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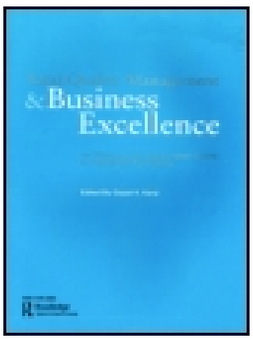

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Towards a quality management competence framework: exploring needed competencies in quality management

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Few empirical studies have focused on what quality management practitioners *actually do*, with even fewer studies focusing on what *it actually takes* to do quality management work, i.e. the competencies of quality management. The purpose of this paper is to introduce a competence-based terminology for describing general competencies of quality management work in organisations and to create a competence framework in order to understand what is needed to be a quality management practitioner. This paper is based on an embedded, qualitative multiple-case study design incorporating four Swedish large size organisations where designated quality management practitioners ($n = 33$) were selected and interviewed. A quality management competence framework incorporating four main quality management competence dimensions is presented: the human, the methods & process, the conceptual and the contextual competence dimensions. Four generic quality management role responsibilities are also posited: centralised & strategic, centralised & operational, local & strategic and local & operational role responsibilities. The competencies and role responsibilities are discussed in relation to the notion of emergent quality management and the emerging need of more integrative and business excellence-oriented quality management.

Keywords: quality management; practitioner; competencies; responsibility; professional

1. Introduction

What are the competencies needed to be a quality management practitioner? This fundamental question is rarely asked (nor answered) within quality management research. Given the current debate on the changing and emerging nature of quality management (e.g. Weckenmann, Akkasoglu, & Werner, 2015; Zhang, Linderman, & Schroeder, 2012), it should be a highly relevant question to ask for any organisation striving for business excellence (Fundin, Bergquist, Eriksson, & Gremyr, 2018). Within the field of quality management, this question should also strike somewhat of an existential note. Indeed, there are studies anticipating a possible 'phasing out' of quality management, perhaps dispersing its practices to other professions and professionals (e.g. Waddell & Mallen, 2001). The heart of the matter is that if it is not really known what quality management practitioners are, nor how to use them, why should an organisation be expected to

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employ quality management practitioners at all? This paper is an effort to demystify the role of the quality management practitioner and take a closer look on what it actually takes to be one.

Focusing on the competencies of quality management practitioners, this paper adheres to the notion of competence as *the potential for performance in a given situation* (lEllström, 1992, 1997). The term *quality management* is conceptually established as practices, principles and techniques facilitating customer focus, continuous improvement and teamwork (Dean, Jr. & Bowen, 1994) and product quality (Sousa & Voss, 2002). The use of *professional* and/or *profession* in quality management research and reports is widespread (e.g. Antony, 2013; Fundin, 2018; Kolb & Hoover, 2012; Sörqvist, 2014). However, using *professional* and *profession* entails certain theoretically grounded obligations, e.g. formal education, legitimacy, licencing and codes of ethics (e.g. Abbott, 1988; Evetts, 2003; McClelland, 1990), none of which can be said to be adequately prominent within the field of quality management. In this paper, the rather less ambitious occupational labels of *practitioner* and *practice* (Schatzki, 2001) are preferred. A *practice* is a defined set of rule-based actions, guided by specific and affectively agreed purposes, collectively understood and agreed upon within the practitioner community, thus establishing a social order (Schatzki, 2001). Quality management practitioners represent a social order of employees responsible for performing quality management practices.

While research on quality management has received attention for decades (starting with Shewhart, Deming & Juran in the 1930s), there have been relatively few empirical studies elaborating on the actual practices of quality management and its practitioners (Elg, Gremyr, Hellström, & Witell, 2011). Even fewer have acknowledged the need for a competence framework, describing what is required to perform quality management. A recent contribution by Ingason and Jónsdóttir (2017) appears to be the first real attempt within the field of quality management to empirically derive a more comprehensive understanding of quality manager competencies. This paper transcends the practitioner-oriented approach of Ingason and Jónsdóttir (2017) in adopting a theoretical understanding of competence and also extending the scope of roles beyond managers to include the whole range of quality management practitioner roles. Following this introduction, the purpose of this paper is to introduce a competence-based terminology for describing general competencies of quality management work in organisations and to create a competence framework in order to understand what is needed to be a quality management practitioner. In line with this purpose, three research questions are proposed:

- RQ1: What general practitioner competencies can be identified within quality management practices?
- RQ2: What generic quality management role responsibilities can be identified in quality management practices?
- RQ3: How can the role responsibilities and competencies of quality management practitioners be conceptualised into a competence framework?

2. Previous literature

Existing and future challenges for quality management have been a recurring theme since the turn of the last century (e.g. Sousa & Voss, 2002). A current research stream on the general development of quality management and its conceptual foundations concerns the expressed need for quality management to be much more adaptive and context-sensitive (e.g. Eriksson et al., 2016; van Kemenade, 2014; Weckenmann et al., 2015). A key theme in this research is the need for quality management to accommodate both incremental

and radical improvement (i.e. quality management for *organisational ambidexterity*, e.g. Fundin et al., 2018; Luzon, D, & Valls Pasola, 2011).

