Fit for purpose?: Exploring competence in quality management

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Fit for purpose?
Exploring competence in Quality Management

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Abstract

Purpose – The purpose of this study is to use competence theory to explore the fit between actual competencies of quality management practitioners and the perception of quality management competence needs in organisations.

Design/methodology/approach – This paper is based on a cross-case quantitative study design featuring a survey of quality management practitioners (n = 249) within eight large Swedish organisations. The research instrument was a questionnaire covering seven themes within quality management. The analysis is based on descriptive statistics.

Findings – The results show that while the perception of formal quality management competence may seem sufficient, the evolving nature of quality management requires knowledge, skills and attitudes that are also apt for more external and explorative perspectives. There is a bias towards competence for exploitative quality management rather than explorative quality management. Organisational logics preserving and possibly reinforcing a perceived “competence lag” in organisations are identified and described.

Originality/value – Few empirical studies within quality management explore the competencies required for quality management practices. This paper contributes to quality management research in providing arguments for adopting competence theory as a foundation for organising current and future quality management work.

Keywords: quality management, practitioner, competence, task, professional
1. Introduction

What is the fit between what people can do and what people need to do when working with quality management (QM) in organisations? This should be a critical question to ask in any organisational environment hard pressed for ever increasing needs of constant transformation and innovation. The changing nature of QM (e.g. Weckemann, Akkasoglu & Werner, 2015; Zhang, Linderman & Schroeder, 2012) and the impact of this change in organisations should thus be a strong incentive for researchers to explore the fit between QM as it is currently performed and QM as needed by organisations. In this paper, QM is conceptually understood as principles, practices, and techniques facilitating customer focus, continuous improvement and teamwork (Dean & Bowen, 1994) and product quality (Sousa & Voss, 2002) and competence is conceived as the potential for performance in a given context (Ellström, 1997). The gap between what can be done and what needs to be done represents a continuous coordination problem which can be described as three basic challenges for QM: What kind of QM is needed, how should QM work be organized, and who do we need to do the QM work?

First, organisations face a challenge of defining the practitioner competencies needed in order to fulfil its short- and long-term goals with their QM work. What competencies are needed and how do these represent a practitioner (i.e. QM) body of knowledge, skills and abilities? Since QM acts as a strategic leverage in organisations (Sousa & Voss, 2001; 2002) this challenge is particularly crucial. Second, organisations struggle with the design of QM as an organisational function. In having defined its desired QM competencies, organisations need to make informed choices on how to best organise in order to solve daily QM tasks. Third, having defined QM and designed a suitable organisation, challenges of matching existing resources with current and future needs arise. What existent QM competencies can be readily utilized and, perhaps more importantly, what competencies must be developed or acquired in order to serve both current operations and the strategic direction? So far, there has been a tendency for research to focus on QM roles (e.g. Addey, 2004; Burcher, Lee & Wadell, 2008; Elg, Gremyr, Hellström, & Witell, 2011; Evans, 2013; Larson, 1998; Sandholm, 2005). Within this stream, few studies are empirically based and even fewer address the specific competencies required in the stated roles. With one notable exemption (Ingason & Jónsdóttir, 2017), the use of competence (and competencies) has not been widely adopted in QM research the last couple of decades (Carnerud, 2018). However, within established QM bodies of knowledge (e.g. ASQ, JUSE, EOQ & CQI) the notion of competence in general and competencies for QM in particular are widely used (e.g. ASQ 2015a; 2015b), however with varying interpretation and conceptual understanding of the competence concept.

This paper extends the relatively moderate stream of previous research focused on QM practices and QM practitioners (e.g. Antony 2013; Elg et al. 2011; Addey, 2004; Wadell & Mallen, 2001; Dahlgaard, Kristensen, Kanji, Juhl & Sohal, 1998) by the use of competence theory, in an effort to explore the notion of QM competencies and discuss the fit between actual (based on the past) and needed (based on current and the future) QM competence in organisations. The purpose of this study is thus to use competence theory to explore perceptions of the fit between actual QM competencies of QM practitioners and the perception of QM competence needs in organisations.

