Quality culture deployment – using behaviours to explain, diagnose and improve a quality culture

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Abstract

Purpose – Today's organisations face the challenge of measuring the right things and then using those measurements as a starting point to work with improved quality. The failure to generate a shared value base is pointed out as one main cause for the inability to effectively apply quality management and lean within organisations; thus, it appears central to measure these values. However, the measuring of values and behaviours seems to be missing within both concepts. Therefore, there is a need for a tool that measures not only quality values but also behaviours that support or obstruct a quality culture. The purpose of this paper is to describe how a measuring tool which measures quality culture can be designed and structured.

Design/methodology/approach – A project with the aim to measure and develop quality culture started in 2015 by three Swedish universities/institutes and seven organisations. During several workshops, quality values and supportive and obstructive behaviours were developed and described. This resulted in a survey where employees of the participating organisations ranked performance and importance of the described behaviours. The results were presented and discussed in a fourth workshop.

Findings – A framework of behaviours and a measurement tool for a quality culture are presented in this paper.

Originality/value – The framework of behaviours, supporting or obstructing a quality culture, is original and may be very useful to diagnose and develop a quality culture.

Keywords Behaviour, Collaboration, Measuring tool, Quality culture, Quality values

Paper type Case study

Introduction

In most industries, quality has never mattered more. Globalisation, digitalisation and the accelerating pace of change challenge organisations to become more agile and continuously innovate and improve their processes (Eriksson *et al.*, 2016). Today, customers are empowered to seek out and compare products and services from around the world. When customers are dissatisfied they can easily alert fellow consumers about quality problems by

social media. As a result of this, managers must find a new approach to quality management (QM) that moves away from the common, often short-term, view on various tools and techniques. Instead they should explore how their organisations can create a strong culture based on quality – one of the most important future challenges that organisations face in the QM area (Henri, 2006).

Organisational culture as a general factor affects almost every part of organisational interactions (Henri, 2006). Rigby and Bilodeau (2011) maintain that culture is as essential as strategy for organisations' success. Many researchers also support the link between the values held by the members of the organisation and the existing culture in the organisation. Without a considerable level of agreement on those values a strong culture cannot be said to exist (O'Reilly *et al.*, 1991). The development of an organisational culture is not an easy task, as it consists of a group of shared norms and values shaped over a long time and that effect the way the organisations work (Santos-Vijande and Álvarez-González, 2007). This is in line with Gimenez-Espin *et al.* (2013) who state that changes in organisational culture can be hard to achieve and take time.

To develop a quality culture can be seen as a deliberate selection of values, practices and tools to achieve systematic improvements in the organisation's processes and for its customers (Nilsson-Witell *et al.*, 2005). The concept of a quality culture is often contrasted to a blaming culture, characterised by a lack of trust (Bergman and Klefsjö, 2003; Khatri *et al.*, 2009).

Although many authors agree on the importance of a strong quality culture for organisational success, there is little agreement on the quality culture content. Thus, the purpose of this paper is to describe a collaboration between academia and practitioners where the aim was to be agreed on the quality culture content. Furthermore, in this paper, we describe how a survey could be designed to measure quality culture by means of values and behaviours.

Organisational culture

An organisational culture is a structure of shared values (Chatman and Eunyong Cha, 2003) and common values are the very core of cultures and of organisational cultures in specific (O'Reilly *et al.*, 1991). The organisational culture occurs on different levels where "level" corresponds to the grade to which the cultural phenomenon is observable (Schein, 2009). The first level, "Artefacts", can be observed and consists of, for example, organisational charts and stories told about the organisation, manner of speaking and style of dressing (Schein, 2009). These "Artefacts" are easy to distinguish but harder to construe. "Espoused values" are, for instance, the values, norms, principles, strategies and goals which are underlying the artefacts. The espoused values often leave large ranges of behaviours unwritten but can usually be identified by, e.g., use of questionnaires. However, espoused values can be difficult to get an idea about by mere observation. The third and bottom level of the organisational culture is the "Underlying Assumptions", and they tend to be very hard to change, unconscious and often taken for granted (Schein, 2009).

A strong organisational culture is formed by a great level of agreement among co-workers about what is valued and a high level of strength about these values (Chatman and Eunyong Cha, 2003). Organisational culture replicates the different social practice, values, norms, behaviours and formalities within a group and is established in an anchored system, something greater than the sum of its parts (Lowie, 1987). To successfully meet the challenges facing organisations today, many claim that the need is to develop a performance measurement system that integrates hard data outcomes with soft measures found in organisational culture, including values, norms and behaviours (Kollberg *et al.*, 2007; Snyder *et al.*, 2016). When a culture is shaped, leadership is crucial and the managers in the

organisation are important (Ingelsson, 2013). "The managers need to be present among their co-workers and aware of how their own actions affect the possibility to build a strong Quality Management culture" (Ingelsson, 2013, p. 77).

Quality culture

Leaders within organisations have the complicated challenge to realise the market, meet customer needs and anticipate and adapt to changes in the market to consolidate a competitive advantage (Bäckström *et al.*, 2012). This increases the demand to develop better efficiency to improve effective performance (Bäckström *et al.*, 2012) and also maintain a healthy working environment. However, many organisations fail to meet this challenge. One cause for the absence of success seems to be a focus on QM tools and processes and an absence of understanding of the influence of quality culture (Ingelsson *et al.*, 2010). The values within the quality culture can be found in the second level of the organisational culture, called "Espoused values" by Schein (2009), which often leaves large areas of behaviours unexplained.