Zhang et al. (2012) draw on March (1991) in describing two types of quality management practice: quality exploitation and quality exploration. Cole and Matsumiya (2007) discuss the tendency for quality management to be overly biased towards exploitation rather than exploration, thus constraining ambidextrous possibilities. To counter this, both Benner and Tushman (2015), Zhang et al. (2012), and Dahlgaard-Park (2011) argue for properly tailored quality management to facilitate organisational ambidexterity. Recent attempts to address the issue of facilitating organisational ambidexterity are represented by Backström (2017) and Fundin, Bergman, and Elg (2017) in their description of *the quality dilemma* (i.e. the balance and coordination between exploitation and exploration in quality management) and *emergent quality improvement* (i.e. the interaction of exploitation and exploration for quality management within one organisational system). Backström (2017) and Fundin et al. (2017) interconnects *internal efficiency* (i.e. 'doing things right') and *external effectiveness* ('doing the right things') as key factors in managing the quality dilemma. Both Backström (2017) and Fundin (2018) discuss possible strategies for emergent quality improvement.

Though there is an abundance of literature on competence and competence models (e.g. Boyatzis, 1982; Bartram, 2005; Delamare Le Deist & & Winterton, 2005; Kurz & Bartram, 2002; Mulder, 2014), literature focusing on quality management practitioner competencies is scarce. The existing quality management literature on this topic can be divided into two main domains: peer-reviewed research and practitioner literature. Within the domain of peer-reviewed research literature, the topic of competencies for quality management is virtually non-existent. In Carnerud (2018) analysis covering 25 years of main topics in quality management research, quality management competencies are not mentioned. Competencies for quality management are mostly indirectly addressed when addressing quality management and its conceptualisations (e.g. Anttila & Jussila, 2017), factors for successful quality management (e.g. Sila & Ebrahimpour, 2003) or when addressing current and future development of quality management (e.g. Antony, 2013; Dahlgaard-Park, 2011; van Kemenade, 2014; Sandholm, 2005; Sörqvist, 2014; Weckenmann et al., 2015).

Several studies address issues on quality manager roles and provide lists of roles and role descriptions that touches upon (but does not elaborate on) competence-related issues (e.g. Addey, 2004; Burcher, Lee, & Waddell, 2008; Evans, 2013; Waddell & Mallen, 2001). Practices in quality management have also been a recurring theme since Dean, Jr. and Bowen (1994) laid the foundation for re-conceptualising quality management and is the focus of several articles (e.g. Dahlgaard, Kristensen, Kanji, Juhl, & Sohal, 1998; Lee, 2002; Zhang et al., 2012). Practices are sometimes discussed in relation to roles (e.g. Elg et al., 2011) but seldom elaborated on in terms of competencies. Leadership in quality management is another theme in related research (e.g. Albacete-Sáez, Fuentes-Fuentes, & Bojica, 2011; Das, Kumar, & Kumar, 2011; Lakshman, 2006), often relating to managerial skills but with few studies incorporating leadership skills in a competence model. The rather disjointed approach of either roles, leadership or practices has led to recent calls for a more direct and comprehensive approach in exploring and defining the actual competencies required for quality management (e.g. Rogala, 2016).

Within the domain of practitioner literature on quality management, the tasks and roles related to quality management are preeminent. Both the American Society for Quality (ASQ) and the European Organization for Quality (EOQ) provide extensive lists of different quality management tasks and roles. Literature relating to the competencies needed to perform tasks and roles is scarcer and seem to be more common within specific certification

programmes linked to chartered practitioner bodies. American (ASQ) and Japanese (JUSE) chartered practitioner bodies have pioneered definitions of roles, tasks and competencies in their extensive standards certification programmes. As an example, the *Pursuit of personal excellence* and *Pursuit of operational excellence*, ASQ (2015a, 2015b) outlines a range of attributes describing particular competencies needed in quality management. ASQ also argues that the conventional role of quality management practitioners as technical specialists is extending to embrace more strategically oriented roles, including partnership, collaboration and leadership (ASQ, 2015a, 2015b).

Another major contribution is the Chartered Quality Institute [CQI] competency framework (CQI, 2018), which outlines *context, improvement, governance, leadership* and *assurance* as main competencies for the quality practice. From a strict European perspective, the drive to certify specified quality management competencies has not been as prominent, resulting in an occupational identity which could be described as weak and diffuse (Sörqvist, 2014).

3. Conceptual framework

As an initial conceptual framework for analysing the general competencies of quality management practitioners, this paper mainly draws on the constructs of *occupational competence* as outlined by Ellström (1997), *professional competence* as outlined by Mulder (2014) and Delamare Le Deist and & Winterton (2005) and *the skills approach* as outlined by Katz (1955). The concept of occupational competence is defined as a multidimensional construct of *potential for performance in a given situation* (lEllström, 1992, 1997), or *ability to act,* based on the basic competence components of *knowledge*, *skills* and *attitudes* (Delamare Le Deist & & Winterton, 2005; Mulder, 2014). The complex multidimensionality is described by Ellström as an interaction between the individual's formal and actual competence and the task and organisational requirements (i.e. qualifications) resulting in the competence actually used to perform a task in a given situation, i.e. the *competence-in-use* (1992, 1997).

In this paper, the term competence incorporates several *competencies* (Mulder, 2014), i.e. related clusters of competencies (Boyatzis, 1982; Mulder, 2014). The clusters of competencies are arranged in order to describe competence-in-use for both routine and non-routine work, allowing variation in complexity. Thus, in this paper, it is assumed that the basic competence components of knowledge, skills and attitudes are expanded in adapting what Ellström and Kock (2008) describes as *perceptual motor skills*, *cognitive factors*, *affective factors*, *personality traits* and *social skills* within *cognitive-rational* as well as *intuitive-contextual* dimensions (Ellström, 1997). The latter dimensions encompass aspects such as task/situation, information needed for action, the mode of information processing, the mode of action, the knowledge base needed, the communication and/or social interaction and also the mode of learning (Ellström, 1997). Culture and/or context (Brown, Collins, & Duguid, 1989; Mulder, 2014) and individual discretion (also *scope of action* or *degrees of freedom*, cf. Ellström, 1997) afforded in the practitioner role (cf. *affordance,* Gibson, 1979) are also integrated as independent components for the dependent variable competence-in-use. In this paper, the analysis of competence-in-use is guided by a compilation of nine theoretically derived conceptual competence components (see Table 1).

