knowledge classification and findability	X	X			X	X	X			X
Communities								X		
Organisation knowledge map										
Lessons learned						X			X	X
Lunch and learn					X					X
Expertise locator	X					X				

(*continued*)

Table II.

Table II.

Knowledge assets management							X					X
Knowledge to actions	X											
Knowledge domains management		X				X	X					X
Suggestions scheme												
Knowledge competition										X		
Knowledge champions												
Shadowing scheme									X			
External knowledge transfer												X
Benchmarking												
Job rotation					X							
Peer assist												
Newsletters		X										
Knowledge partnership management						X						

Notes: X shows the intersection between the two factors. Based on the agreed budget, time and scale you might select additional components (added-value)

Develop performance metrics

Performance metrics are the critical aspects in KM performance management, the various indicators should be developed carefully to reflect the progress and maturity of KM in any organisation. The development of performance metrics should include:

- review organisation performance management and reporting guidelines;
- design KPIs for the selected business components and destitute targets and weighing accordingly;
- design and overall knowledge maturity index; and
- review performance targets on yearly basis or in alignment with the organisation business planning cycle.

Stage 3: deployment and business change management

Changing the way business go about performing work requires well-planned change management?

As illustrated in Figure 7, the process of change requires buy-in, willingness and ability to change from managers and employees.

Successful change requires clear change strategy supported by sound methodology and followed by a change plan which governs the change activities.

Change management strategy

The change management strategy should highlight the desired business and state the overall approach of going about managing the change; this would also include the change guiding principles. The change management strategy should cater for the following factors:

- Stakeholders: identify the stakeholders at all levels and the associated levels of influence and support in addition to the strategies associated with each segment of the stakeholders and the linked approaches to assure appropriate buy-in.
- Communications: identify the key messages and the delivery mediums to raise the required awareness.

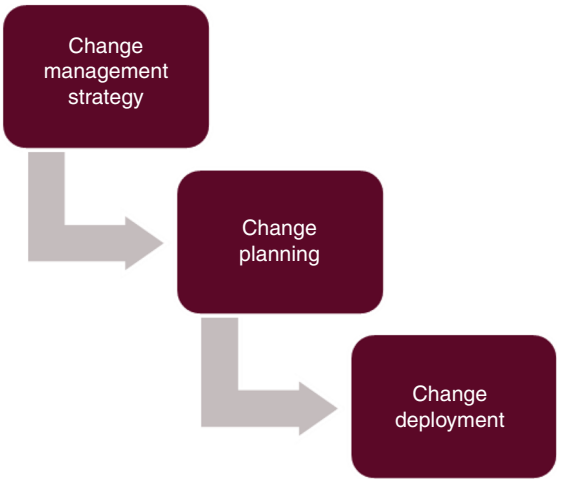


Figure 7.
Change management framework

- Training and coaching: it is critical that employees are enabled to carry their jobs with the new/changed business processes and also the ability to effectively use any new systems, it is also important that managers are able to drive and support the new ways of working. Other change agents such as knowledge champions might also be included in the strategy.
- Transition: transition approaches such as phasing or piloting could be considered to support the organisation moving to the new desired state.

Change planning

Based on the change management strategy, the business should formulate an overall change management plan which governs all the change management activities. Typical change management plan would include:

- stakeholders' management plan;
- communications plan;
- training and training plan;
- coaching and coaching plan; and
- transition plan.

Change deployment

Deploying the change will be governed by the change management plans, utilising resources from the various parts of the organisation with prime focus on:

- maintaining stakeholders engagement;
- performing coaching activities;
- managing communication campaign;
- delivering training activities; and
- monitor transition.

Stage 4: sustainability

To assure the sustainability of all KM initiatives, we should have the appropriate support arrangements in place in addition to the ongoing monitoring of the KM processes across the organisation.

KM involves a major transformation of knowledge flow and is not only a major project, it is also a permanent change to the way business is being conducted, and therefore it requires support from many areas within the organisation. Addressing the following key issues will help to ensure that the KM efforts remain on the right track and sustainable.