2. Previous research

2.1 Quality management, evolution and change in practice

The concept of QM is constantly evolving. Early QM focused on practices aimed at ‘conformance to specifications’ (Reeves & Bednar, 1994) which changed to QM as ‘fitness for use’ (Juran & Gryna, 1988) into the modern day ‘customer focus’-definition of QM. Sousa and Voss (2001; 2002) predicted an increase of strategic influence and for QM to become a more integrated part of organisation’s strategic effort (Sousa & Voss, 2001; 2002) in order to support
competitiveness. This has started to materialise and Zhang, et al. (2012) draws on March (1991) in describing two types of emerging QM practices: quality exploitation and quality exploration. The balance and coordination between exploitation (i.e. QM oriented towards improvement and control) and exploration (i.e. QM oriented towards value creation and innovation) has also been prospected in recent studies by Backström (2017) and Fundin, Bergman and Elg (2017). In line with this, Zhang et al. (2012), Dahlgaard-Park (2011) and Benner and Tushman (2015) argue for properly tailored QM to facilitate organisational ambidexterity in the sense of being able to efficiently handle its management of today's business and at the same time creating conditions for coping with tomorrow's changing demands. The evolving nature of QM seems apparent but in order to explore needed competencies, the nature of QM practices also needs to be examined.

Though QM practices have been extensively researched (e.g. Flynn, Schroeder & Sakaibara, 1995; Nair, 2006; Samson & Terziovski, 1999; Saraph, Benson and Schroeder, 1989) there is little agreement on how to compile a definite canon of QM practices (Kim, Kumar & Kumar, 2012; Samson & Terziovski, 1999). Not only is there little consensus on what QM practices really are, with a few exceptions (e.g. Dahlgaard et al., 1998), the way in which various QM practices are applied, and organised for, is also a fairly under-researched area (e.g. Powell, 1995; Dow, Samson & Ford 1999; Sousa & Voss, 2002; Elg et al., 2011).

An overview of the development of QM is outlined in Table I, based on a selection of representative articles between 1989 and 2017.

Table I. Overview of the evolution of the core of QM in selected representative QM literature referring to QM practice between 1989 and 2017.

<table>
<thead>
<tr>
<th>Source</th>
<th>Core of QM with outline of related practices</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saraph et al., 1989</td>
<td>Use of statistical methods (SPC), process management and product design.</td>
<td>A model of eight QM practices and measures is presented. Control oriented practices are emphasised. Internal focus. Customer and customer focus not emphasised.</td>
</tr>
<tr>
<td>Flynn et al., 1994</td>
<td>Quality information and performance, process management and product design, SPC</td>
<td>Scales for measuring quality performance are proposed. Emphasis in QM is described as on control and improvement.</td>
</tr>
<tr>
<td>Dahlgaard et al., 1998</td>
<td>Quality improvement, education and training in QM philosophy and methods, application of tools and methods</td>
<td>QM described as being narrowly conceived. More emphasis needed on culture, communication, co-operation and teamwork required in QM.</td>
</tr>
<tr>
<td>Sousa and Voss, 2001</td>
<td>Formulation &amp; implementation of a quality policy, training in principles and tools, quality leadership, use of tools and methods.</td>
<td>Developing links between QM and organisational performance. Traditional QM setting is described as contexts with high certainty and less emphasis on creativity. Less focus on higher level strategy. Expansion of QM beyond the traditional QM setting is described as a major challenge.</td>
</tr>
</tbody>
</table>
In Table 1, three particular lines of change in core QM practice, can be outlined. First, over the last three decades, QM has extended from a mainly internal focus towards also including external focus where the outcome can be described as creating value for customers i.e. *effectiveness*. Second, the level of impact is expanding, from a predominant operational practice focus to also including strategic, business and corporate level practices in QM. Practices within
QM seems to *increase the strategic leverage*, impacting organisational outcomes on a higher organisational level than 30 years ago. Third, the inclusion of radical improvement and development (facilitating innovation) to complement the traditional core practice of facilitating incremental improvement. The core practice of customer focus and process management seem to have resulted in QM practices growing in importance in the *development of new services and products* in organisations. To sum it up, this paper recognizes that the emergent QM of today includes the core elements of value creation and innovation to complement QM’s traditional core elements of improvement and control.

The consequences of these three lines of change are reflected in both current research literature (e.g. Weckemann *et al.*, 2015; Zhang, Linderman & Schroeder, 2012) and current practitioner literature (e.g. American Society for Quality [ASQ], 2015a;2015b; Swedish Quality Management Academy/Swedish Institute for Quality [SQMA/SIQ], 2012). Backström (2017) describes the dilemma of ‘internal efficiency’ versus ‘external efficiency’. This dilemma in QM work was, in part, addressed already by Juran (1988) as the balance between ‘little q’ and ‘big Q’ in QM. Eriksson *et al.* (2016) and reports by SQMA/SIQ, (2012) and ASQ (2015a;2015b) describe the emergence of strategy enabling and strategy developing roles in QM as a response to the impact of business excellence models. ASQ (2015a) also describes the traditional role of QM practitioners as technical specialists as extending towards also including more strategically oriented roles, including partnership, collaboration and leadership.