In order to frame and conceptualise the range of components constituting the various knowledge skills and attitudes forming competence-in-use, this paper draws on both Delamare Le Deist and & Winterton (2005) and particularly Katz (1955) in adapting a meta-clustering of three distinctive competence dimensions. Katz defines *technical skills* as

Table 1. Conceptual competence components linked to relevant theory.

Competence components	Theoretical foundation, main references
Knowledge	Cognitive competence, (a) Cognitive factors, (b) Knowledge base, (c) Disciplinary knowledge, (d)
Skills	Functional competence, (a) Perceptual motor skills, (b) Working with artefacts, (d)
Affectivity and attitude	Affective factors, (b) Meta competence, (a) Attitudes, (d)
Sociality	Social competence, (a) Social skills, (b) Social interaction, (c) Social role, (d)
Personality	Personality traits, (b)
Discretion	Mode of action, (c) Affordance, (e) Intuition, (g)
Information	Mode of information processing, (c) Information processing, (d)
Context/culture/ activity	Task/situation, (c) Context & culture, (f)
Learning	Mode of learning, (c) Professional learning, (d)

Note: (a) Delamare Le Deist and & Winterton (2005), (b) Ellström and Kock (2008), (c) Ellström (1997), (d) Mulder (2014), (e) Gibson (1979), (f) Brown et al. (1989), and (g) Sadler-Smith and Sheffy (2004).

knowledge and proficiency in techniques, procedures and methods. *Interpersonal skills* are the abilities to cooperate, interrelate and, in general, work with and for people. *Conceptual skills* are the abilities for higher reasoning, holistic perspectives and abstract thinking (1955). The conceptual framework guiding the analysis in this paper thus features three basic constructs or competence dimensions, each contributing to the competence-in-use: *human competence* (cf. interpersonal skills), *methods- and process competence* (cf. technical skills) and *conceptual competence* (cf. conceptual skills). Each competence dimension is, in turn, composed of the above nine theoretically based competence components (see Figure 1).

4. Research method

The research design for this paper is directed by the explorative effort and the need to understand and describe the generic competencies of contemporary quality management practitioners. In order to do so, an embedded multiple-case study design (Miles &

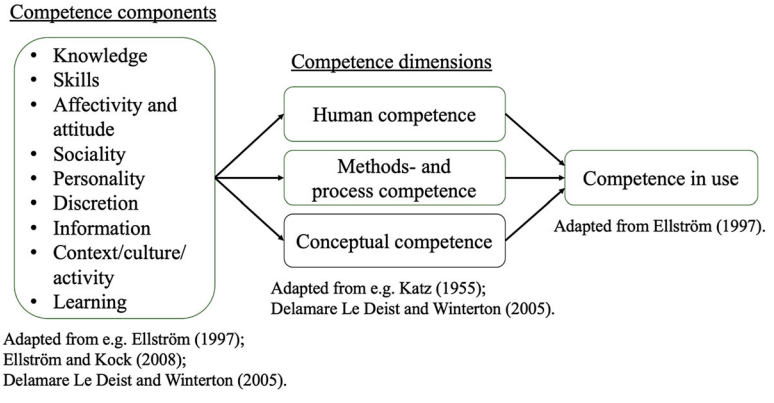

Figure 1. Conceptual framework for analysing competencies in quality management.

Huberman, 1994; Yin, 2014), with qualitative interviews was selected. A multiple-case study design is particularly useful when seeking new perspectives (Patton, 2015), when deepening the understanding of the studied phenomena (Miles & Huberman, 1994) and when building theory by identifying the key variables and their relations (Eisenhardt, 1989; Voss, Tikritis, & Frohlich, 2002). Since this paper tries to identify competencies shared by individuals and cutting across the particular case contexts, the studied cases are perceived as instrumental (Stake, 1995). The multiple units of analysis set within each case context therefore make an embedded multiple-case study design (Miles & Huberman, 1994) particularly suitable.

The case organisation sampling strategy was guided by the need to identify common patterns across diverse case contexts (Patton, 2015) and to cover a relevant variety of established quality management practices. The sample of organisations included three private companies and one organisation in the public sector. The participating organisations were part of the Swedish Quality Management Academy (SQMA) research network with each organisation fulfilling the minimum requirement of having least at 1 000 employees and an annual turnover (or annual budget) of at least 50 MEUR. The required organisation size ensured that the case organisations housed established quality management functions, with formalised organisational structures dedicated to quality management work. It also ensured that there were strategic and operational imperatives guiding quality management in the organisations. The case organisations represent an operational variation, not only between manufacturing and services production but also in a variety of both business to business, business to consumer and civic service.

The sample of interviewees in the study was based on a need to cover the whole spectrum of quality management. Thus, data were collected by interviewing 33 practitioners representing the whole range of quality management, embedded on all levels in each of the case organisations (see Appendix for an outline of the interviewees). The sampling strategy thus followed what Patton describes as a *group characteristics sampling* strategy including *maximum variation* of interviewees and also seeking *key informants* and *typical case* interviewees (2015). The sample of interviewees was based on extensive organisational knowledge and done with careful consideration in collaboration with the studied organisations. It was ensured that every interviewee had formalised tasks and designated time for carrying out quality management work. The individual interviewees also represented a fairly equal distribution of quality management practitioners within the whole range of strategic and operational organisational levels.