Support arrangements

KM initiatives would require support for the various pillars. The ongoing support should be a key concern and should be taken into account when taking decisions related to the scope and phasing of the KM initiatives. Without appropriate support in place the KM initiative would be at the risk of failing over the time.

The support arrangements should be looking into the following areas:

- Supporting employees and their activities: arranging for people to facilitate and raise the awareness of the various KM activities, this could be a mix of full-time and part-time employees and should be sufficient and in alignment with the number of overall employees within the organisation.

- Supporting KM technologies: supporting the deployed KM technology is critical to assure availability of the IT-related enablers. The support should form part of the IT function and should be govern by the organisation service-level agreements, this role would include activities such as bug fixes, security management, integration management and system updates.
- Supporting KM processes: KM process should be supported to make sure it is effectively communicated, reviewed and updated as and when needed. It should also be governed by the adopted management systems and the associated audits and controls.
- Supporting information management: information classification tools and repositories such as taxonomies and ontologies should be monitored and updated as needed; the adopted information facets adopted in designing the information classification system could be a reflection of elements such as organisation charts, process, people, strategies and products. Changes in these facets should result in subsequent updates to the information classification systems.

Performance management

The performance of KM process and initiatives should be monitored, controlled and reported to assure the achievement of the planned benefits. This should be performed preferably by the performance management function within the organisation and managed accordingly. Corrective actions might be needed to respond to the lack of performance in certain business units, this could be managed by the quality department supported by the KM unit.

Conclusions

All organisations are demanding better justification for investments in any KM initiative and expected outcomes. Therefore we must ensure that KM initiatives are directly linked to the organisation's business strategy. Moreover we must also ensure there are performance measurements in place to evaluate the success of the proposed KMF or KM initiative.

KM strategy is a key step in introducing KM into the organisation and it should, therefore, be aligned with the organisation's overall strategy; it should support the organisation in achieving its goals via the effective utilisation of knowledge throughout the organisation. Developing an effective KM strategy also requires alignment with the various internal and external knowledge governance levels, such as policies, regulations, laws and quality and excellence standards. The strategy document should highlight the adopted approach for KM; it should also determine the key KM objectives and the associated performance targets. This document shall also adopt the organisation's principles and values. The formation of a solid KM strategy is an important factor in determining the strategic approach for implementing KM programmes, as it identifies the required components for KMFs, their operation and the best methods for their introduction to the organisation.

It is important to ensure a proper and efficient governance of KMF and KM initiative for a maximum benefit from any investment in KM initiative and improved business results.

Successful implementation of KMF requires organisations to develop structures and processes to govern the wide range of different KM practices. Therefore KMFs must take a holistic approach to designing inter- and intra-organisational "systems" with due consideration not only for the technological design, but also for the design of strategic sustainability of these systems. The checklist (Table I) should be taken into consideration.

References

Abou-Zeid, E.-S. (2002), "A knowledge management reference model", *Journal of Knowledge Management*, Vol. 6 No. 5, pp. 486-499.

Alavi, M. and Leidner, D.E. (1999), "Knowledge management systems: issues, challenges and benefits", *Communications of AIS*, No. 1, Article No. 7.

Alavi, M. and Leidner, D.E. (2001), "Review: knowledge management and knowledge management systems: conceptual foundations and research issues", *MIS Quarterly*, Vol. 25 No. 1, pp. 107-136.

Al-Yahya, K. and Farah, S. (2009), "Knowledge management in public sector: global and regional comparison", paper presented to the International Conference on Administrative Development: Towards Excellence in Public Sector Performance, Riyadh, 1-4 November.

An, X., Deng, H., Wang, Y. and Chao, L. (2013), "An integrated model for effective knowledge management in Chinese organizations", *Program: Electronic Library and Information Systems*, Vol. 47 No. 3, pp. 320-336.

Barnes, S. (2002), *Knowledge Management System*, Thomson, p. 181.

Becerra-Fernandez, I. and Sabherwal, R. (2001), "Organizational knowledge management: a contingency perspective", *Journal of Management Information Systems*, Vol. 18 No. 1, pp. 23-55.

