

the business continuity  
**JOURNAL**

Volume two, issue one

Beyond competence: identifying and understanding non-technical competencies for crisis management team members

---

Human factors in business continuity management and response

---

'Continuity risk appetite': what it is and why it is important

---

The rising tide: climate change and business continuity

---

Research roundup



# **BEYOND COMPETENCE:** identifying and understanding non-technical competencies for crisis management team members

## Abstract

The study of competence in a business context usually relates to behavioural outcomes, judged against a set of agreed criteria (Spencer & Spencer, 1993). Business usually examines competence as “how well an individual performs in their role”, it does not normally look at how an individual’s competence level can be cultivated and developed towards expertise.

This paper describes the research undertaken over three inter-related, triangulated studies, throughout 2006, to look holistically at existing studies in competence and expertise from a performance psychology perspective, in an attempt to identify essential and non-technical competencies for crisis management team members (CMTM).

Using the competencies as a basis to explore expertise and its development in a business environment, the research provides a theoretical model for the development towards competence and beyond, proposing an integrated expertise framework.

## Author



Lorna Anderson is AEGON UK’s business continuity manager and heads up the organisation’s BC team. Lorna has in excess of eight years’ direct experience of business continuity management within financial services, investment and banking environments. A qualified Risk Management (BA Hons) and Performance Psychology (MSc) graduate, Lorna’s interest lies in improving organisational business continuity preparedness through individual performance.

## Background

---

The rationale for this in-depth, far-reaching, study emerged as a result of a debate at the “Business Continuity And Disaster Recovery In The Financial Services Sector” annual conference held in London on 25<sup>th</sup> January 2006. During the debate, business continuity managers held the view that crisis management team members (CMTMs) must be made of “the right stuff” (City & Financial, 2006) but there was no agreement as to what “the right stuff” was and in what context, leaving the question “What is CMTM competence and how can it be developed?” unanswered.

Looking to the business continuity community for guidance, there was no specific literature on this topic (although much on incident commanders and incident leaders). Using this opportunity to fulfil not only the practitioner-researcher’s organisational needs, but also the needs of other business continuity (BC) managers, this study contributes theoretically and practically to the growing body of knowledge on business continuity management (BCM) and allows the gap between academia and business, to be bridged by developing competencies and an expertise framework for real world application.

## Introduction to the study

---

In recent years, there has been a plethora of major commercial, industrial and financial crises which have dominated news headlines around the world. These crises have taken many forms, affected many organisations and brought hardship and grief to communities, worldwide. No matter the event, organisations still have to provide their goods and services to their customers. A company’s strategic direction and all its supporting business decisions are based on an assumption of their business continuing to provide its products or service, ‘whatever the weather’. An incident or crisis (defined by Turner, 1994 as an *unintended, unpremeditated or unforeseen event*) that contravenes this assumption, directly effects the organisation’s ability to fulfil its business objectives and in extreme cases, can even threaten the company’s very survival.

Failure to prepare for reacting to these events (or crises), leaves business managers facing situations, for which they have had no training and which may be outside the scope of their experience and their confidence to handle. By introducing the concept of business continuity management into an organisation, plans and processes are developed in readiness to respond to these unexpected events, by providing basic information to help minimise response times and support managerial decision making. However, business continuity and supporting crisis management plans are only as good as those managers and teams implementing them.

Organisational crises are rarely solved by one person. Normally a team called a crisis management team (CMT) or incident management team (IMT) (Cannon-Bowers & Salas, 1998, Smart and Vertinsky, 1977) assemble to collectively address issues or events that threaten the organisation. There is no ‘one size fits all’ approach to crisis management (CM). Some organisations have one CMT; some have a number at different levels of the organisation. Regardless of how they are structured, members of these teams are normally representative of different areas of the business and undertake the crisis management role as an addition to their normal job role.

In many cases, a crisis management role is vastly different from an individual’s day to day job role and as such, an individual Crisis Management Team Member’s (CMTM) competence contributes to the collective competence of the organisation’s CMT and ultimately to its very survival, post crisis. Paton & Flin (1999) advise that “control in [disaster] contexts makes substantial demands on the personal resources and

competence of those in management roles". Therefore ensuring the individual competence of CMTMs, is important, as the skills and attributes needed for crisis management, may not be the same as the individual's normal role. A manager may be an expert in his/her field i.e. HR. IT etc, but may not be a competent CMTM. The difference may not lie with the individual's technical knowledge but how they respond behaviourally. The differentiator, therefore, is the non-technical, personal skills that the individual has and utilises in context.

Fortunately, incidents and organisational crises don't happen everyday. This does however present a problem in allowing CMTMs to develop competence and expertise, particularly when modelled on expertise development models which use the theory of deliberate practice (Ericsson, 1996) as a basis<sup>1</sup>. CMTMs therefore, have limited opportunities to gain competence through deliberate practice or experience, to enable them to attain a level of competence from real organisational crises. Therefore, there is a very real need to examine alternative means of identifying, developing and maintaining the core crisis management skills needed to effectively manage and help to resolve organisational incidents, at a CMTM level.

There exists a substantial literature on crisis/command leadership and the characteristics of leaders (see Flin, 1996, Pigeau & McCann, 2000) and indeed the competencies for business continuity managers (see Business Continuity Institute Professional Standards, 2003). However, the competencies and skills required for CMTMs (not incident commanders) are not documented as part of the current research literature and show a gap in crisis management research and in existing professional practice. This research aims to address the gap by identifying the competencies and factors that can propel CMTMs towards expert status.

In summary, defining CMTM competence allows any organisation to ensure that members of their CMT are indeed the 'right people' with the 'right skills'. Like a road map, they allow the identification and recognition of the range of knowledge, skills and behaviours that are required as a CMTM. With competence for CMTM performance identified (through the identification of non-technical skills), competencies and exemplars for good behavioural indicators can be established within an expertise framework, providing a clear route to the development of expertise, beyond mere competence.

## Methods

---

The purpose of this study was to identify and define the non-technical skills for the development of competence and expertise for crisis management team members.

The research commenced by examination of the current literature pertaining to crisis management. Investigation across a number of interrelated subject areas showed that there is no specific literature on crisis management team member competence or expertise development, but there is a large body of knowledge from which conclusions, supported by real world research, can be based upon.

The research aimed to identify competency elements, specific competencies and to propose an integrated expertise framework for CMTMs to develop beyond competence towards expertise, the review of literature was centred around five key headings: Crisis management; Competence and competencies; Expertise; Adaptability and; Non-technical skills.

---

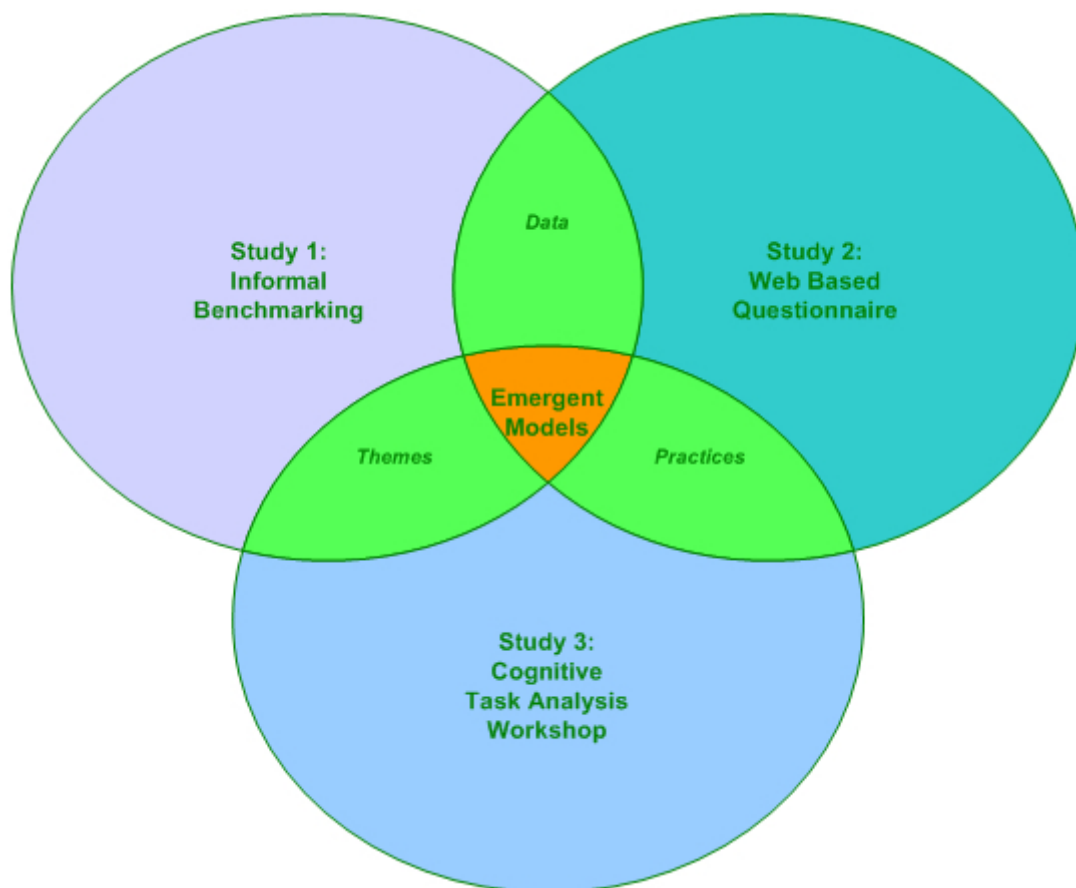
<sup>1</sup> Ericsson's (1996) theory of deliberate practice suggests individuals need 10 years or 10,000 hours deliberate practice before expert status can be reached.