The semi-structured interviews (Bryman, 2015; Kvale & Brinkmann, 2014) were aimed at exploring and describing quality management practices and the challenges faced by the quality management practitioners in daily quality management work. This approach provided data enabling the researchers to identify the components and dimensions of competence-in-use by the interviewees. Drawing on Patton (2015), the individual forms the primary level of analysis in this paper, however also maintaining a structural focus on the quality management function within organisations. Guided by the above-stated purpose, this paper seeks to explore similarities and patterns signifying general competencies shared between the embedded individuals within the overarching practitioner domain of quality management, thereby making it possible to extract and describe the general competencies needed in quality management.

The analysis strategy can be described as an abductive two-step strategy combining inductive thematic analysis with deductive pattern clarification (Miles & Huberman, 1994). In the first thematic analysis step, the content and variables were analysed and thematised. In the next step, pattern clarification, thematic patterns and patterns shared

between variables were identified in order to generate new concepts (Miles & Huberman, 1994) as a basis for generating new theory (i.e. a competence framework).

The interviews, which lasted approximately between 1 and 1.5 h per interview, were recorded and then transcribed verbatim. The original transcriptions were imported into the QSR NVivo software program, which provided possibilities to store, organise and communicate the data as well as facilitating coding and subsequent analysis. The data analysis followed a four-stage process (see Table 2).

In the first stage, the data was read multiple times and coded. Coding was open, data-driven and descriptive in what Miles and Huberman (1994) describe as 'attributing a class of phenomena to a segment of text' (p. 57). In the second stage, the content of the coded data was thematically analysed which included clustering of variables into general themes. In the third stage, a construct table was designed whereby the identified themes were compared and pattern matched between cases, whereby the identification of general similarities between the case organisations was possible. In the fourth and final stage of analysis, the condensed and reduced data was evaluated, analysed and interpreted using the conceptual and theoretical underpinnings in an effort to establish a logic governing the inferences previously made and to further understand the data. Based on the analysis of the reduced and condensed data, an empirically grounded and conceptually guided competence framework for quality management practitioners was constructed. The framework not only outlines the general competencies, but it also clusters and outlines proficiency levels of competencies, signifying different generic role responsibilities.

Several tactics were employed to achieve convergence of evidence (Yin, 2014) and to strengthen convergent and discriminant validity (Hackman & Wageman, 1995). A pre-study involving scholars and specialists were performed in order to understand the practitioner context and to guide the design process of the interview guide. The interview guide was further validated through several feedback rounds with representatives from the studied organisations and also quality management scholars and specialists. Further validation measures included pre-testing of the analytical framework by a non-participating organisation with a similar size as the four case organisations. Workshops were also conducted during data collection and preliminary analysis, where feedback from representatives from the studied organisation was gathered and evaluated for validation purposes. During final analysis, the confirmation and validation tactic of *checking for representativeness* and *triangulation* was also used (Miles & Huberman, 1994; Yin, 2014).

Table 2. Analytical process and outcomes.

	Stage 1	Stage 2	Stage 3	Stage 4
Process	Reading and data-driven coding.	Data-driven thematic analysis. Categorisation, ordering and clustering of themes	Comparing between cases and pattern matching.	Evaluation and conceptual interpretation.
Outcome	A list of derived competence themes.	Clusters of general meta themes.	Categorisation of role specific general competencies.	Conceptual elaboration and theory building.

5. Findings

5.1. *Identifying and describing quality management practitioner competencies*

The coding strategy revealed 63 different competence-related codes. These codes were analysed, categorised and then clustered into fifteen different *competencies-in-use* which, in turn, were clustered into the three main competence dimensions but also into an additional, inductively derived the fourth dimension: the *contextual competence dimension*, which is elaborated below (see Table 3). The dimensions are composed of the quality management competencies-in-use identified and analysed in the interviews. A compilation and description of all the 63 codes used in the analysis can be made readily available on request by contacting the main author.

The human competence dimension covers various social skills and abilities to engage and uphold relations on different levels and in different situations. Quality management leadership and change management abilities encompass a wide range of skills (not least skills for project management) which is reflected in the following quote:

> You need to work with changing processes and ways of working in order to reach out / … / a big part is to anchor it and getting it launched. (IP6)

The ability to communicate and convey information is also clustered as a category within the human competence dimension as described by this interviewee:

> The primary method that I work with is communication, it is networks, I mean communication and dialogue. (IP9)

Handling relations and having the skills and ability to interrelate is also a recurring theme across the organisations which is illustrated in this quote:

> One needs to be able to handle people on different levels, just as much in meeting top level quality managers as when meeting an operator in the production. (IP30)

The methods and process competence dimension reveal the need for procedural knowledge and to understand established quality management concepts and methods (e.g. Lean, Six Sigma, management systems) which is illustrated in this quote:

Table 3. The main competence dimensions and their respective quality management competencies-in-use.