Several studies have addressed the need for QM to facilitate ambidexterity and innovation in organisations (e.g. Steiber & Alänge, 2012; O’Reilly & Tushman, 2013) or at least not to *impede* innovation (e.g Cole & Matsumiya, 2007). The ability for QM practice to facilitate and promote both internal efficiency and external effectiveness is outlined by Smith (2014) in his reflections on the need for a holistic and strategic impact of QM. In the same line of argument, Watkins (2006) argues that QM should be more able to transform into an integrated business management system concept, with a set of practices serving *all levels of an enterprise*.

An anticipated challenge for QM and the QM practitioners is that the pace and scope of this QM practice evolution, as reflected in research, may create a gap where the competencies of practitioners never fully match the evolving organisational needs for changed and/or new competencies. This paper discusses the competence gaps in organisations, focusing in particular on the competencies of QM practitioners. In adopting a competence-based view, this paper is trying to explore the past and present and possibly also make some predictions about the future of QM in terms of QM *competence*. In order to do that we need to elaborate the notion and conceptual underpinnings of occupational competence.

### 2.2 Competence

In the present paper it is assumed that competence is a multifaceted construct following the definition by Ellström that “competence is the potential for performance in a given task, situation or context” (Ellström, 1992, p. 21). The underlying logic of this is that competence is always a relative measure, specific to the particular individual acting in a particular situation (or task, or context). As such, competence is a dynamic concept, mutually dependent on the capacity of the individual as well as the varying complexities of the situation at hand (Ellström, 1992; 1997). Following this definition, an individual may be adequately competent performing a specified task in certain conditions; i.e. the construct of competence is, in turn, perceived as being composed of the basic components of *knowledge, skills and attitudes* (Delamare Le Deist & Winterton, 2005, and Mulder, 2014). In arguing that competence is an interplay between the individual and the task and/or context, Ellström (1997) also describes competence as having a formal, explicit dimension and an informal, tacit dimension. Formal competence exists on the individual level as explicit and often documented. On the task/organisational level formal competence exists as officially demanded competence (i.e. *qualifications*). Formal competence
as explicitly stated and/or required by the particular task or organisational setting can be measured, documented and formally described (e.g. a CV for the individual, or a recruitment profile for an organisation).

Within the informal, implicit competence dimension, competence can be described as the actual competence possessed by the individual (e.g. the combination of actual previous experience and tacit skills, not readily expressed or articulated) and competence required to succeed with the job or task at hand (e.g. required skills and necessary experience, not readily expressed or articulated). Ellström (1992;1997) outlined this idea in a conceptual diagram where the utilised competence, in a specific situation, is described as an interaction between the individual’s formal and actual competence and the officially demanded competence and required competence of the task and or organisation. This utilised competence is defined as competence in use (see Figure 1). Due to the difficulty of encapsulating all aspects of tacit competence, i.e. “we can know more than we can tell” (Polanyi, 1966, p. 4), there almost certainly always exists, by necessity, a gap between formal descriptions of individual competence and officially demanded competence and informal individual actual competence and the competence required by the job and or task.

Thus, the necessary competence to solve the tasks or successfully perform the job (i.e. the competence in use) can be discerned and defined in the interaction between the individual and the organisation, and revealed in the professional actions of the practices performed within the practice context (Schatzki, 2005; Lindberg and Rantatalo, 2015).

![Figure 1. Ellström’s (1992;1997) competence diagram.](image)

The formal level of Ellström’s (1992;1997) competence diagram can be claimed to represent a system level framed by a logic of appropriateness (March & Olsen, 1989) for defining competence. With a system perspective, formal competence can be said to describe the content of competence in accordance with particular organisational system requirements, as to the individual and organisation. As such, demanded and formal competence must correspond to what is viewed as the legitimate, technical core of the organisation (Weick, 1976). The actual level can be said to represent a local level framed by a logic of consequence (March & Olsen, 1989). With a local perspective, actual competence can be said to conform to local requirements based on practice consequences, i.e. what actually works.

The different logics represented by the system structures of formal and actual competence can be more or less strongly coupled with each other (Weick, 1976). The ensuing conclusion of this perspective is that the match between the individual and task/organisation can be both related to actual competence gaps but also to a decoupling from what is deemed as appropriate on a system level and what is actually required (i.e. “what works”) on the local level.