Following the results of the literature review, a three staged approach was adopted:

- Informal organisational benchmarking (unobtrusive documentary content analysis) (n=3);
- A structured web-based questionnaire of current CMTMs (n=44); and
- A cognitive task analysis workshop (Militello & Hutton, 1998) (n=6), to explore the business continuity community's views on CMTM competence and expertise development.

Figure one (below), shows how, together, these three separate but inter-related studies provided grounded data as well as a picture of current practices and qualitative themes on which to devise the competencies, competency elements and expertise framework.

Figure one:



## RESULTS

---

### Results summary

From the three studies, three key 'macro level' themes were found:

- *Key theme one:* It is suggested that CMTM competence consists of seven essential, non-technical competencies and the achievement of competence is an integration of seven factors.
- *Key theme two:* The research proposes that expertise levels can be graded from novice to expert, when integrated with competencies and mediating factors within a CMTM expertise framework.
- *Key theme three:* The study proposes CMTMs can progress beyond competence by developing the meta-competencies of 'adaptability' and 'self-confidence'.

In addition, several ancillary, 'micro level', themes also emerged from the study:

- *Emergent theme A:* Current CMTM practice shows non-technical skills are not addressed, however CMTMs perceive themselves as 'experts'.
- *Emergent theme B:* Perceived control is a key element which differentiates CMTM experts and novices.
- *Emergent theme C:* CMTMs receive little training and development.
- *Emergent theme D:* CMTMs rely on their acquired competencies (past knowledge) to perform.
- *Emergent theme E:* CMTMs rely on crisis management plans and procedures.

The results in more detail

The study identified the non-technical skills which contribute to CMTM competence and how that level of competence or proficiency can be developed towards expert status, by providing the following outcomes:

- A definition of the competency elements necessary to achieve CMTM competence;
- The non-technical competencies required for an effective CMTM; and
- The development of a proposed CMTM expertise framework, which will provide a basis for expertise development.

For clarity of presentation to the reader, the overall key macro level themes are outlined individually along with the lesser but still significant micro themes:

*Key theme one:*

**It is suggested CMTM competence consists of seven essential, non-technical competencies and the achievement of competence is an integration of seven factors.**

The literature review undertaken as part of the research identified and discussed concepts of competence (Klemp, 1980, Shanteau, 1992, Wright, Turner & Horbury, 2003,) and expertise (Galton, 1869, Watson, 1925, Ericsson, Krampe & Tesch-Romer, 1993, Skoyles, 1999, Ollis, MacPherson & Collins, 2006), defining competence as the ability of an individual to perform tasks and roles to a certain, predetermined standard (Parry, 1996). The literature review and third study, the cognitive task analysis (CTA) confirmed that there is no current explicit existing standard, defining CMTM competence.

The literature showed, however, that there was an implicit expectation that the CMTM will be ready, willing and capable to act as an effective and efficient team member during a crisis. The survey substantiated this expectation, identifying that CMTM roles form part of many CMTM's day to day job roles (Coombs, 1999, Elliott, Swartz & Herbane, 2002, Borodzicz, 2005). The standard expected (at an organisational level) will no doubt vary with experience, responsibility, specific roles within the CMT and with organisational considerations; however, it is concerning that many questionnaire respondents (who took part in the web-based survey, study 2) considered themselves expects without such criteria. It raises the debate of what CMTM competence is, when different people have different expectations of what that means in practice.

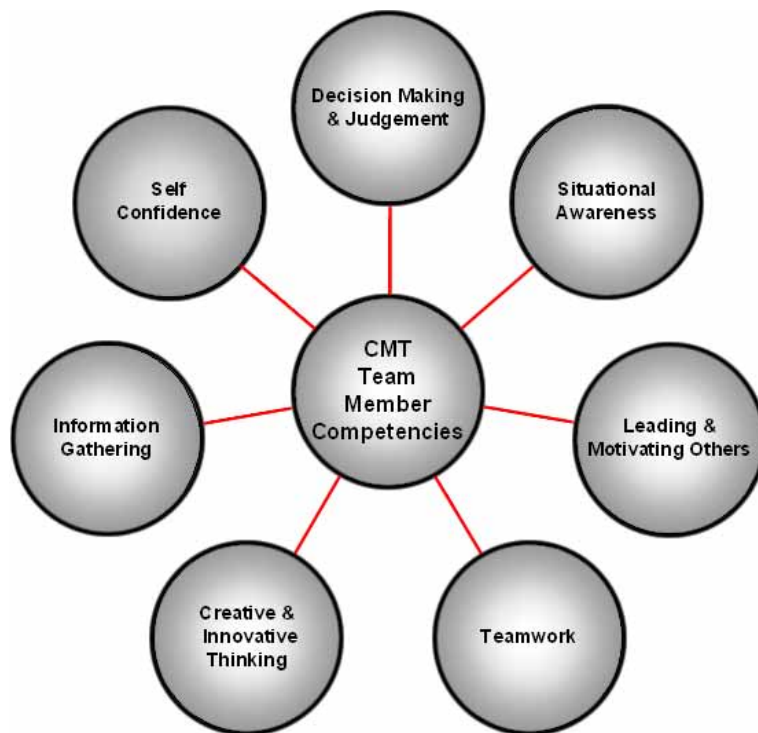
Increasing regulation, especially in the field of financial services (FSA, 2006), has not yet recognised this deficiency in current practice but there is an implicit expectation from the regulators that organisations should be prepared and capable of handling crises to minimise market disturbances.

This confirms the importance of meeting these implicit expectations and emphasises the need to make CMTM competencies explicit, preferably by allowing the business continuity community to define the standards, as has been attempted by this preliminary research.

The non-technical competencies hierarchy was developed using the tri-element method of informal benchmarking, survey and cognitive task analysis (CTA) to identify the skills on which to base CMTM competence. The results of the literature review identified many existing non-technical skill taxonomies currently being used within other industries (Wiener, Kanki & Helmreich, 1993, Helmreich, 1997, Mearns, Whitaker, Flin, Gordon & O'Connor, 2003, Flin, Fletcher, McGeorge, Sutherland & Patey, 2003, Yule & Flin, 2004). These showed that four key non-technical competencies were essential across all domains: decision making, situational awareness, leadership and team working & co-operation.

The survey and CTA confirmed these competencies were also essential for CMTMs.

The individual competencies were defined through the three levels of data and method triangulation, to produce seven essential non-technical competencies for CMTMs. These are displayed in figure two, below.



*Figure two: Essential non-technical competencies required for CMTMs*

Competence has been shown to be a multi-dimensional, fluctuating construct (Jones, 2004) which is made up of elements which have a direct relationship on how competent the CMTM is or is perceived to be.

It is an amalgamation of many different elements which, like Gestalt psychology, are greater than the sum of their parts (Eysenck, 2002).

The literature showed competence doesn't occur in a vacuum (Roberts, 1997), but is developed by individual and organisational learning and mediated by a number of factors. The research produced from the three studies, showed CMTM competence is a function of eight interactive main elements, with two meta-competencies, identified to support development beyond expert status:

*Factors:*

- Natural competencies
- Technical competencies
- Non-technical, personal competencies
- Expertise/skill acquisition levels

- Social, environmental mediating factors
- Organisational and team dynamics
- Ability to self regulate learning
- Amount of deliberate practice

*Meta-competencies:*

- Adaptability
- Self-confidence

Results from the survey suggest that there may be a difference between *competence* - what a CMTM can do (primarily limited by deliberate practice and deliberate expertise) and *performance* - what they genuinely do in a crisis, observed through their behaviour.

Competence and performance is also constrained by the crisis lifecycle which occurs along four dimensions – personal, interpersonal/team, organisational and environment (Fink, 1986, Shrivistava & Mitroff, 1987, Mitroff, 1988, Reason, 1990, Hood & Jackson, 1992, Darling, 1994, Turner, 1994 and Heizen, 1996).