Bosua, R. and Venkitachalam, K. (2013), "Aligning strategies and processes in knowledge management: a framework", *Journal of Knowledge Management*, Vol. 17 No. 3, pp. 331-346.

Butler, T. (2003), "From data to knowledge and back again: understanding the limitations of KMS", *Knowledge and Process Management*, Vol. 10 No. 3, pp. 144-155.

Collison, C. and Parcell, G. (2004), *Learning to Fly: Practical Knowledge Management from Leading and Learning Organisations*, Capstone Publishing Ltd., Chichester.

Darroch, J. (2005), "Knowledge management, innovation and firm performance", *Journal of Knowledge Management*, Vol. 9 No. 3, pp. 101-115.

De Gooijer, J. (2000), "Designing a knowledge management performance framework", *Journal of Knowledge Management*, Vol. 4 No. 4, pp. 303-310.

Drucker, P. (1998), "The coming of the new organization", *Harvard Business Review*, January-February, pp. 45-53.

Dufour, Y. and Steane, P. (2007), "Implementing knowledge management: a more robust model", *Journal of Knowledge Management*, Vol. 11 No. 6, pp. 68-80.

Fiol, M.C. and Lyles, M.A. (1985), "Organizational learning", *Academy of Management Review*, Vol. 10 No. 4, pp. 803-813.

Fontaine, M. and Lesser, E. (2002), *Challenges in Managing Organizational Knowledge*, IBM Institute for Knowledge-Based Organizations, IBM Corporation, IBM Global Services, New York, NY (this article was originally published in Next Frontier by WorldatWork and IHRIM), available at: www.worldatwork.org www.ihrim.com (accessed 18 April 2013).

Garvin, D.A. (1993), "Building a learning organization", *Harvard Business Review*, Vol. 71 No. 4, pp. 78-91.

Gebba, T.R. (2013), "The role of governance in planning and implementing knowledge management strategy in the UAE: the case of RTA", *International Journal of Business Research and Development*, Vol. 2 No. 4, pp. 1-26.

Handy, C. (1989), *The Age of Unreason*, Arrow, London.

Handzic, M. (2011), "Integrated socio-technical knowledge management model: an empirical evaluation", *Journal of Knowledge Management*, Vol. 15 No. 2, pp. 198-211.

He, W. and Wei, K.-K. (2009), "What drives continued knowledge sharing? An investigation of knowledge-contribution and -seeking beliefs", *Decision Support Systems*, Vol. 46 No. 4, pp. 826-838.

Holsapple, C.W. and Joshi, K.D. (2002), "Knowledge management: a threefold framework", *Information Society*, Vol. 18 No. 1, pp. 47-64.

Huber, G.P. (1991), "Organizational learning: the contributing processes and the literatures", *Organization Science*, Vol. 2, February, pp. 88-115.

Jimenez-Jimenez, D. and Sanz-Valle, R. (2013), "Studying the effect of HRM practices on the knowledge management process", *Personnel Review*, Vol. 42 No. 1, pp. 28-49.

Joshi, K.D., Sarker, S. and Sarker, S. (2007), "Knowledge transfer within information systems development teams: examining the role of knowledge source attributes. Emerging issues in collaborative commerce", *Decision Support Systems*, Vol. 43 No. 2, pp. 322-335.

Kettinger, W.J. and Li, Y. (2010), "The infological equation extended: towards conceptual clarity in the relationship between data, information and knowledge", *European Journal of Information Systems*, Vol. 19 No. 4, pp. 409-421.

Lai, H. and Chu, T. (2000), "Knowledge management: a review of theoretical frameworks and industrial cases", *Proceedings of the 33rd Hawaii International Conference on System Sciences*, *HI*.

Lee, C.-F., Tsai, S.D.-H. and Amjadi, M. (2011), "The adaptive approach: reflections on knowledge management models", *Journal of Management Inquiry*, Vol. 21 No. 1, pp. 30-41.

Lee, H. and Choi, B. (2003), "Knowledge management enablers, processes, and organizational performance: an integrative view and empirical examination", *Journal of Management Information Systems*, Vol. 20 No. 1, pp. 179-228.