Lindberg and Rantatalo (2015) also adds a normative dimension about what shapes actions as the manifestation of professional practices; that is, what is professionally perceived as the correct view on proper actions in order to be competent. Thus, competence is also a collective
notion, defined by regulations and norms from which practices and actions can be said to be inferred. This paper sets out to identify the collective components of QM competencies in relation to the dimensions featured in Ellström’s (1997) diagram and to elaborate on the potential gaps between the actual and needed competencies.

2.3 Research questions
Based on the two areas of QM and competence, two research questions guide this paper:
- RQ1: How can the formal and actual competencies of the QM practitioners in current organisations be described?
- RQ2: What officially demanded and required competencies in current organisations can be distinguished?

3. Method
3.1 Research context
Eight organisations participated in the study; all are large-sized Swedish or Sweden-based organisations, both public and private, with >1000 employees and annual turnover or annual budget of >50 M EUR. Table II outlines the participating organisations and the number of respondents.

Table II. Participating organisations

<table>
<thead>
<tr>
<th>Organisation</th>
<th>No. of participating QM professionals</th>
<th>Response rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life-science company</td>
<td>51</td>
<td>98%</td>
</tr>
<tr>
<td>Component manufacturing company</td>
<td>20</td>
<td>87%</td>
</tr>
<tr>
<td>Government body</td>
<td>41</td>
<td>84%</td>
</tr>
<tr>
<td>Energy supply company</td>
<td>25</td>
<td>68%</td>
</tr>
<tr>
<td>Telecommunications company</td>
<td>18</td>
<td>90%</td>
</tr>
<tr>
<td>Regional hospital</td>
<td>16</td>
<td>94%</td>
</tr>
<tr>
<td>Manufacturing company A</td>
<td>38</td>
<td>66%</td>
</tr>
<tr>
<td>Manufacturing company B</td>
<td>40</td>
<td>77%</td>
</tr>
<tr>
<td></td>
<td>n=249</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total response rate: 81%</td>
<td></td>
</tr>
</tbody>
</table>

One-third of the respondents represent service providers and the remainder represent manufacturing companies. Of the commercial organisations, around 58 per cent of the respondents compete on a business-to-business market, 20 per cent on the consumer market, and 22 per cent sell to both companies and consumers. All organisations have dedicated QM departments with established corporate governance structures responsible for maintaining QM policies and designing QM practices. In order to cover the breadth of QM, it was important that the organisations represented both private, public, commercial and public welfare organisations. In order to find suitable organisations, the available network of organisations connected to the Swedish Quality Management Academy (SQMA), a research body within the Swedish Institute for Quality, was used.

3.2 Questionnaire design and measures
The questionnaire included measures and items covering internal and external dimensions, situational/contingency aspects and outcomes (inspired by Van de Ven and Chu (1989)). We developed a questionnaire with 43 questions (or items) generated through a literature review, expert discussions (including experienced practitioners and scholars), and reviews of previous survey research.
Measures to ensure validity included several peer and practitioner reviews of the questionnaire during development. Testing was conducted and particular attention was given to the language and phrasing in order to minimise the risks of misinterpretation. During the test rounds, several changes and adjustments were made, enhancing the quality of the questionnaire. The web-based questionnaire was divided into part A (38 questions) for all participants and part B (five questions) for participants with managerial responsibilities. Part A was structured into seven main themes: (1) background factors, (2) work roles, (3) work content, (4) competencies and knowledge, (5) practitioner development and training, (6) learning and learning processes, and (7) management and leadership. Part B covered managerial perspectives on QM organisation and outcomes. The questionnaire was administered for online delivery using the web-based survey tool SurveyMonkey. For the self-assessment items featured in this paper, validated measures were used that utilized five-point Likert scales adapted from Elg et al. (2011), Dallner et al. (2000), Lagrosen and Lagrosen (2005), and Ahmed and Hassan (2003).

The data used is based on individual responses reflecting perceptions of organisational and task related settings. The level of analysis is therefore not individual but organisational in its ambition to explore practitioner competencies on a general and structural level. This paper is therefore an attempt to describe the actual and needed competencies in the studied organisations as perceived by representatives of QM practice.

3.3 Sample
In order to cover a wide scope of QM, a broad approach was used to define the target group. QM practitioners were defined as employees with a specific amount of time dedicated solely to recurrent QM work. In collaboration with the participating organisations, 30–50 survey participants on strategic, operational and functional levels were selected per organisation. Questions were included about possible managerial responsibilities, organisational levels, levels of engagement and responsibility in QM work. A general information letter was also designed, inviting each potential participant to complete the survey and describing the purpose, design and confidentiality of the survey study. Information about voluntary participation was also provided. The content of the information letter was contextualised in accordance with each organisation and e-mailed to each potential participant by a senior QM representative within each organisation.