The proposed CMTM Competency Element Model incorporates the factors and meta-competencies which have been identified by the study to contribute towards CMTM competence and expertise development.

The model shown in figure three provides a simplistic integration of the elements revealed by the research, noting that only one of the competencies, the non-technical personal competencies, has been examined as part of this study:

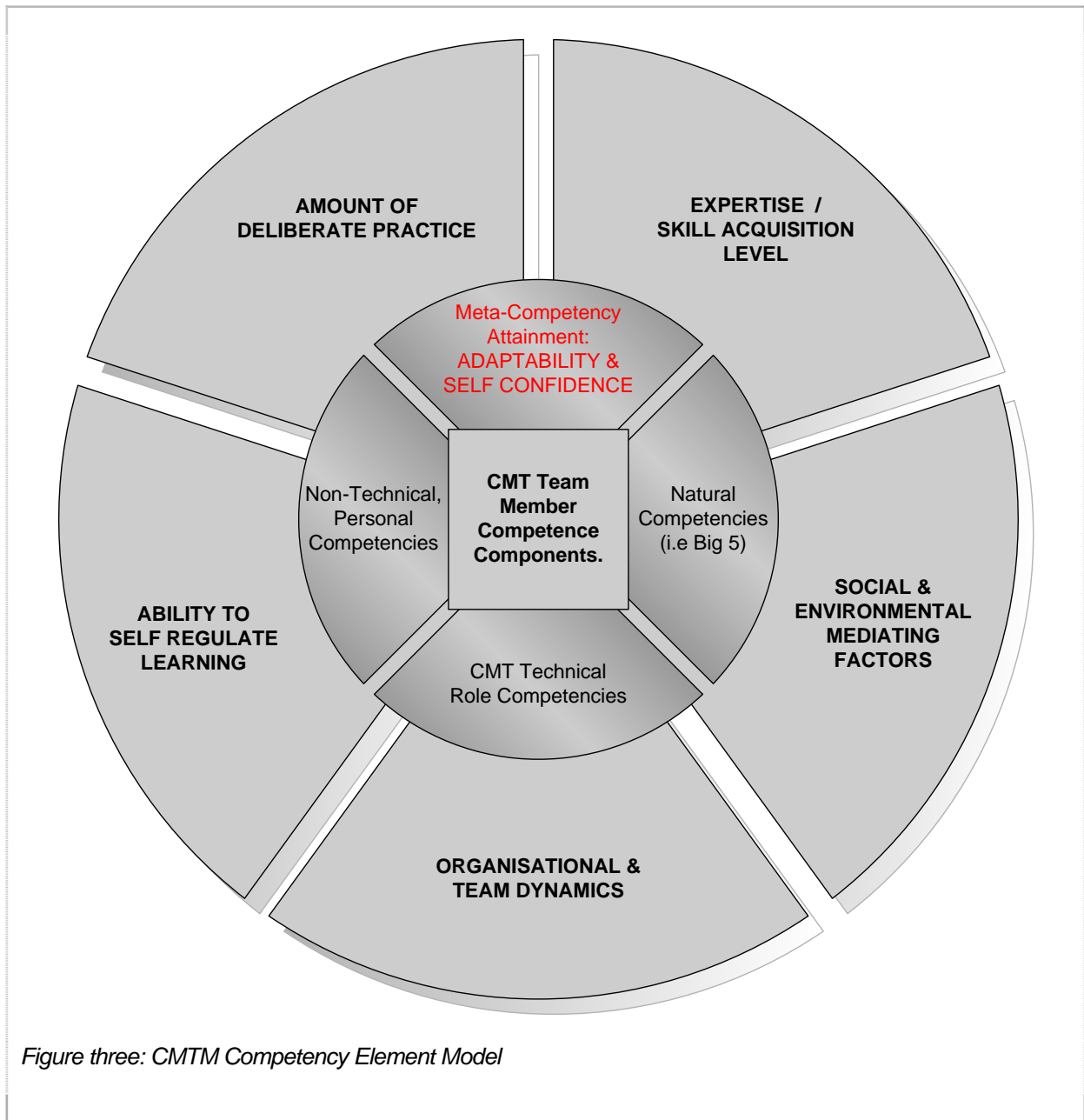


Figure three: CMTM Competency Element Model

The CMTM Competency Element Model depicts the constituents which come together to provide a snapshot in time of CMTM competence. The internal quadrants show the 'competencies' identified from the literature and the CTA (natural, technical, non-technical, meta) whilst the outside lane shows the constructs (deliberate practice, skill acquisition level, social & environmental mediating factors, organisations & team dynamics and self regulation) which influence how competent a CMTM is, at a given point in time. This is the standard representation of the element model, as a key emergent theme from the CTA was that CMTMs all respond in different ways, based on the factors and meta-competencies discussed. Thus the standard model depicts all the quadrants as equal. Each CMTM, as a result of his/her tacit knowledge (and

competency elements) is at a different level of CMT expertise, which is mediated by social, environmental, organisation and team factors on any given day. Therefore, the model quadrants for each individual will differ in size to reflect the factors for each individual in a given crisis or CMT situation. Following research in other industries, a CMTM's expertise can be graded along a continuum with three main, but not static, stages defined as *novice*, *proficient* and *expert*, where a CMTM at a proficient level can be described as 'competent'.

The CMT itself, of which the CMTM is one element, has been shown by the literature review to essentially be a distributed information processing system (Jones, 2004), with multiple people, all with limited skills and cognitive abilities who engage in a joint activity towards a common goal (Lagadec, 1993, Salas, Weaver & Cannon-Bowers, 2002). The recent FSA Feedback Statement on the Resilience Benchmarking Project Discussion Paper (2006) asked the question "*Although the financial system appears to be technologically resilient, are there vulnerabilities in other areas that could put it at risk?*" The concept of CMT collective competence was not considered by any of the 12 organisations who took part, accentuating a potential unconscious overconfidence by the industry. Increased CMTM competence contributes to market confidence, as the diagram in figure four depicts:

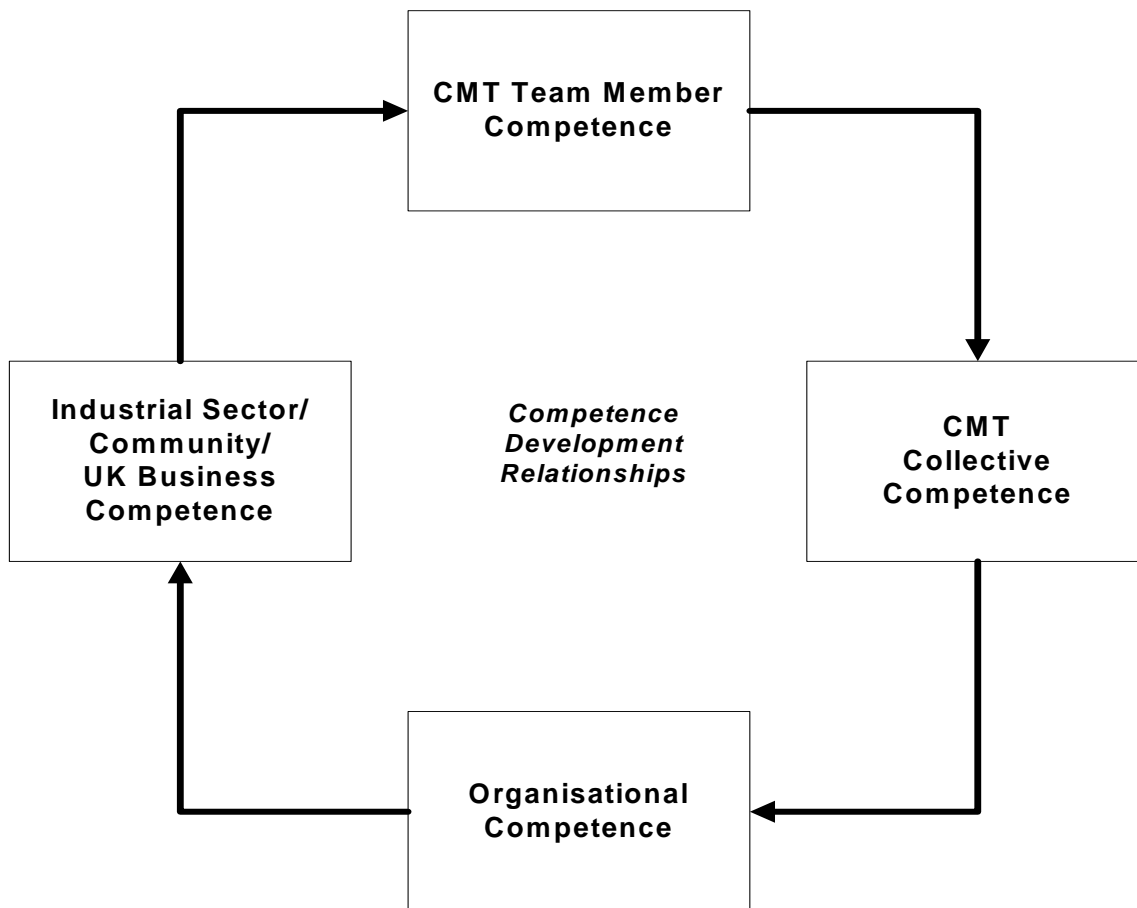


Figure four: CMTM competency development relationships

The key to competence, collective or individual, is not merely the technical skills that each individual holds but how effectively they can collectively co-operate and communicate i.e. the personal, non-technical skills. Work by Hutchins (1990) and Rasmussen, Brehmer & Leplat (1991) supports this analysis. Competencies

identification (through this study) and the development of such, recognise the need for the change from the individual's day-to-day role to their CMTM role. The survey illustrated that this 'switch' is not documented in many cases in the CMT plans, nor is this change documented as part of individuals' training, development and appraisal systems.