Leonard, D. and Sensiper, S. (1998), "The role of tacit knowledge group innovation", *California Management Review*, Vol. 40 No. 3, pp. 112-132.

Linderman, K., Schroeder, R.G., Zaheer, S., Liedtk, C. and Choo, A.S. (2004), "Integrating quality management practices with knowledge creation processes", *Journal of Operations Management*, Vol. 22 No. 6, pp. 589-607.

Liss, K. (1999), "Do we know how to do that? Understanding knowledge management", *Harvard Management Update*, February, pp. 1-4.

McQueen, R. (1998), "Four views of knowledge and knowledge management", *Proceedings of the Fourth Americas Conference on Information Systems*.

Massingham, P. (2010), "Knowledge risk management: a framework", *Journal of Knowledge Management*, Vol. 14 No. 3, pp. 464-485.

Molina, L.M., Montes, F.J.L. and Fuentes, M.D.M. (2004), "TQM and ISO 9000 effects on knowledge transferability and knowledge transfers", *Total Quality Management and Business Excellence*, Vol. 15 No. 7, pp. 1001-1015.

Nan, N. (2008), "A principal-agent model for incentive design in knowledge sharing", *Journal of Knowledge Management*, Vol. 12 No. 3, pp. 101-113.

Nonaka, I. (1994), "A dynamic theory of organizational knowledge creation", *Organization Science*, Vol. 5 No. 1, pp. 14-37.

Nonaka, I. and Takeuchi, H. (1995), *The Knowledge-Creating Company*, Oxford University Press, Oxford.

Perez, J.R. and De Pablos, P.O. (2003), "Knowledge management and organizational competitiveness: a framework for human capital analysis", *Journal of Knowledge Management*, Vol. 7 No. 3, pp. 82-91.

Probst, G. and Buchel, B. (1997), *Organizational Learning*, Prentice Hall, London.

Purvis, L., Ramamurthy, V. and Zmud, R. (2001), "The assimilation of knowledge platforms in organizations: an empirical investigation", *Organization Science*, Vol. 12 No. 2, pp. 117-135.

Ribière, V.M. (2004), "Integrating total quality management and knowledge management", *Journal of Management Systems*, Vol. 16 No. 1, pp. 39-54.

Salisbury, M. (2008), "A framework for collaborative knowledge creation", *Knowledge Management Research and Practice*, Vol. 6 No. 3, pp. 214-224.

Schroeder, A. and Pauleen, D. (2007), "KM governance: investigating the case of a knowledge intensive research organization", *Journal of Enterprise Information Management*, Vol. 20 No. 4, pp. 414-431.

Schroeder, A., Pauleen, D. and Huff, S. (2012), "KM governance: the mechanisms for guiding and controlling KM programs", *Journal of Knowledge Management*, Vol. 16 No. 1, pp. 3-21.

Schultze, U. and Boland, R. (2000), "Knowledge management technology and the reproduction of work practices", *Journal of Strategic Information Systems*, Vol. 9 Nos 2/3, pp. 193-212.

Snowden, D. (2000), "Organic knowledge management – the ASHEN model: an enabler of action", *Knowledge Management*, Vol. 3 No. 7, pp. 14-17.

Stata, R. (1989), "Organization learning – the key to management innovation", *Sloan Management Review*, Spring, pp. 63-74.

Swan, J. (2001), "Knowledge management in action: integrating knowledge across communities", *Proceedings of the Hawaii International Conference on System Sciences*, *Maui, HI, January*.

Taylor, R.M. (1991), "Towards a knowledge-based model of project management", *International Journal of Project Management*, Vol. 9 No. 3, pp. 169-178.

Tsang, E.W.K. (1997), "Organizational learning and the learning organization: a dichotomy between descriptive and prescriptive research", *Human Relations*, Vol. 50 No. 1, pp. 73-89.

Turban, E. and Aronson, J.E. (Eds) (2002), *Knowledge Management, Decision Support Systems and Intelligent Systems*, ISBN 81-7808-367-1, Pearson Education.