3.4 Survey administration
After the individual e-mail invitation, the research team administered the survey and subsequent analysis. The invitation letter included a hyperlink to the web-based questionnaire, allowing recipients to participate in the survey. The survey was conducted over a two-month period in the autumn and winter of 2016/2017. The questionnaire went live for one month per organisation, including two follow-up email messages. Data was collected in a database for analysis using MS Excel and SPSS. The research team was available to address questions or comments about the questionnaire. In total, 308 invitations were sent out to potential participants in the eight organisations and 249 responses were collected (a response rate of 81 per cent).

4. Results
In the following the results will reported in relation to competencies, roles, and practices; finally, the summary of findings will address the overall question of potential misalignments, or fit, between actual QM competencies and the perception of QM competence needs in organisations.
4.1 The formal and informal competencies of QM practitioners

Figure 2 shows the QM practitioners’ education levels in the specific area of QM.

![Educational level by percentage of answers](image)

**Figure 2.** Educational level by percentage of answers (multiple answer choice possible)

The most common ways of gaining formal knowledge in the area of QM were self-directed studies, and various internal courses offered by the organisations. However, university education was common, as was more specialised and focused Six Sigma Black Belt training. It is also relevant to assess whether the practitioners feel that their education background in QM is sufficient for the tasks that they perform or if they would need more education (see Figure 3).

![Pie chart](image)

Do you perform QM-related working tasks that you need more education for?

- Very rarely or never
- Quite rarely
- Sometimes
- Quite often
- Very often or always

**Figure 3.** Degree to which QM practitioners feel that they perform tasks for which they would have needed more education
As Figure 3 shows, the QM practitioners are sometimes required to carry out tasks that they do not feel they have sufficient formal competence for (in terms of their formalised education and training). However, only about 10 per cent of respondents stated that they experience such situations rather often or very often. The results thus indicate that QM practitioners perceive their formal competence as being generally sufficient. However, in the actual situations that QM practitioners encounter, the actual individual competence (that is, knowledge and skills acquired via practice and experience) frequently is experienced as insufficient. More than half of respondents stated that they often or very often experience situations where more knowledge and skills are required (see Figure 4). The actual competence thus seems to be unmatched compared to the required competence of the task/organisation.

Does your work within QM require you to acquire new knowledge and skills?

- Very rarely or never
- Quite rarely
- Sometimes
- Quite often
- Very often or always

**Figure 4.** Degree to which QM practitioners feel that they perform tasks for which they would have needed more knowledge and skills.

### 4.2 QM role perception and competence

Regarding what roles the QM practitioners assume in organisations, Figure 5 outlines the results ranging from operational roles (such as auditing a specific standard), to strategic roles. The most common role perception was that of an expert support and method developer. When asked about work content and how strategic or operational they perceive it, the respondents were almost evenly split in terms of whether they mainly work on a strategic, or on an operational level. However, the respondents were allowed multiple choice so both strategic and operational roles may include a large variety of more specific roles.

Among the four most common roles in the results, three roles (expert support, method developer and internal consultant) suggest a tendency for a more traditional, specialist-oriented practice with a predominant internal focus. In sum, QM practitioner’s actual work seems to be mainly operational requiring operationally oriented competencies. However, they also perceive themselves as being more strategic, indicating possible discrepancies in formal and actual individual competence compared to demanded and required organisational competence.
Figure 5. Roles pursued by QM practitioners in their organisations by percentage of answers (multiple answer choice possible)

4.3 Practices in relation to concepts, methods and tools
While the variety of QM practitioner roles affects how QM work is carried out, it is also affected by the context in which they work. Table III shows ten different QM work orientations in order to capture the context in which the QM practitioners work and contribute to.

Table III. Mean scores and standard deviations for the statements on orientation of QM practices.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>We work with the design of routines and processes in the organisation</td>
<td>4.08</td>
<td>0.88</td>
</tr>
<tr>
<td>We regularly perform audits</td>
<td>3.93</td>
<td>1.18</td>
</tr>
<tr>
<td>We create efficient workflows to decrease our costs</td>
<td>3.71</td>
<td>1.04</td>
</tr>
<tr>
<td>We create meeting venues including different parts of the organisation</td>
<td>3.42</td>
<td>1.02</td>
</tr>
<tr>
<td>We work to reduce variation in processes</td>
<td>3.33</td>
<td>1.22</td>
</tr>
<tr>
<td>We work with QM in collaboration with our customers</td>
<td>3.14</td>
<td>1.19</td>
</tr>
<tr>
<td>We are good at adopting new concepts and ways of working for quality</td>
<td>3.09</td>
<td>1.05</td>
</tr>
<tr>
<td>We regularly train our co-workers in new methods</td>
<td>3.07</td>
<td>1.11</td>
</tr>
<tr>
<td>We work with statistical methods</td>
<td>2.89</td>
<td>1.12</td>
</tr>
<tr>
<td>We are good at decreasing unnecessary costs in the organisation</td>
<td>2.67</td>
<td>0.98</td>
</tr>
</tbody>
</table>