Main competence dimension	Quality management competencies-in-use
Human competence dimension	• Change management • Communication • Pedagogical abilities
Methods and process competence dimension	• Organisation specific quality management concepts • Established tools and methods for quality management • Standards and management systems • Data analysis • Information processing and visualisation
Conceptual competence dimension	• Customer perspective • Developmental approach • Harnessing technology and digitalisation • Holistic and strategic understanding
Contextual competence dimension	• Experience from external contexts (other organisations) • Experience from internal contexts (present organisation) • Contextual adaptability (‘street smartness’)

> Partly our specific Lean methods, like how you apply them, experience and knowledge about [visual] control and management and 5S and all the various Lean tools and the theory behind it and how we apply it in … so knowledge and competence within that. (IP 12)

Knowledge and skills in established quality management tools and techniques (e.g. statistical process control, PDCA/PDSA, value stream mapping etc.) which is reflected in the following illustrative quote:

> Yes, absolutely. We work a lot with many different tools. I don't really know where to draw the line between systematic problem solving, value stream mapping, current state mapping or whatever tools we work with. (IP11)

The knowledge and understanding of relevant standards and management systems (e.g. ISO, 2015) and the ability and knowledge of data analysis and information processing and visualisation are also affiliated to the methods and process competence dimension. One interviewee illustrates this by the following referral to the importance of standards:

> We have our principles here, we have standards, we have it in the methods / … / but I mean, if I, as a manager do not show that we follow up the standards and show that it is important with standards in order to assure the quality, well / … / then nothing happens. (IP13)

The conceptual competence dimension reflects competencies needed for abstract reasoning, conceptualising and meta-knowledge. The main competence categories forming this dimension include the ability to understand the customer perspective (both internal and external). The following quote is an illustrative example of customer reasoning:

> We talk a lot about, seeing the customer, where do customer needs start and when do they really end, so it is really this kind of view along with this customer need driven that is the new kind of twist, the linchpin, basically. (IP15)

Conceptual competence is also about adopting a developmental and innovative approach, questioning and challenging in order to affirm and/or initiate radical change. The following excerpt from the interviews illustrates this:

> You don't need to know / … /or exactly down to [that detail] but you need enough to know how it ties
>
> together in order to challenge, to question. (IP24)

Also, knowledge and skills concerning the possibilities of digitalisation and how it enables (or constraints) quality management are expressed across the organisations. Conceptual competence also entails systems perspective with a holistic and strategic understanding. This competence category reflects an ability to relate local practice to the governing strategy and having the ability to conceptualise and relate local conditions into a holistic and strategic understanding. The importance of a competence reflecting a holistic view is reflected by this quote:

> But also, to master the overall issues; product, hardware, software, central systems, aftermarket tools etc. We are not there yet. (IP5)

Finally, the added contextual competence dimension was inductively derived and defined as its focus on previous experience as the main element was not found within the other competence dimensions. As such, the contextual competence dimension reflects the knowledge and skills gained from previous experience in both external and internal organisational contexts. This competence category is reflected in this quote:

> I have operated within logistics; production and the technical side / … / one can speak a certain kind of
>
> language with different players but it is mostly within the soft issues where I have been able to act. But one

> has a certain type of knowledge base in the back [of your head], to which you always can relate when
> dealing with different issues in order to understand in an easier way, so to speak. (IP23)

Contextual competence transcends the notion of mere accumulated knowledge into a kind of 'street smart' and adaptive ability and also a reflective capacity for evaluating how own actions affect consequences within organisational systems. One interviewee provides an example of such reasoning:

> So, one always has a kind of 'consequence thinking' and / … / when we have problems with quality, where
> do we best react in order to have the least impact on the final delivery to … to the customer? (IP 3)

Our results also show that an increased level of contextual competence provides practitioner reflexive capacity. This capacity renders the individual a readiness and ability to better adapt to situations and contexts including situations and contexts not even yet experienced. The ability for systems thinking and contextual adaptability is illustrated by the following quote:

> That is what a really do, my speciality is to take a systems approach, drive change within systems and
> understanding how it all fits together and what needs to be done. (IP28)

As such, contextual competence appears to act as a key leverage in the individual potential for action. Our results reveal that the scope of such action is mainly dependent on what kind of general role responsibilities the quality management practitioner assumes within the organisation. In the next section, a role structure incorporating two general performance characteristics and four generic quality management practitioner role responsibilities are introduced.

5.2. *Generic quality management role responsibility structure*

Following the analysis of general competencies, a pattern revealing an empirically derived generic quality management role responsibility structure could also be identified, as presented in Figure 2. Within this structure, two main role responsibility characteristics can be empirically discerned: *functional scope* and *situated range*.

The functional scope characteristic describes the overall orientation and content level of the quality management role responsibility performance. The needed qualification levels

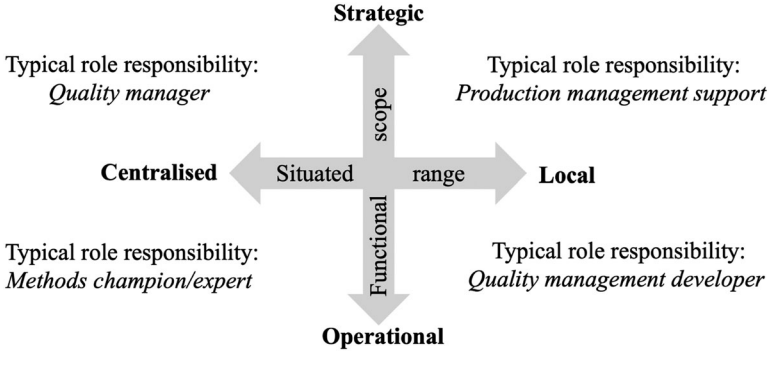

Figure 2. Generic role responsibility characteristics of quality management.

regarding content and also the strategic and operational focus defines the functional scope. The functional scope illustrates what quality management level of practice is affected and *how* it is affected. As to functional scope, the typical role responsibilities are defined by their level of being either *strategic* or *operational*. A strategic scope is characterised by competencies predominantly needed to assume strategic responsibilities and perform indirect management practices. An operational scope is characterised by operational responsibilities and competencies predominantly linked to direct management practices.