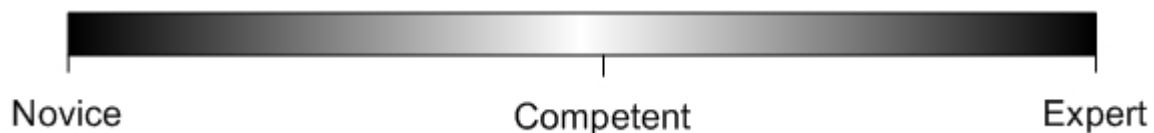
It is surmised from the survey that the CMTM role is not generally acknowledged within organisations, perhaps because parameters for CMTM competence and indeed performance have not been defined. This may be seen by many as necessary for ensuring that competence in different aspects of the individuals' job is translated into performance, as a whole. Until this is recognised the individual is being paid and assessed for only part of their function.

It can also be concluded that CMTMs are in general not being properly trained, supported and developed for their CMT role (which will be discussed further as a micro theme). Therefore setting the competencies and competence element model in context, by integrating them into an expertise framework, will allow a standard industry approach to CMTM competence and expertise development.

*Key theme two:*

**The research proposes that expertise levels can be graded from novice to expert, when integrated with competencies and mediating factors within a CMTM expertise framework.**

The literature review, supported by the CTA, allowed three basic levels of CMTM expertise to be identified, based on the Dreyfus & Dreyfus (1984) model (supported by Shanteau, 1992) defined as; novice, competent/proficient and expert (see figure five).



*Figure five: Expertise continuum based on the work by Shanteau (1992)*

The literature review and the CTA support the view that novices contribute and take action as part of a CMT by learning a set of rules which are initially based on plans, procedures and other members' knowledge. This combined with their own past knowledge (acquired competencies), deliberate practice (Ericsson et al, 1993) and deliberate experience (Ollis et al, 2006) develops into a schema or knowledge structure which is the basis of their actions/decisions as part of the team. Conversely, experts can automatically retrieve (Fitts & Posner 1967) an answer to a problem based on their existing knowledge structure, which has been compiled and refined through experience, deliberate practice and team interaction.

This leads to a different way of contributing to the team, by being flexible in approach (adapting), experts are able to make faster and more suitable decisions than novices, demonstrating the need for a structured competence and expertise development mechanisms.

The literature theorised, and CTA substantiated, that novices and experts have very different approaches (as a result of differences in their knowledge structures) and as a result, will respond to incidents in very

different ways. This knowledge structure evolves from deliberate practice (Ericsson et al, 1993); training, feedback (Ericsson, 1996) and action combined with previous relevant experience cues. However, the development of CMTM expertise (as identified and discussed by Paton & Flin, 1999, Alexander, 2003) through deliberate practice or deliberate experience is limited by the infrequency of crises.

CMTM's knowledge structures determine how they will respond, what actions or decisions are relevant and will generate future actions/decisions/outcomes from these basic schemas (Piaget in Satterly, 1987). They also contribute to how the individual perceives the crisis (Turner, 1994), their situational awareness (Endsley, 1995) and what they perceive their CMT role to be. The literature review showed a direct relationship between expertise levels, skill acquisition levels, response basis and information processing ability, which is summarised in figure six.

*Figure six: Literature review compilation of relationships which develop CMTM knowledge structures*

	<b>Expertise / Skill Acquisition Level</b>		
	<b>Novice</b>	<b>Proficient</b>	<b>Expert</b>
<b>Response Basis</b>	Procedural	Rule Based	Intuitive
<b>Skill Acquisition Level</b>	Routinised	Semi-automatic	Automatic
<b>Information Processing Ability</b>	Effortful	Effortless	Automatic

From the literature review and the CTA, it was expressed that CMTMs, at a proficient level or below, lack flexibility and adaptability in their approach as a result of incomplete knowledge structures. Experts conversely, have a more complete knowledge schema, based on experience, training and self-regulated learning (Pintrich, 1999). The literature research conclusions were confirmed by both the survey and the CTA.

The CTA developed the four key competencies identified from the literature review and categorised by the survey, to produce a hierarchy of 21 competencies, rated essential, desirable and less important. The resulting exemplar behaviours allowed the development of the basis of the CMTM Expertise Framework, which encompasses both the seven essential identified competencies (figure two) and the Competency Elements model (figure three).

Using the basic levels of expertise development as a basis (figure six), the learning from the literature review, informal benchmark, survey and CTA, demonstrates the development of CMTM expertise is influenced by nine aspects: procedural & tacit knowledge; personal competencies; personality; skill acquisition; information processing; natural competencies; acquired competencies; and levels of expertise.

Recognising the integrated nature of performance, based on all of the elements outlined in the CMTM Elements Model, the research proposes a prototypical-integrated model of CMTM Expertise Development, which is shown below.