The most prevalent QM work orientation appears to be towards internal and exploitative practices (and corresponding knowledge, skills and attitudes). The three most common orientations are to: conduct internal audits, develop routines and processes, and increase efficiency in workflows to reduce costs. Less common were the externally oriented and exploratory orientations, such as QM work in collaboration with suppliers or introducing new concepts and practices to the organisation. These orientations in QM practices indicate that the required competencies in the studied organisations are centred around internal processes and practices focused on internal control and improvement on an operational level. When asked what QM concepts are most common, the respondents listed internally focused concepts, practices and tools that are already in place in the organisations and did not expand the practices
or develop radically new ways of working (see Table IV). The concepts are dominated by various approaches to manage processes and standards, including Lean. There appears to be a bias towards using internally oriented concepts supporting continuous improvement efforts and process efficiency and less focus on externally oriented concepts such as business excellence models (for example, the EFQM business excellence model). The competencies needed to work with the top three named concepts all centre on knowledge, skills and attitudes needed for incremental change on an operational level.

Table IV. Total mean scores and standard deviations for the stated use of most common QM concepts.

<table>
<thead>
<tr>
<th>QM concept</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 9001 (or other QM system)</td>
<td>3.69</td>
<td>1.59</td>
</tr>
<tr>
<td>Lean</td>
<td>3.58</td>
<td>1.30</td>
</tr>
<tr>
<td>Environment management system (e.g. ISO 14001)</td>
<td>3.58</td>
<td>1.55</td>
</tr>
<tr>
<td>Process management</td>
<td>3.55</td>
<td>1.07</td>
</tr>
<tr>
<td>Corporate Social Responsibility (CSR)</td>
<td>2.77</td>
<td>1.50</td>
</tr>
<tr>
<td>Six Sigma</td>
<td>2.59</td>
<td>1.31</td>
</tr>
<tr>
<td>SIQ business excellence model and SIQ quality award</td>
<td>1.84</td>
<td>1.11</td>
</tr>
<tr>
<td>EFQM business excellence model and European quality award</td>
<td>1.81</td>
<td>1.18</td>
</tr>
<tr>
<td>The Malcolm Baldridge business excellence model and MB National Quality Award</td>
<td>1.21</td>
<td>0.59</td>
</tr>
</tbody>
</table>

As to particular QM methods and tools, the results show that a majority of methods or tools are used in parallel. Methods and tools with wide applicability (e.g. PDCA, flowcharts and seven improvement tools) are most commonly used, whereas some more specific statistical tools (Design of Experiments and Taguchi methods) are used the least, although there is high variation between organisations (see Table V). The results indicate that needed competencies centre around highly traditional practices. To match the perceived practices, the competence of QM practitioners should be oriented towards having knowledge and skills on traditional, internally oriented methods targeted at incremental improvement on operational levels.

Table V. Total mean scores and standard deviations for the stated use of most common QM methods and tools.

<table>
<thead>
<tr>
<th>QM method and tool</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDCA or PDSA (Plan-Do-Check-Act or Plan-Do-Study-Act)</td>
<td>3.90</td>
<td>1.17</td>
</tr>
<tr>
<td>Flowcharts</td>
<td>3.83</td>
<td>1.12</td>
</tr>
<tr>
<td>‘Seven improvement tools’ (e.g. control charts, scatter plots, data collection etc.)</td>
<td>3.23</td>
<td>1.26</td>
</tr>
<tr>
<td>FMEA (Failure Mode and Effect Analysis)</td>
<td>2.92</td>
<td>1.51</td>
</tr>
<tr>
<td>Poka Yoke (mistake proofing)</td>
<td>2.71</td>
<td>1.33</td>
</tr>
<tr>
<td>‘Seven management tools’ (affinity diagram, tree diagram, matrix diagram, etc.)</td>
<td>2.49</td>
<td>1.21</td>
</tr>
<tr>
<td>Statistical process control</td>
<td>2.36</td>
<td>1.17</td>
</tr>
<tr>
<td>Design of experiments (DOE)</td>
<td>2.00</td>
<td>1.09</td>
</tr>
<tr>
<td>QFD (Quality function Deployment)</td>
<td>2.00</td>
<td>1.22</td>
</tr>
<tr>
<td>Taguchi methods</td>
<td>1.94</td>
<td>1.17</td>
</tr>
<tr>
<td>Quality circles (QC)</td>
<td>1.89</td>
<td>1.13</td>
</tr>
</tbody>
</table>
4.4 Summary of results
In summary, QM practitioners perceive themselves as rather well educated and formally competent and as being generally strategically and externally oriented. This stands in contrast to the perceived actual competencies which are described as predominantly operational with an emphasis on internal efficiency. To some extent, the individual actual competencies seem to match the organisational demands and requirements. The results show that a fair amount of QM work in organisations is exploitative and oriented towards internal processes. However, although the demanded and required QM competencies generally seem to match the actual competencies of QM practitioners, our results also show a discrepancy between the individual’s actual competencies and the competencies required by the task and/or situation at hand.