The situated range characteristic describes in what organisational context the interaction and performance normally have an impact. The situated range outlines the normal contact interfaces and internal organisational and/or external awareness normally found within the range of the role responsibility. In this performance characteristic, the typical roles and responsibilities are defined by the daily interaction range and organisational impact of any given role and are defined by its *centralised* or *local range*.

It should be noted that this characterisation is decoupled from any specific positional attributes. Thus, neither functional scope nor situated range can strictly be used in order to describe the organisational position or hierarchical level in terms of any given quality management practitioner role in this paper. Though organisational position or assignment may often be reflected by particular role responsibilities, it is possible that a quality management practitioner holding a middle or higher-level formal position can still have operational and local role responsibilities. An example of this decoupling from positional attributes is highlighted by the two following quotes by an interviewee occupying a higher formal position, but also expressing operational scope and local range:

> Yes, well it is very close to operations, with short term goals due to the need of data to conduct a
> quality analysis, so, it is kind of operational. (IP19)

The local range is described by the same interviewee illustrated with this quote:

> So, everything is focused on increasing the quality within the local administration process / … / we talk a lot about the local administration process quality [in the production] and not so much / … /, to be honest, about business development and such things. (IP19)

Though the functional scope and situated range characteristics are dynamic descriptions and represent continuums, four *ideal-type* role responsibilities were also discerned (see Figure 2). These ideal-type role responsibilities represent role generalisations that focus attention on the most salient and distinct role responsibility features applicable across all the different organisational contexts. These ideal types do not strictly refer to normatively preferred roles, but describe common generic role responsibilities shared between the organisations. These ideal types also held their significance in the feedback received from the organisations in discussions and validating workshops.

6. Discussion

6.1. *A competence framework for quality management practitioners*

When evaluating and conceptually interpreting the findings, a pattern of role responsibilities featuring the competence dimensions emerged. Typical role responsibilities relating to each of the competence dimensions were identified. An overview of the competence-in-use characteristics defining each generic quality management role responsibility is presented in Table 4.

The competencies within the strategic and centralised roles responsibility can be described as having a high level of individual discretion with consistent referencing by

the interviewees to the amount of trust being vested into the role, as representing an important special competence. A recurring theme is a notion of having practitioner ownership of the domain of quality management and business excellence, often with a systems perspective and leadership responsibilities (Lakshman, 2006). The strategic and centralised role responsibilities also operate in an interdisciplinary context, having the potential not only to influence the quality management domain in both strategic and operational ways but also to influence the quality management domain within other organisational functions and contexts.

In the contextual settings for the strategic and centralised role responsibility, the veering between interactional contexts emphasises a need for particularly good communication skills. The contextual dynamics reflects a need to balance issues pertaining to both explorative and exploitative quality management practice, i.e. dealing with the quality dilemma (Backström, 2017; Fundin et al., 2017). This indicates that such role responsibilities also carry a need for various stakeholder perspectives. The end customer perspective is particularly prominent with interviewees having strategic and centralised role responsibilities, referencing to the importance of understanding customer (or civil) needs and experience. There is a tendency to share the value of assuming a kind of 'ambassadorship' in trying to assume a customer perspective that cuts vertically in the organisations, both upwards, in a strategic management context and downwards, in an operational management context. The strategic and centralised role responsibility operates in a context where the balance between external effectiveness and internal efficiency poses challenges for emergent quality management (Backström, 2017; Fundin, 2018).

The strategic and local role responsibility is characterised by its bounded discretion, often described as limited by resources and power distribution. In having a local range, strategic and local role responsibilities often operate in a general context with many internal and external contacts in a production situated context. Working in inter-disciplinary, local settings and assuming leader roles in project networks is common which, in turn, stresses the need to adopt the local organisational discourse and leadership competencies (Lakshman, 2006). This role responsibility is close to the core business, requiring a simultaneous consideration of strict business and profit rationality, organisational limitations and quality management values. Initiating dialogue and brokering strategic ideas into local ideas and local practice dictates generic role similarities emphasising communicative skills. The strategic and local role responsibility is mainly focused on quality management aimed at incremental change, driving and supporting continuous improvement efforts within a production context. A customer perspective is vital, but it is generally restricted to address efficiency issues with the aim of having the right product/service delivered at the right time. The notions of radical change and discussions on effectiveness are not prominent in the descriptions of the interviewees within this role responsibility, indicating quality management mainly for exploitation (Zhang et al., 2012; Cole & Matsumiya, 2007).

The centralised and operational role responsibility operates in a highly specialised context, often assuming a leading specialist role with key responsibilities in the realisation of strategic quality management efforts, affecting a broad range of local settings of the organisation. This role responsibility is often positioned as a direct link between management levels and operational levels within the organisation and transcends the interactional levels ranging between top management and operatives on the production floor. The centralised range of the quality management role responsibilities also generates extensive knowledge of the operations and the organisation as a whole. Working in and on projects and project-based networks, with a high amount of internal co-worker interaction, defines

Table 4. The competencies-in-use of quality management practitioners.