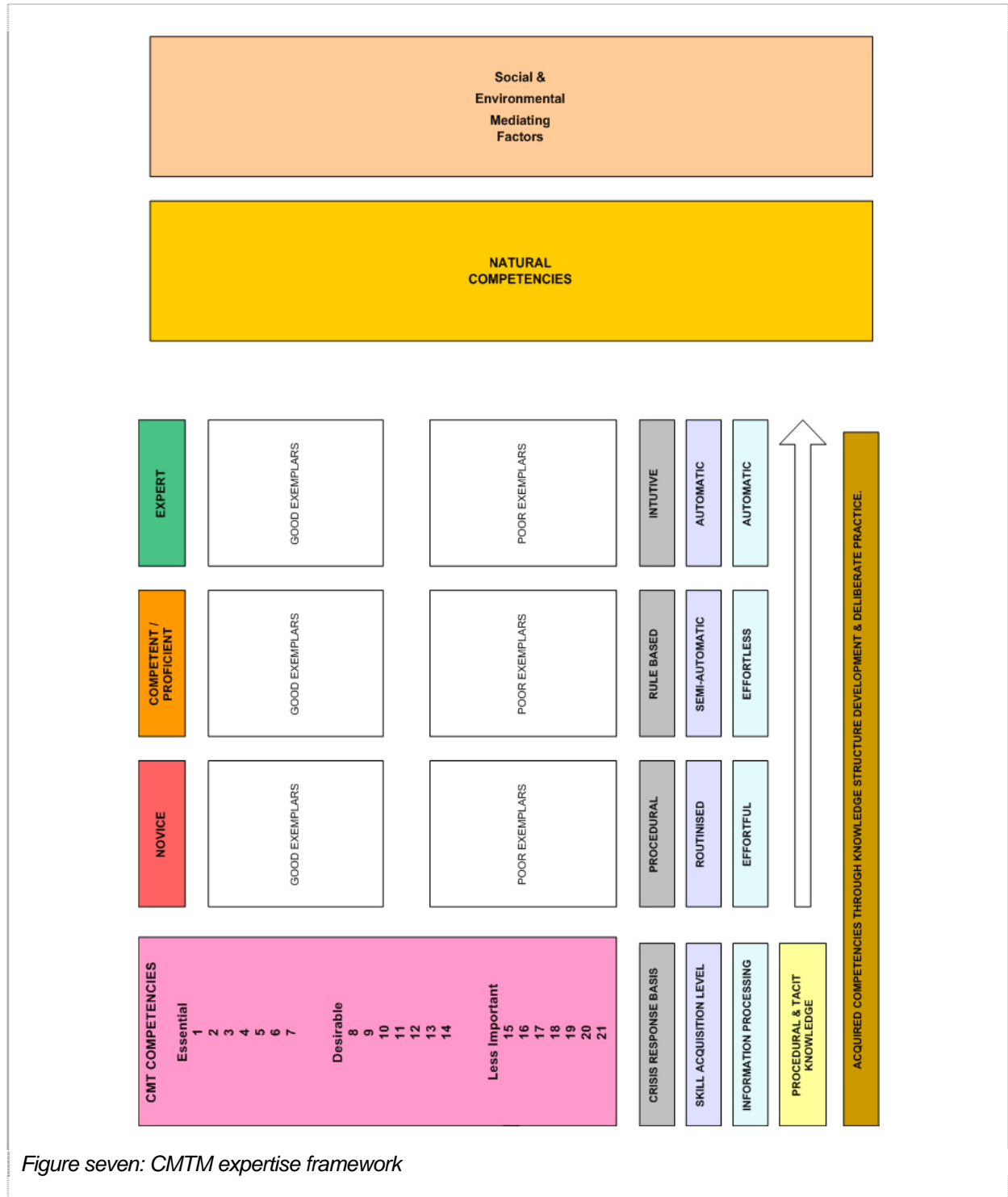


Figure seven: CMTM expertise framework

The model is a synthesis of integrated themes, which emerged out of research, that interact and interlock to provide a framework which explains how CMTM expertise is developed. This proposed CMTM expertise framework allows each individual to continuously improve and to provide demonstrable evidence of expertise in their CMTM role and integrates the four active elements for learning: watching, thinking, feeling and doing as proposed by Kolb (1984).

It must be stressed that the model is set in a contextual framework of mitigating factors which are unable to be controlled or anticipated but will have a direct influence on competence, expertise development and performance.

*Key theme three:*

**The study proposes CMTMs can progress beyond competence by developing meta-competencies.**

Two competencies, identified from the research: 'self confidence' and 'adaptability' were defined by the experts during the CTA as the differentiators in expertise levels. These competencies appear to be critical to expertise development through self-regulated reflection (Schon, 1983) and as a result may be considered as meta-competencies (Hall, 1986).

According to the literature and CTA, the activation and development of non-technical competencies is overseen by these two meta-competencies. These are the higher order, meta-cognitive competencies (Davidson, Deuser, & Sternberg, 1994) which determine the CMTM's ability to acquire other competencies for the future. In turn, that further develops the ability to learn from experience and to develop and enhance new competencies. These two meta-competences affect the ability to acquire other competencies or to modify existing CMTM knowledge structures.

Self-confidence and adaptability are competencies in their own right but the research suggests CMTMs at an expert level must master these (at a meta-cognitive rather than cognitive level) to progress beyond expert level towards adaptability. Reaching an expert level of CMTM expertise with acquisition of these meta-competencies may lead *beyond* an expert level of CMTM competence to a level of mastery, however further research is needed to substantiate this conclusion. The development of competence (thus gaining expertise) has been concluded from the research to be a function of learning and the development of knowledge structures, which may be mediated by these meta-competencies.

### **Macro level summary**

In summary, the research identified that CMTM's competence is dependant upon seven essential competencies that allow for their level of expertise to be gauged and developed, within an expertise framework. However, competence and expertise will be mediated by self, social, task, organisational, team and environmental factors. Using the critical realism approach (Robson, 2002), two meta-competencies (adaptability and self-confidence) emerged from the research which provided for the difference between novices' and experts' ability to move from routinised to improvised, adapted behaviour.

Meta-cognitive development (i.e. the development of adaptability and self-confidence as meta-competencies) appears to largely be a function of the interactive relationship between competence attainment (working to a prescribed level, demonstrated through behavioural outcomes of the seven competencies identified), competence elements (identified in the CMTM competency element model), deliberate practice (Ericsson, 1996), deliberate experience (Ollis et al, 2006) and self regulated reflection (Schon, 1983, Pintrich, 1999) mediated by social, team, organisational and environmental factors.

The development of the competencies, competencies model and the expertise framework allow individuals and organisations to assess their competency levels, allowing for specialised training and development programmes to be developed. Although these are the key outcomes from the three studies, five additional themes also emerged, particularly from the practitioner survey and from the CTA.

Each of these themes are now discussed individually, briefly, below.

*Emergent theme A:*

**Current CMTM practice shows non-technical skills are not addressed, however, CMTMs perceive themselves as experts.**

The survey showed some key themes from current CMTM current practice which demonstrated that non-technical (i.e. cognitive and interpersonal) skills are not explicitly addressed as part of current working practices. It also found that attention needs to be paid to these non-technical skills as part of a wider appreciation for CMTM's roles and that the only way for those to be achieved would be from an examination of CMTM behaviours in their specific CMT role.

The survey illustrated that the majority of CMTMs had a maximum of three years experience in business continuity management, but had been in the workforce for between 21-25 years, showing they brought with them significant experience and tacit knowledge from their previous roles. They did however rate themselves as experts in their current position, conflicting with the literature on deliberate practice, which would classify them nearer the novice rather than expert level. The majority of respondents with this view also did not hold any relevant BC/CM qualifications. This suggests a perception of competence, which is out of sync with the defined literature; even a dangerous overconfidence in their abilities.

Howell (1982) describes competency states and, from the literature, the 'unconsciously incompetence' mode seems to articulate the findings of the research:

*"Unconscious incompetence – At this lowest level of performance, people are not only doing badly, but perceiving failure as success. They make mistakes and don't know it. To be the unconsciously incompetent member of a work team, this may be a blissful condition, but the other members of the team do not share the bliss and will not tolerate the situation for long."* [p.30].

By generating a competence profile and expertise model from the research, it may promote discussion in the industry and allow CMTMs to reframe their competence in an attempt to move towards an expert level of expertise. The results showed that there is a discrete disparity between the current literature on deliberate practice and learning through experience, with the current practices and perceptions provided by the survey.

CMTMs have a perception of competence with no substantial evidence to back up their claims as experts, as by their own admission they have no selection process or criteria, limited introduction training (if any), and little developmental training to ensure their skills are kept current. A key area to examine in future research is whether there is an over-estimation of CMTMs' skill levels.

Survey responses also show that CMTM roles are normally part of an individual's day-to-day role, but that their CMT role is not covered by their organisation's performance management approach. This shows that both the organisation and the individual may undervalue the role. Respondents also highlighted that the majority of CMTMs are not chosen to join a CMT which raises questions like; how does the organisation know they are an appropriate person to join the team? Does the individual synergise with the team? Are the

team dynamic and skill levels appropriate? This is a key finding from the survey and indicates that when organisations recruit they do so for the main role and not for the CMT element. This suggests no-one has 'approved' their selection to the team, assessed their competency, and therefore the organisation cannot currently 'prove' its CMT competency.

*Emergent theme B:*

**Perceived control is a key element which differentiates CMTM experts and novices.**

The CTA showed that the difference between novices and experts, who respond to a given crisis, lies with their perceived level of control. If the individual has evidence of competence, their level of perceived optimism or helplessness will impact on their perceived level of control (Seligman, 1998). This in turn will impact on their self-confidence or self-efficacy (or psychological distress) of how they feel they can handle the situation. In turn, affecting the way the individual adapts to the circumstances, which affects how they will perceive the problem and how they can adapt their existing knowledge structure/schemas to it. If their level of efficacy is high, their approach and mindset optimistic, they will be more motivated to positively contribute to the team/situation and, from the literature, will be more willing to take on board learning points to modify their responses for the future. Leading, again, to an increase in competence and expertise levels.