The main finding of this paper is a misalignment between actual and required competencies. Our results show that the actual situations encountered by QM practitioners in daily work requires additional QM competencies not formally demanded in the studied organisations. It thus appears that the general understanding of QM competence shared in the oral and written formulations (i.e. formal and demanded competence) is not readily compatible with the real needs (i.e. actual and formal competence) in the studied organisations.

5. Discussion
5.1 Exploring the fit between formal & demanded and actual & required QM competence
An explanation for the discrepancy between actual and required competence (Ellström, 1997) could be traced to the changes in QM (e.g. Sörgqvist, 2014, October; ASQ, 2015a). New organisational demands may not be on par with the curriculums within academia and schooling institutions. This could indicate a growing gap between formal competencies and actual competencies needed, but also a perceived and increasing structural mismatch between officially demanded competencies and competencies required by the job. QM practices involving customers and suppliers are required as a response to the future challenges addressed by Eriksson et al. (2016) and ASQ (2015a). This requires competencies to develop and introduce new concepts and practices within QM, necessitating more explorative oriented competencies rather than the predominantly exploitative competencies of the studied QM practitioners reflected in the results.

It can be argued that the driving force of QM competence in organisations is what the task and/or situation actually requires. This driving force is directly connected to the daily practices and our results indicate that daily task requirements promotes an internal efficiency perspective. Change is ultimately driven by external, customer demand (e.g. Antony, 2013; Backström, 2017; Fundin, Bergman & Elg, 2017; Benner and Tushman, 2015; Weckenmann et al., 2015; Zhang et al. 2012). The results in this study points to a lack of sufficient internal adaption to accommodate this external drive. As such, there may also be a mismatch between what is required and what is prescribed, i.e. in the officially demanded dimension (Ellström, 1997) of QM competence. As a consequence, the external nature of this drive may outpace internal organisational perspectives and normative perception of needed QM competencies creating a kind of “competence lag” in organisations. The perceived dominant logic of “traditional” QM in organisations could then also add to the lag by resonating back to traditional perceptions.

The lack of sufficient organisational awareness could be described as somewhat of a loose coupling (Weick, 1976) between officially demanded competencies and what is required. Hence, the logic of appropriateness (March & Olsen, 1989), i.e. what is regarded as officially demanded and prescribed QM competence, would be outpaced by the evolutionary speed of the logic of consequence (i.e. the required competence as dictated by customer demands). The loose coupling between officially demanded and required competence would then be echoed on the individual level, where the perception of adequate formal competence is loosely coupled with the needs for actual competence. Individual as well as institutional perceptions of formal and
demanded competence are thus not sufficiently coupled with the competence needs resulting from daily practice. The outcome is a misalignment and gap between needed competencies and actual competencies and mismatches between individual potential and organisational needs.

Compared to the results in earlier studies (e.g. Elg et al., 2011), the perceived role of strategist has emerged to be more prominent. The growing self-image of QM practitioners as being “QM strategists” seem to contradict the practices reported by the respondents in this study. It might be argued that the rationality of the ongoing QM discourse, as advocated by QM bodies of knowledge (e.g. ASQ, 2015a; SQMA/SIQ, 2012) and also current research (e.g. Antony, 2013; Fundin, 2018; Weckenmann et al. 2015), infuses a professional self-perception that is not matched by corresponding competence development (e.g. education programs and/or training or actual practices). As our results show, QM practitioners are more involved with traditional tools, techniques and methods (e.g Bunney & Dale, 1997; Bamford & Greatbanks, 2005) presupposing current QM as clinging on to past practices and an internal perspective. Current QM practitioners seem to be more involved in supporting internal processes on operational levels rather than external processes on strategic levels. This is in line with facilitating internal efficiency (Fundin, 2018) and ‘little q’ practices (Juran & Gryna, 1988). This further indicates that the QM practitioner remains one of a specialist rather than that of a strategic partner, collaborator and/or leader (ASQ, 2015b).