Quality management competencies-in-use				
Competence dimension	Strategic and centralised role responsibilities	Strategic and local role responsibilities	Operational and centralised role responsibilities	Operational and local role responsibilities
Human competence dimension	Indirect/direct leadership skills, interdisciplinary interaction 'ambassador' and carrier of quality management values. Adaptive communicative skills. Translating between organisational contexts.	Mostly direct leadership. Creating organisational commitment. Communicative skills and ability to translate strategic initiative into operational actions within production. Counselling skills.	Mostly direct but also elements of indirect leadership. Network dependent and a crucial node in the communication interface between strategic/operational and centralised/local. Extensive pedagogical skills.	Direct leadership. Ability to coach, support and develop individuals and groups in project form. Pedagogical skills. Relational ability and reliant on network interaction.
Methods and process competence dimension	General knowledge sufficient. The ability to coordinate and integrate a portfolio of standards, concepts and tools applicable to the organisation	General knowledge mostly sufficient. Having methods and process skills in order to drive local adaption and quality assurance in the organisational use of applicable standards, concepts and tools. Represents a quality management body of knowledge within production.	Specialist knowledge and experience in relevant standards, concepts and tools applicable to the organisation. Also, a general concept and tool knowledge and understanding. Translation and decontextualisation skills.	Specialised in a bounded selection of standards, concepts methods and tools applicable to the organisation.
Conceptual competence dimension	Key actor in customer understanding and customer focus. An ability to handle and evaluate a multitude of variables interconnecting various interdisciplinary contexts. Balancing short and long-term issues and the quality dilemma.	Systematic problem-solving capabilities and conceptual understanding in order to drive continuous improvement efforts. Ability to identify and exploit synergy potential within own organisation.	Role is a direct link between strategic initiative and operational execution of quality management. High level of abstraction and conceptualisation skills. Defines needs and actions needed in the organisation.	Predominantly practices related to continuous improvement efforts. Developmental initiatives are scarce. Flexibility. Internal customer focus.

(*Continued*)

Table 4. Continued.

Quality management competencies-in-use				
Competence dimension	Strategic and centralised role responsibilities	Strategic and local role responsibilities	Operational and centralised role responsibilities	Operational and local role responsibilities
Contextual competence dimension	Knowing local organisation in detail and overall organisation in general. Business, market and competitive intelligence skills. Detailed knowledge on products and services.	Extensive knowledge and understanding on the products/services and production organisation. Understanding of structural conditions for production and quality management.	Wide and extensive knowledge on organisation. Holistic (internal/external) organisational perspective. Key ability to mediate between theory and practice. Interdisciplinary knowledge and understanding.	Experience not emphasised. High commitment and value-oriented stance. Internal, local and limited organisational perspective.

the social context setting for this role responsibility. This also extends to an external perspective with this role responsibility often being engaged in external practitioner networks specialised in quality management. Consequently, it is both internally and externally exposed to ideas lending to both incremental and radical change. The findings indicate both exploitative and explorative quality management competencies (Zhang et al., 2012), supporting continuous improvement along the different production sites/subunits, but also supporting more explorative initiatives from managerial levels and external influences in order to create radical change. The centralised and operational role responsibility could therefore be described as particularly representing emergent quality management practices and ambidexterity, as described by Benner and Tushman (2015), Dahlgaard-Park (2011) and Fundin et al. (2018).

The local and operational role responsibility often needs to locally plan, execute and evaluate specific quality management projects. The organisational context of the local and operational role responsibility is often limited both in scope and expected results. In this capacity, it can be said to be restricted in terms of discretion and is mainly exploitative (Backström, 2017; Zhang et al., 2012). However, within the boundaries of the practices, it could be argued that this role responsibility carries high levels of discretion in the local setting with a relatively big potential to influence within the range of these boundaries. Working with incremental change in projects designed for continuous improvement on an operational level is predominant.

6.2. *Competencies for emergent quality management*

The need for quality management to address the challenges faced by organisations was already addressed by Sousa and Voss (2002) and is becoming even more important considering the rapid changes in the business environment (e.g. Weckenmann et al., 2015). The potentially increasing importance of business excellence models (Eriksson et al., 2016) reflects this and is also mirrored in the need for quality management to focus more on issues supporting exploration and external effectiveness advocated as central in emergent quality management (Fundin et al., 2017). Our findings indicate that centralised role responsibilities are more externally oriented with local role responsibilities being more internally oriented. The centralised strategic role responsibility (i.e. that of the 'Quality manager') and the centralised operational role responsibility (i.e. that of the 'Methods champion/expert') thus display competence profiles more aimed at exploration and external effectiveness. Our data indicate that this drive within centralised role responsibilities primarily stems from a predominant focus on external customer perceptions and conceptual understanding of quality management. In the case of the centralised operational role responsibility, the findings indicate an under-utilisation of this role in its potential for supporting emergent quality management. The centralised operational role responsibility represents advanced competence levels within all four competence dimensions and it has access to both internal and external organisational contexts. This could be viewed as a kind of untapped potential that is instrumental in order to facilitate emergent quality management.

As to local role responsibilities (i.e. those of the 'Production manager support' and the 'Quality management developer'), these appear to be predominantly focused on internal customers within production, mostly facilitating internal efficiency. Hence, this paper identifies a tendency for organisational compartmentalisation, with centralised quality management role responsibilities more focused on what Fundin (2018) describes as exploration for effectiveness and local quality management role responsibilities more focused on

exploitation for efficiency. The results provide little evidence for more integrative approaches in the studied organisations. A more structured approach in integrating role responsibilities and competencies in quality management may thus be needed to support emergent quality, facilitating both exploration and exploitation in a one-system approach (Backström, 2017).

6.3. *Role perception and competencies*

There is a discrepancy between practitioner literature and research literature in the approach towards quality management practitioner competencies. The practitioner literature has generally been more focused on methods and tools skills and their related knowledge (cf. *practices* and *techniques*, Dean, Jr. & Bowen, 1994) rather than on higher order competence components facilitating *competence-in-use*. However, practitioner bodies are now acknowledging the emergence of such competencies (e.g. ASQ, 2015a, 2015b; CQI, 2018). This development calls for more theoretically grounded competence frameworks for quality management. As to research literature, exploring the practices of quality management has been more conceptually oriented in its more role-oriented stream of studies (e.g. Addey, 2004; Elg et al., 2011).