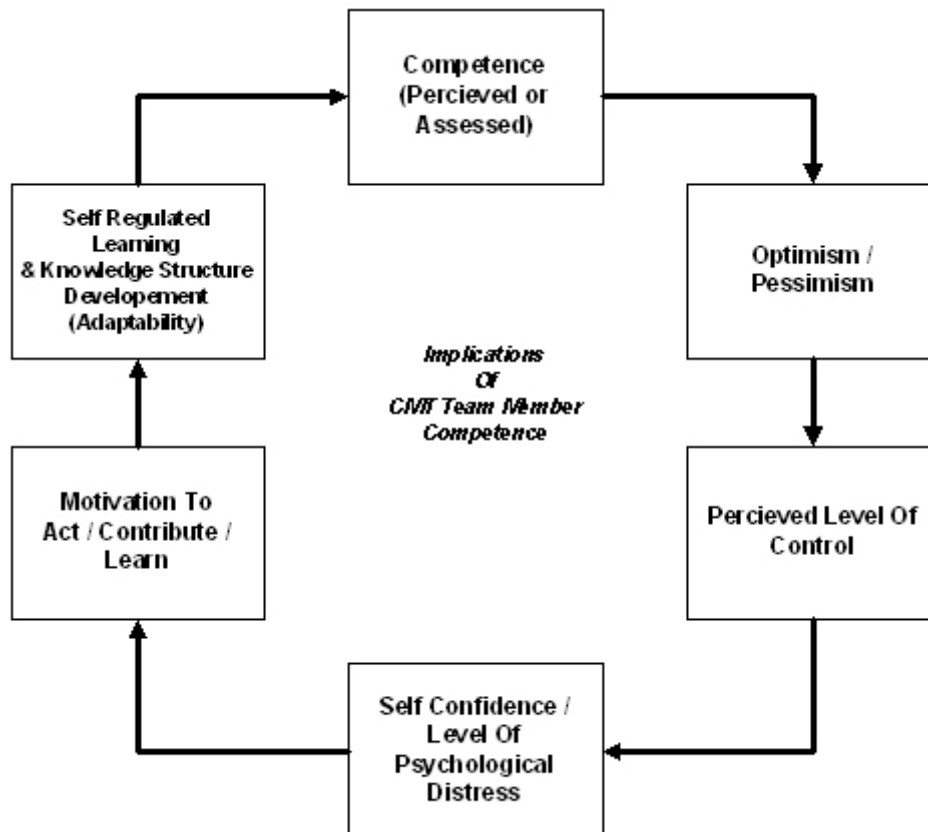


Figure eight: Implications of CMTM competence

The research showed that experts and novices differ in their range of actions and their ability to alter their existing knowledge structures. This finding is consistent with Orasanu & Connelly's (1993) published work. Situational awareness between experts and novices was also found to be at a different level and supports the literature review, which showed it is more limited in novices, as they haven't fully defined knowledge structures. This in turn, supports Nobles' (1993) research which shows expert actions and behaviour is schema driven. The diagram in figure eight (above) outlines this cyclical process, as found by the research.

*Emergent theme C:*

**CMTMs receive little training and development.**

The research showed that formal training of CMTMs has predominantly focused on developing knowledge, role expertise and technical skills but not on the softer skills which are critical to competence. Integration of these non-technical skills may contribute to better CMTM performance (Crichton, Lauche & Flin, 2005). The results of the survey also showed that self-regulation of learning (Pintrich, 1999) and expertise development was minimal among CMTMs. The research from the literature review and indeed as described above, shows a need for individuals to self regulate their own learning to contribute to adaptation of their knowledge structures (Schon, 1983). The majority of respondents believed that initial training (if any was provided) along with an annual exercise is enough to promote competence in CM, in contrast to the theories examined as part of the literature review (Ericsson, 1996).

Piaget (in Satterly, 1987), Kolb (1984) and Lewins' (1942) models of learning, show that self-reflection and specific feedback are mechanisms that transfer experiences to learning, allowing individuals to develop new mental models/schemas/knowledge structures which they can use to guide a better response in the future.

The research also showed that exercises, also called simulations, are key in allowing CMTMs to develop their knowledge structures, through experience and interaction. However, the majority of CMTMs only participate in one exercise per year with no supplementary training, providing a substantial reliance on an annual one-off event for learning, training and development.

The survey also found an absence of structured individual feedback on performance, demonstrating that CMTMs do not receive the recognition for their role, in most organisations. This lack of feedback limits the development of schemas, effectively limiting the individual's level of competence and thus collective organisational competence. A CMTM's competence ceiling, therefore, may remain static through lack of structured feedback, development and training but participation in exercises leads to an increase in the individual's confidence and thus a perception of increased competence, which may not be true in practice, explaining the views put forward in the survey.

In addition, the survey also showed that induction training, which is considered the key to most business roles, where provided, was based on the basics of business continuity management and not specifically on crisis management or its response.

The results of the survey show that training for CMTMs appears to be minimal, which is disturbing given the emphasis placed on crisis or incident management by organisations today. A small percentage of CMTMs received induction training for their role but only 3.8 percent have received any psychological skills training. Given that crises are events which incur significant psychological stress, organisations do not appear to be providing a duty of care to their CMTMs.

CMTMs may experience many crises of differing magnitudes over their time as part of a CMT, which may impact on the individual's wellbeing, over time. Organisations are not 'psychologically preparing' their CMTMs and there is a real need arising from the literature to integrate human factors into CMTM's training and development.

*Emergent theme D:*

**CMTMs rely on their acquired competencies (past knowledge) to perform.**

As the majority of respondents have not been in crisis management for more than three years, equating more to a novice level of expertise, they are specifically reliant on past experiences and knowledge from other roles. This may include both the non-technical and technical elements of their CMTM role. It is important to state that these past experiences will develop towards schemas and how they respond to incidents but that skills can regress unless maintained and updated. Further research is needed to identify how this past experience contributes to CMTM competence.

*Emergent theme E:*

**CMTMs rely on crisis management plans and procedures.**

From the information gathered from the survey, CMTMs are reliant on crisis management plans and procedures, not only to guide their response but also for clarifying their role and responsibility. This is concerning as most decisions taken by CMTMs and indeed the CMT are naturalistic (Klein, 1997).

The research shows that CMTMs may be overly reliant on plans and procedures but adaptability or flexibility in approach was defined by experts as the key competency for successful crisis management. This suggests that most respondents are at a novice/proficient level of competence and not the expert level they perceive themselves to be at.

The CTA also uncovered an aspect of CMTM performance not addressed by the literature review or the survey; that novices must learn 'social' aspects as part of competence attainment, as well as technical and non-technical skills. CMTMs must understand and align themselves with the norms and culture of the CMT which in itself is a competency. This finding complements Lave & Wenger (1991), who state that novices must learn social and cultural norms to develop competence and highlights the importance of these factors as part of the CMTM expertise framework.

Transactive memory (Mitchell & Nicholas, 2006) was also identified by the experts at the CTA session, which had not been addressed earlier in the research. This suggests that novices base their knowledge and experience on others in the CMT and adjust their own behaviour to suit. In effect, learning from others' experience. If this is indeed a learning mechanism used by CMTMs, the survey suggests that the annual exercise is the primary mechanism for this knowledge transfer. Other mechanisms in addition to the exercise would be useful in allowing novice members to learn from others, such as shadowing or buddy systems whereby feedback is individual, appropriate and timely delivered to develop competence and expertise.

## Limitations of the research

---

It has been argued that CMTM's competence is not a static construct. It develops and regresses depending on eight competency elements and two meta-competencies. Production of the CMTM's competency elements model and expertise framework will allow an assessment of competence or expertise only for a brief snapshot in time. Although many theories on competence and indeed expertise show discrete stages of expertise development (Bloom, 1985, Dreyfus & Dreyfus, 1986), Jones (2004) argues that it is an 'emergent property', fluid and fluctuating, depending on context, task, environment and human factors. This must be considered in the application of the CMTM competencies, the competency elements model and supporting expertise framework devised from this research, particularly if the proposed expertise framework is used for assessment purposes.

Given the unpredictable and dynamic nature of crisis management (Flin, 1996), the limitations of being unable to gain 'deliberate practice' (Ericsson et al, 1993) may hinder the development of competence, even if the model of competency and expertise framework has been accepted by an organisation.

## Overview of the three studies

---

The research showed that a CMTM can become an expert in their role, but competency and expertise are not static variables, they are mediated by eight different factors and a model has been proposed to illustrate this for CMTMs, in an attempt to start practitioner discussion.

The study showed the importance of self confidence in allowing self regulated learning to take place, and identified how little training and development was currently being undertaken by CMTMs.

The competencies and suggested models were built from information gained directly from the business continuity community and exemplars of behaviour for the essential competencies were provided by a panel of CMT experts, currently practicing in the field.

The difficulty with defining CMTM's competence was resolved by using observable behaviours, as a way to gauge expertise levels and performance.

The literature review and primary research found that the mindset of the business continuity community may be blinkered, with people believing their competence rates are far beyond what they can substantiate, specifically using the theories of deliberate experience and deliberate practice. To assist the business continuity community in applying the non-technical competencies, competence element model and expertise framework developed from this research, the author has devised further recommendations and tools for organisations to adapt, to assist them in developing their CMTM's competence and expertise, which will be published freely for the benefit of the whole business continuity community during 2007.