Turban, E., McLean, E.R. and Wetherbe, J.C. (2002), *Information Technology for Management: Transforming Organizations in the Digital Economy*, John Wiley & Sons, New York, NY.

Van Winkelen, C. and McDermott, R. (2010), "Learning expert thinking processes: using KM to structure the development of expertise", *Journal of Knowledge Management*, Vol. 14 No. 4, pp. 557-572.

Wasko, M.M. and Faraj, S. (2005), "Why should I share? Examining social capital and knowledge contribution in electronic networks of practice", *MIS Quarterly*, Vol. 29 No. 1, pp. 35-57.

Wiig, K. (1997), "Knowledge management: an introduction and perspective", *Journal of Knowledge Management*, Vol. 1 No. 1, pp. 6-14.

Zack, M.H. (1999a), "An architecture for managing explicated knowledge", *Sloan Management Review*, Vol. 40 No. 4, pp. 45-58.

Zack, M.H. (1999b), "Managing codified knowledge", *Sloan Management Review*, Vol. 40 No. 4, pp. 45-58.

Zyngier, S. and Venkitachalam, K. (2011), "Knowledge management governance – a strategic driver", *Knowledge Management Research and Practice*, Vol. 9 No. 2, pp. 136-144.

Web references

http://isako.wikispaces.com/file/view/chevron+case+study.pdf

www.chevron.com/documents/pdf/corporateresponsibility/Chevron_CR_Report_2004.pdf

www.chevron.com/chevron/speeches/article/01111999_managingknowledgethechevron way.news

www.corvelle.com/mini-cases/Minicase_10_2.php

www.starbucks.com/

www.facebook.com/Starbucks

www.sarkuysan.com/en-EN/about-us/119.aspx

http://usacac.army.mil/CAC2/call/

www.usaid.gov/results-and-data/information-resources/knowledge-management-support

www.cdc.gov/

http://en.tehran.ir/

About the authors

Allam Ahmed is an Economist with an extensive background in academia, public and private sectors, specialising in KM, technology transfer, SD, business process re-engineering, change management and organizational transformation. He is the Founding President of World Association for Sustainable Development and its entire journal; Founding Director of Middle Eastern Knowledge Economy Institute; and Founder of Sudan Knowledge. In 2009 Allam led the Government of Abu Dhabi major and first of its kind in the Middle East Knowledge Management Framework (Musharaka). His work featured and archived by major international institutions and top universities such as World Bank; UN; EU; DFID; Government of St Lucia; WFP; Imperial College; Cambridge; Jönköping; Oxford; Princeton; Yale; Harvard; MIT; Stanford; Toronto, etc. Expert Advisor to the European Commission on International Scientific Cooperation (2006-2008); International Co-ordinator UNESCO Chair on Transfer of Technology (2008-2010); and Advisor African Capacity Building Foundation (2011-2013). He is the recipient of the Royal Agricultural University Scholarship and Prestigious Book Prize for Best MSc/MBA Dissertation. Listed in the WHO'S WHO IN THE WORLD 2009-2016. Allam Ahmed is the corresponding author and can be contacted at: allam@sussex.ac.uk

Mohamed Elhag is a Senior Management Consultancy Professional and Business Architect with an extensive background in public and private sectors, specialising in business strategies, business process re-engineering, change management, organizational transformation, knowledge management, and ICT. Mohamed holds an MBA from the University of Leicester School of Management, PRINCE2 & MSP Registered Practitioner with the Office of Government Commerce – UK and accredited as a Fellow Member by the Institute of Consulting, Full Member of the Chartered Management Institute, The British Computer Society and The Institution of Electrical and Electronic Engineers (IEEE). Mohamed has led many major projects within the UK: National Program for IT (NPfIT) and for the Government of Abu Dhabi. In addition Mohamed has actively participated in analyzing, architecting and managing various clinical data, records management and knowledge management systems and frameworks for healthcare, pharmaceutical organizations, and electronic publishers, Mohamed also has several years of experience in architecture assessment, IT policies and systems integration. Specialties: BPR, Change Management, KM, Project/Program Management, ICT.