Customer demand, as driving the described paradigm change, certainly requires new competencies, broader skillsets and expanded knowledge bases in QM, supporting ambidexterity and innovation in organisations (e.g. Dahlgaard-Park, 2011; Steiber & Alänge, 2012; O’Reilly & Tushman, 2013). However, our results reveal perceptions with a rather internal and exploitative focus, with competencies predominantly aimed at conducting internal audits, developing routines and processes, and working to increase efficiency in workflows. Heeding the call for QM to support innovation (as being a more explorative QM activity) would require more exploratory and externally oriented competencies. However, such competencies appear to be less common among the QM practitioners studied, even though the self-perception suggests otherwise.

This study sought to explore competence in QM. Issues may be raised as to representation and heterogeneity among participating organisations. The relative breadth and size of the participating organisations provides a means for adequate face validity with a sufficiently correct notion of the competence dimensions (Ellström 1992;1997) within QM practice. Identification and sampling of suitable respondents (“QM practitioners”) was done in collaboration with the participating organisations. Targeting respondents in this way ensured the selection of respondents with relevant background, however, possible bias due to organisational influence must also be considered. Two particular risks in conjunction with the sampling approach in this study have been anticipated: (1) that the sampling approach misses highly relevant respondents formally working with QM who have not been selected for subjective reasons; and (2) that the same sample approach may also exclude respondents who are considered as not formally working with QM but still have a highly relevant (albeit informal) QM role. However, the transparency and close dialogue between the organisations and the researchers minimize these risks of organisational bias, as well as the breadth of respondents e.g. in terms of representing a variety of organisational levels.

5.2 Implications
This paper shows that current QM competencies seems to be predominantly rooted in traditional, internally focused QM traditions equivalent to what Sörqvist (2014, October) described as QM mainly assuming a supporting role. The results imply that an increased organisational awareness of the potential for QM practitioners to act in particular situations and contexts is imperative for QM to assume a leading role. Organisations thus need to organise
QM with a potential to act with both internal, operational and incremental imperatives and at the same time with external, strategic and radical imperatives.

Such ambidextrous ambitions may prove to be difficult to achieve (Benner & Tushman, 2015) and this paper argues that a competence-based analysis is a viable option in order to define, design and match QM competencies by addressing the basic challenges of what, how and who that is needed. With a competence perspective researchers and practitioners might avoid overly abstract notions of QM practice, as competence deals with real acts in real situations. Properly managed, an organisation featuring a combination of QM competencies, with carefully analysed knowledge bases and skillsets, adapted for both exploitative and explorative QM practices, could facilitate ambidexterity within organisations.

5.3 Further research
This paper forms an argument to adopt a competence-based approach in developing the conceptual understanding of QM and support organisations in their way to organise QM. Further research with other types of data, more in-depth studies and extensive analysis are needed to extend the descriptive results in order define and describe the actual and needed competencies of QM. Further qualitative studies where QM practices are analysed in order to identify and describe the key competencies and their components within QM are needed. As an outcome of such research, it will also be helpful to develop a workable QM competence model encompassing competencies for integrative and emergent QM. Also, further case-study-based research may be required in order to develop guiding organising principles for an organisation of QM practitioners that is truly fit for purpose.

6. Conclusions
The purpose of this paper was to use competence theory to explore perceptions of the fit between actual QM competencies of QM practitioners and the perception of QM competence needs in organisations. Three lines of change outlining paradigmatic changes during the last three decades was described. The results show that while the perception of formal QM competence may seem sufficient, the evolving nature of QM requires knowledge, skills and attitudes that are apt for more external perspectives aimed at strategic understanding, strategic influence also promoting radical change. Currently, there is a gap where there is a bias towards competence for exploitative QM rather than explorative QM. Organisational logics preserving and possibly reinforcing a perceived “competence lag” in organisations is identified and described. The described changes in QM also necessitates a more structured approach when defining relevant QM competencies in order to best organise QM in current and future organisations. By focusing on how QM practitioners should act given defined situations, needed competence and actual competence can be mapped and developed and by infusing competence theory, a better conceptual understanding of QM can thus be developed.

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Disclosure statement
No potential conflict of interest was reported by the authors.
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