## References

---

- Alexander, D. (2005) *Towards the development of a standard in emergency planning*. Disaster Prevention and Management, 14 (2), 158–175.
- Bloom, B. S. (1985) *Developing talent in young people*. New York: Ballantine.
- Boyatzis R. (1982) *The competent manager: a model for effective performance*, New York: Wiley Interscience.
- Business Continuity Institute (BCI) (2003) *The Ten Certification Standards For Professional Practitioners* [on-line] available at: <http://www.thebci.org/certificationstandards.htm>
- Cannon-Bowers, J. and Salas, E. (1998). *Individual and Team Decision Making under Stress: Theoretical Underpinnings*. In Cannon-Bowers, J. and Salas, E. (eds.), *Making Decisions under Stress: Implications for Individual and Team Training*. Washington: DC, APA.
- City & Financial (2006) *Delegates Pack* [on-line] available at: <http://www.cityandfinancial.com/conferencedocumentation/>
- Coombs, T. W. (1999) *Ongoing crisis communication*. Thousand Oaks: SAGE Publications.
- Crichton, M., Lauche, K. and Flin, R. (2005). *Incident command skills in the management of an oil industry drilling incident*. Journal of Contingencies and Crisis Management, 13, 116-128.
- Darling, J.R. (1994). *Crisis management in international business: key to effective decision-making*. Leadership & Organisation Development Journal, 15 (8), 3-8.
- Davidson, J. E., Deuser, R. & Sternberg, R. J. (1994). *The role of metacognition in problem solving*. In J. Metcalfe & A. P. Shimamura (eds.), *Metacognition: Knowing about knowing*. Cambridge, MA: MIT Press.
- Dreyfus, H. and Dreyfus, S. (1984). *From Socrates to Expert Systems: The Limits of Calculative Rationality*. [on-line] available at [http://ist-socrates.berkeley.edu/~hdreyfus/html/paper\\_socrates.html](http://ist-socrates.berkeley.edu/~hdreyfus/html/paper_socrates.html). Accessed 12th May 2006.
- Dreyfus, H. L. and Dreyfus, S. E. (1986) *Mind over machine: The power of human intuition and expertise in the era of the computer*. Oxford: Basil Blackwell.
- Elliott, D., Swartz, E. and Herbane, B. (2002). *Business continuity management: A crisis management approach*. London: Routledge.
- Endsley, M.R., & Rodgers, M.D. (1994). *Situation awareness information requirements for en route air traffic control (DOT/FAA/AM-94127)*. Washington, DC: Federal Aviation Administration Office of Aviation Medicine. Available from: National Technical Information Service, Springfield, VA 22161; ordering no. ADA289649.
- Ericsson, K. A. (1996) *The road to excellence: The acquisition of expert performance in the arts and sciences, sports and games*. Mahwah, NJ: Erlbaum.
- Ericsson, K. A. (1996). *The acquisition of expert performance: an introduction to some of the issues*. *The Road to Excellence: The Acquisition of Expert Performance in the Arts and Sciences, Sports, and Games*. Mahwah, NJ, Erlbaum: 1–50.

Ericsson, K. A. and Smith, J. (1991). *Prospects and limits of the empirical study of expertise: An introduction. Toward a general theory of expertise: prospects and limits*. New York: Cambridge University Press.

Ericsson, K. A., Krampe, R. Th., & Tesch-Römer, C. (1993). *The role of deliberate practice in the acquisition of expert performance*. *Psychological Review*, 100, 363-406.

Ericsson, K.A., and Lehmann, A.C. (1996). *Expert and exceptional performance: Evidence of maximal adaptation to task*. *Annual Review of Psychology*, 47, 273-305.

Eysenck, M.W. (2002). *Psychology: A student's handbook*. East Sussex: Psychology Press Ltd. Publishers.

Financial Services Authority (2006) *Business Continuity Management Practice Guide*, on-line] available at: [http://www.fsa.gov.uk/pubs/other/bcm\\_guide.pdf](http://www.fsa.gov.uk/pubs/other/bcm_guide.pdf)

Financial Services Authority (2006) *Resilience Benchmarking Project Discussion Paper* [on-line] available at: <http://www.fsc.gov.uk/upload/public/Files/9/Web%20-%20Res%20Bench%20Report%2020051214.pdf>

Fink, S. (1986). *Crisis management: Planning for the inevitable*. New York: American Management Association.

Fitts, P. M, & Posner, M. I. (1967). *Human performance*. Belmont, CA: Brooks/Cole.

Fletcher, G.C.L, McGeorge, P., Flin, R.H., Glavin, R. J., and Maran, N.J, (2002) *The role of non-technical skills in anaesthesia: a review of current literature*. *British Journal of Anaesthesia*, 88 (3), 418-429.

Flin, R. H. (1996). *Sitting in the hot seat: Leaders and teams for critical incidents*. Chichester: Wiley.

Galton, F. (1874) *On men of science: Their nature and their nurture*. *Nature*, 9, 344-345.

Helmreich, R. L. (1997). *Managing human error in aviation*. *Scientific American*, 276 (5), 62-67.

Helsen, W.F., Starkes, J.L. and Hodges, N.J. (1998). *Team sports and the theory of deliberate practice*. *Journal of Sport and Exercise Psychology* 20, 12-34.

Hood, C. and Jackson, M. (1992), *The new public management: a recipe for disaster? Hazard management and emergency planning perspective on Britain*. London: James and James Science Publishers.

Howell, W.S. (1982). *The empathic communicator*. University of Minnesota: Wadsworth Publishing Company.

<http://www.cogsci.ecs.soton.ac.uk/cgi/psyc/newpsy?10.002>. Accessed: 3<sup>rd</sup> May 2006.

Hutchins, E. (1990) The technology of team navigation. In J. Galegher, R. Kraut, and C. Egidio (eds.) *Intellectual Teamwork*. New Jersey: Erlbaum.

Jones, P (2004). Designing for competence. In K. Smith, J. Shanteau, and P. Johnson, (eds) *Psychological investigations of competence in decision making*. Cambridge: Cambridge University Press.

Klein, G. (1997). The current status of the naturalistic decision making framework. In R. Flin, E. Salas, M. Strub & L. Martin (eds.) *Decision Making Under Stress: Emerging Themes and Applications*. Aldershot, UK: Ashgate Publishing Ltd. 11-28.

Klemp, G O (1977) Three Factors of Success. In D.W Vermilye (ed) *Relating Work and Education*. San Francisco: Jossey-Bass. 102-109.

- Kolb, D.A. (1984) *Experiential learning: Experience as the source of learning and development*. New Jersey: Prentice-Hall
- Lagadec, P. (1993). *Preventing Chaos in a Crisis. Strategies for Prevention, Control and Damage Limitation*. London: McGraw-Hill.
- Lave, J., and Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.
- Lewin, K. (1942/1951). Field theory and learning. In D. Cartwright (ed.), *Field theory in social science: Select theoretical papers*. New York: Harper and Row. 60-86.
- Mearns, K., Whitaker, S., & Flin, R. (2003). *Safety climate, safety management practice and safety performance in offshore environments*. *Safety Science*, 41, 641-680.
- Militello, L.G., Hutton, R.J.G., (1998) *Applied cognitive task analysis: a practitioner's toolkit for understanding cognitive task demands*. *Ergonomics*, 41, (11), 1618-1641.
- Mitchell, R and Nicholas, S (2006) *Knowledge creation in groups: The value of cognitive diversity, transactive memory, and open-mindedness norms*. *The Electronic Journal of Knowledge Management*, 4 (1), 67-74.
- Mitroff, I.I. (1988) *Crisis management: Cutting through the confusion*. *Sloan Management Review*, 29 (2), 15-20.
- Noble, D. (1993). *A model to support development of situation assessment aids*. In G. Klein, J. Orasanu, R. Calderwood & C. Zsombok (eds.), *Decision making in action: Models and methods*. Norwood, NJ: Ablex Publishing Company. 287-305.
- Ollis, S; Macpherson, A;& Collins, D. (2006) *Expertise and talent development in rugby refereeing: An ethnographic enquiry*. *Journal of Sports Sciences*, 24 (3), 309-322.
- Orasanu, J. & Connolly, T. (1993) *The reinvention of decision making*. In: G. A. Klein, J. Orasanu, R. Calderwood and C. E. Zsombok (eds.), *Decision Making in Action*. Norwood, NJ: Ablex Publishing Company. 3-20.
- Parry, S.B. (1996). *The quest for competencies*. *Training*, 33 (7), 48-54.
- Paton, D. & Flin, R. (1999) *Disaster stress: An emergency management perspective*. *Disaster Prevention and Management*, 8, 261-267.
- Paton, D. (1999) *Disaster business continuity: promoting staff capability*. *Disaster Prevention and Management*, 8 (2), 127-133.
- Piaget, J. (1995). *Sociological studies*. London: Routledge.
- Pigeau, R. and McCann, C. (2002). *Reconceptualizing command and control*. *Canadian Military Journal*, 3 (1), 53-63.
- Pintrich, P. R. (1999). *The role of motivation in promoting and sustaining self-regulated learning*. *International Journal of Educational Research*, 31 (6), 459-470.
- Rasmussen, J., Brehmer, B., J. Leplat, J. (eds.). (1991). *Distributed Decision Making (Cognitive Models for Cooperative Work)*. Chichester: John Wiley and Sons.

Reason, J. (1990). *Human error*. Cambridge: Cambridge University Press

Roberts, G. (1997). *Recruitment and Selection: A Competency Approach*. London: Institute of Personnel And Development.

Robson, C. (2002) *Real World Research* (2nd edn.) Oxford: Blackwells.