The main contribution of this study is two-fold: firstly, it theoretically complements current research on quality management by infusing a competence theory-based terminology to describe quality management competence. Secondly, it interrelates to the established conceptual framework of principles, practices and techniques of quality management (Dean, Jr. & Bowen, 1994) in an attempt to describe the whole range of competencies needed, in most organisational contexts. This is achieved by describing quality management competencies in three levels: *competence components*, *competence dimensions* and *competence-in-use*. The four main competence dimensions are meta-competencies representing the range of abilities that are essential for performing quality management, i.e. *competence-in-use*. Reflected both in the practitioner literature, research literature and our study are the expansion of quality management practice from mainly supporting control and compliance (i.e. exploitative quality management practices) into also supporting development and innovation (i.e. explorative quality management practices). The human competence dimension and conceptual competence dimension indicates a general shift in how the responsibilities of the quality management practitioner are perceived. Both practitioner literature and research literature emphasise an emerging need for quality management practitioners to increasingly lead, communicate, broker, coach and partner in quality management practice. This study provides a theoretically grounded structure and terminology in order to define and describe the quality management competencies addressing these emerging practitioner needs.

A particular area of interest lies within competencies for facilitating learning in organisations (e.g. Anttila & Jussila, 2017; Antony, 2013; Dahlgaard-Park, 2011). This particular need for competence recurs throughout the range of our defined role responsibilities and could be described as a Human Resource Development [HRD] capability, normally reserved within the professional domain of Human Resource Management [HRM]. Our findings indicate that the practices of quality management seem to be closing in with the practices of HRM. In having quality management practitioners assuming an increased responsibility for HRD-issues and facilitating organisational learning, adopting HRD-related competencies appears to be a natural step in order for quality management practitioners to be able to facilitate emergent quality management. Analysing competencies for facilitating conditions for learning would thus seem a natural topic for further research

in order to understand how quality management practitioners could best serve current and future organisations.

6.4. *Limitations*

This paper is explorative. In order to strengthen the validity of the findings and the presented competence framework, further empirical research is required. In such an effort, extending the range of organisations and contexts is necessary. Most importantly, in order to validate the quality management competence framework, extensive testing and measures (e.g. Boyatzis, 1982) need to be performed in assessing the causal relationships between competencies and actual quality management performance. In doing so, Mulder (2014) also points out that the relationship between practitioner competence and performance needs to be further understood, opening up new methodological possibilities for researchers of practitioner competence.

7. Conclusion

The stated purpose of this paper was to introduce a competence-based terminology for describing general competencies of quality management work in organisations and to create a competence framework in order to understand what is needed to be a quality management practitioner.

The first research question – what general practitioner competencies can be identified within quality management practices as perceived by its practitioners? – put focus on four generic competence dimensions: the human, the methods & process, the conceptual and the contextual competence dimensions. The contextual competence dimension was also an inductively derived finding, added to the initial conceptual framework. In relation to the second research question – what generic quality management role responsibilities can be identified in quality management practice? – this paper identifies four generic quality management role responsibilities derived from the analysis: centralised and strategic (e.g. 'The quality manager'), centralised and operational (e.g. 'Methods champion/expert'), local and strategic (e.g. 'Production manager support') and local and operational role responsibilities (e.g. 'Quality management developer').

As to the last research question – how can the role responsibilities and competencies of quality management practitioners be conceptualised into a competence framework? – this paper proposes a competence framework for quality management practitioners where competencies-in-use, specific to role responsibilities, are outlined and described.

The competencies and role responsibilities are further discussed in relation to the quality dilemma in emergent quality management and the paper identifies an emerging need for more integrative and business excellence-oriented quality management, guided by the proposed competence framework.

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Appendix. List of interviewees.

Organisation	Interviewee code	Empirically derived role responsibilities
Manufacturing company A	IP1	Local/Strategic
Manufacturing company A	IP2	Local/Strategic
Manufacturing company A	IP3	Local/Strategic
Manufacturing company A	IP4	Centralised/Strategic
Manufacturing company A	IP5	Centralised/Strategic
Manufacturing company A	IP6	Local/Strategic
Manufacturing company A	IP7	Centralised/Strategic
Manufacturing company A	IP8	Local/Strategic
Manufacturing company A	IP9	Centralised/Operational
Life science company	IP10	Centralised/Operational
Life science company	IP11	Local/Strategic
Life science company	IP12	Local/Operational
Life science company	IP13	Centralised/Strategic
Life science company	IP14	Local/Strategic
Government body	IP15	Local/Strategic
Government body	IP16	Centralised/Operational
Government body	IP17	Centralised/Strategic
Government body	IP18	Centralised/Strategic
Government body	IP19	Local/Operational
Government body	IP20	Centralised/Operational
Government body	IP21	Centralised/Operational
Government body	IP22	Centralised/Strategic
Manufacturing company B	IP23	Centralised/Strategic
Manufacturing company B	IP24	Centralised/Strategic
Manufacturing company B	IP25	Centralised/Strategic
Manufacturing company B	IP26	Local/Strategic
Manufacturing company B	IP27	Centralised/Operational
Manufacturing company B	IP28	Centralised/Operational
Manufacturing company B	IP29	Local/Operational
Manufacturing company B	IP30	Centralised/Operational
Manufacturing company B	IP31	Centralised/Operational
Manufacturing company B	IP32	Centralised/Operational
Manufacturing company B	IP33	Centralised/Operational