Salas, E., Weaver, J. and Cannon-Bowers, J. (2002) *Command and control teams: Principles for training and assessment*. In: Flin, R. and Arbutnot, K. (Eds.), *Incident Command: Tales From The Hot Seat*. Aldershot, UK: Ashgate.

Salas, E., Weaver, J. and Cannon-Bowers, J. (2002) *Command and control teams: Principles for training and assessment*. In: Flin, R. and Arbutnot, K. (Eds.), *Incident Command: Tales From The Hot Seat*. Aldershot, UK: Ashgate.

Satterly, D. (1987). Piaget and education. In: R.L Gregory, (ed.) *The Oxford Companion to the Mind*. Oxford: Oxford University Press.110-143.

Schön, D. A. (1983) *The reflective practitioner: how professionals think in action*. New York, Basic Books.

Seligman, M. E. P. (1998). *Learned optimism: How to change your mind and your life* (2nd ed.). New York: Pocket Books.

Shanteau, J. (1989). *Psychological characteristics and strategies of expert decision makers*. In B.Rohrman, L. R. Beach, C. Vlek, and S. R. Watson (Eds.), *Advances in Decision Research*. Amsterdam: North Holland. 203-215.

Shanteau, J. (1992). *Competence in experts: the role of task characteristics*. *Organisational Behaviour and Human Decision Processes*, 53, 252-266.

Shrivastava, P., Mitroff, I.I., Miller, D., and Miglani, A. (1988). *Understanding industrial crises*. *Journal of Management Studies*, 25 (4), 285-303.

Skoyles, J.R. (1999). *Human evolution expanded brains to increase expertise capacity, not IQ*. [on-line] available at: <http://www.cogsci.ecs.soton.ac.uk/cgi/psyc/newpsy?10.002>. Accessed: 3 May 2006.

Smart, C and Vertinsky, I. (1977). *Designs for crisis decision units*. *Administrative Science Quarterly*, 4, (4), 640-657.

Spencer, L. M., and Spencer, S. M. (1993). *Competence at work: Models for superior performance*. New York: John Wiley.

Turner, B. S. (1994) *Orientalism, Postmodernism and Globalism*. London: Routledge.

Watson, J. B. (1925) *Behaviourism*. London: Kegan Paul & Co.

Weiner, A. J. and Kahn, H. (1972) *Crisis and arms control*, in C.F Hermann (ed), *International Crises: Insights from Behaviour Research*. New York, NY: The Free Press.

Wiener, E., Kanki, B. and Helmreich, R. (1993). *Cockpit Resource Management*. San Diego: Academic Press.

Wright, M., Turner, D. & Horbury, C. (2003) *Competence Assessment for the Hazardous Industries*. Research Report 086 [on-line] available at <http://www.hse.gov.uk/research/rrpdf/rr086.pdf>. Accessed 3rd April 2006.

Yule, S., Flin, R., Paterson-Brown, S., & Maran, N. (2005). *NOTSS: A non-technical skills taxonomy for surgeons*. Association of Surgeons of Great Britain and Ireland annual meeting, Glasgow, April. [on-line] available at <http://www.abdn.ac.uk/~psy296/dept/Aberdeen%20NOTSS%20project%20home.htm>. Accessed 28<sup>th</sup> January 2006.

## REVIEWERS' COMMENTS

The author sets out some early and commendable assertions such as trying to bridge the gap between academia and business and how individuals might just be 'cultivated and developed towards expertise'. However, I am not sure just how successful these and other logical themes were developed throughout 21 pages of very otherwise interesting reading?

Other very welcome observations refer to 'crisis management plans being only as good as those managers and teams implementing them' and how (in my words) unusual situations demand unusual responses, rather than conformity with usual protocols.

Throughout the paper were several clear diagrams, although some such as crisis management team competences did not include otherwise useful member competences such as lateral thinking (Edward de Bono) or a consideration of team and work roles (Meredith Belbin) as well as the often used revised model of situational leadership (Hersey & Blanchard). I think it might have been useful to also refer to these.

It was good, indeed, to read the outcome of part empirical research which showed that 'the CM team members role is not generally acknowledged within organisations' (how very true) notwithstanding an analysis of 'CM team members had a maximum of three years BC experience'. Also that exercises 'are key in allowing CM team members to develop their knowledge structures through experience'. The same research suggested that on average less than 4 percent of CM team members had received any psychological skills training and 'how little training was currently being undertaken by CM Teams'.

Apart from some otherwise very interesting comments, a particular area where the paper seemed to have somewhat artificial restrictions was the constant reference to the 'business environment' which rather excluded the public sector. A counter view might suggest the concept of crisis management team members has no such boundaries? However, given the background of the author this is an understandable reference point.

It would also have been very interesting indeed to see comment on BS 25999 and I believe it's misplaced guidance insofar that crisis management is not really that but 'incident management' instead. For many people the noun crisis is more accurate, eponymous and easy to understand. I am in one sense glad the author refers to crises rather than the rather vague term 'incidents' but can only assume this work was completed before BS 25999 was published otherwise I sense this might have been commented on. At least I hope so.

So, in a world where the extraordinary has become commonplace and the unexpected is now regularly anticipated it is good to read this paper, albeit with some doubts that I have just expressed. I think the author

might agree with me that the noun crisis is in fact a lay term – albeit in search of scholarly meaning and in this sense the author is to be congratulated.

*Peter Power, FBCI*

**Case studies show that** success or failure in managing a serious incident depends far more on the way it is handled than its cause, scale or impact. The ability to measure and improve the competence of the team who would attempt to manage the crisis is therefore imperative since this team is usually assembled by default rather than chosen on merit. The finding that team members perceive themselves as experts when their experience in crisis management would rate them as novice level is particularly concerning implying dangerous overconfidence.

The conclusions reached by the paper are probably no different to those we would suspect intuitively but by analysing the components of competence, through the literature and practical research, pointers emerge as to how best to improve it. There is clearly a need to focus training on soft skills rather than knowledge and technical skills and it is suggested that simulation exercises offer the best way to develop these. It will be interesting to see what tools and further recommendations for competence development of the CMTM emerge from this research later in the year.

*Ian Charters FBCI*

**The crisis around the loss of oil rig Piper Alpha**, in 1988, raised concerns about the effectiveness of crisis management teams. Crises pose particular problems for management teams and their members; intense demands are placed upon the team and the individuals who comprise it. These demands may arise from the uncertainty and dynamism as an incident unfolds, difficulties compounded by limited information flows and tight deadlines for decision making. For the individual, crisis management team member's (CMTM), responding to a crisis incident is likely to be a long way removed from the day to demands placed upon them. The cultural values that underpin rules of communication in daily routines may be inapt to crisis scenarios. It has been argued that CTTM's not only have to handle a crisis incident but they have to resist falling into the operating norms that suit routine operating practices. The police at Hillsborough spring to mind as one extreme example (see Elliott & Smith, 1993).

Thus this paper deals with the important question of what constitutes the 'right stuff' with regard to the individual's who make up a crisis management team. That the study emerged from an inconclusive discussion is not surprising. To put into practice the understanding we have of how to make teams more effective is not an easy task for routine activities. The uncertainty and dynamism, characteristic of crises, makes this even more difficult. A strength of this paper is to flag up the importance of this issue – one test of BCM is in how effectively incidents are managed, and the effectiveness of the team tasked with handling crises is an important factor in achieving this. The paper reviews much of the relevant literature and provides a thought provoking examination of the types of important competences.

But to play devil's advocate, I wonder whether the focus upon the individual is apt. A key issue identified by Anderson is the distinction between members of a crisis team there by virtue of their specialist knowledge (HR or IS for example) and those there because of their 'behavioural' style. Some personalities seem better able to deal with the peculiar demands of managing a crisis than others. This leads me to question the use of Ericsson's work and the implicit assumption that crisis management expertise can be developed – Ericsson suggests that 10 years or 10,000 hours of deliberate practice leads to 'expertise'. But Ericsson's concern, I believe, was with individuals rather than teams, and a well established view is that teams are greater than the sum of their parts. To use an analogy from sport, Martin O'Neill's success with Leicester

City football club (I confess a personal interest) arose from an ability to pick of team of largely uninspiring individuals and to make them click. O'Neill seemed able to identify individuals with the basic technical competence in key areas and also their behavioural suitability to fit within the team.

Lorna Anderson's goal is the creation of a 'road map... [to] allow the identification and recognition of the range of knowledge, skills and behaviours that are required as a CMTM.' A next step in this important study must be to evaluate whether predictions deduced from the study's findings are supported by evidence from real life crisis management or, from crisis simulations – I look forward to seeing the results!

*Dominic Elliott BA MBA PhD FBCI*

*Professor of Business Continuity and Strategic Management, University of Liverpool Management School*

---