According to Sila and Ebrahimpour (2002), the most frequent values referred to in QM literature are customer orientation, leadership commitment, participation of everybody, continuous improvements, management by facts and process orientation. This is comparable to the values Motawi (2001), presents as critical QM factors from a literature review: top management commitment, quality measurement and benchmarking, process management, product design, employee training and empowerment, vendor QM, customer involvement and satisfaction. Lagrosen (2006) sees the values within QM as the basic elements. The establishment of these values constitutes both the outcome and the ingredients of an excellent QM initiative. In a literature review, she notices that different authors use different names for the content of QM such as, for example, key elements, values, corner stones, principles or fundamental concepts (Lagrosen, 2006). A summary of her literature review is presented in Table I, where it can be recognised that although there is a difference in naming and content, they are strikingly similar.

The newly revised ISO9001 standard (ISO9001:2015) is also based on seven values (principles): customer focus, leadership, engagement of people, process approach, improvement, evidence-based decision making and relationship management (ISO, 2015). Hellsten (1997) found in her literature review six values that seemed to be common in most descriptions of QM: focus on customers, focus on processes, fact-based decisions, continuous improvements, everybody's commitment and management commitment. According to Dean and Bowen (1994), most of what has been written about QM is based on three values (principles): customer focus, continuous improvement and teamwork.

Methodology

A project with the aim to measure and develop quality culture started in 2015. The founder of the project was Swedish Quality Management Academy (SQMA), a research network whose purpose is to conduct needs-based research in collaboration between practitioners and academia in the area of QM. Seven large Swedish organisations from different lines of business were part of and also funded the project. Linköping University, Mid Sweden University and SIQ – Swedish Institute for Quality – represented academia. The overall aim of the project was to create new knowledge and insights about:

- what quality culture is;
- what quality culture consists of;
- how quality culture can be measured; and
- how it can be developed.

Bergman and Kiefsjö (2003) <i>Cornerstones</i>	Dale (1999) <i>Key elements</i>	Dahlggaard <i>et al.</i> (1999) <i>Principles</i>	EFQM Excellence Model (2002) <i>Fundamental concepts</i>	Hardjono <i>et al.</i> (1997) <i>Core values</i>	SIQ Model for Performance Excellence (SIQ, 2005) <i>Core values</i>	Malcolm Baldrige Excellence Framework (NIST, 2006) <i>Core values and concepts</i>
Committed leadership Let everybody be committed	Committed leadership of the CEO Involvement Teamwork Education and training	Leadership Everybody's participation	Leadership and constancy of purpose People development and involvement Partnership development	People focus	Leadership commitment Constancy of purpose Participation of everybody Competence development	Visionary leadership Valuing staff and partners
Improve continuously	Culture for continuous improvements	Continuous improvements (Kaizen) Focus on the customer and the employee	Continuous learning, improvement and innovation Customer focus	Learning focus	Continuous improvement Learning from others Customer orientation	Organisational and personal learning Managing for innovation Customer focused excellence
Focus on customers Focus on processes Base decisions on facts	Using tools and techniques Measurement and feedback Planning and organisation	Focus on facts	Management by processes and facts Corporate social responsibility Results orientation	Customer focus Business process focus	Process orientation Management by facts Social responsibility Collaboration Faster reactions Prevention	Management by facts Social responsibility and community health Agility Focus on results and creating value Focus on the future Systems perspective

Table I.
Cornerstones, key elements, principles, core concepts, core variables, core values or values of QM identified from a literature review (Lagrosen, 2006)

In this paper, the work to meet the first, second and third aims and the results of that work are presented.

The research project consisted of five workshops in total with two representatives from each organisation and one researcher from each university/institute. The first workshop was held in March 2015 with the purpose to develop a common framework between academia and practitioners regarding: “What is Quality Culture?” and “What does Quality Culture consist of?” During the second workshop in May 2015, supportive and obstructive behaviours were discussed, developed and described for each commonly agreed quality value. After the second workshop, the researchers compiled and analysed the collected material. Then, a further developed framework, with supportive and obstructive behaviours for each quality value in a quality culture, was analysed and revised during the third workshop in August 2015. Then, the academics developed a survey by using the proposed behaviours. During the period October 2015 until January 2016, a pilot survey was tested among the seven organisations. The survey consisted of an assessment of the framework for supportive and obstructive behaviours in quality culture. Hence, the aim of the tests was to measure quality culture.

The survey was tested and used by employees of the participating organisations which ranked perceived performance and importance of the described behaviours. The survey was web-based and available in a Swedish and an English version, both with the same questions only in different languages. The seven organisations participating chose what part of the company should take part and sent out web-links to the survey. The answers were not sent to the organisations but directly to the researchers. Each organisation sent the survey to between 73 and 310 respondents, in total 1,016. Response rates varied between 45 and 91 per cent on average 61 per cent.

Results and analysis conducted by the researchers of given answers were presented to the organisations in a fourth workshop in March 2016. Each organisation was given heads-up information about their specific strengths and weaknesses in terms of quality values and behaviours before the workshop and were asked to present their methods and practices of their strong areas in the workshop. In this way, the organisations could share best practises and learn from each other.

Analysis of the survey results were done in a number of ways using the methods presented below. The purposes of the analyses were to see:

- which values and behaviours were strong or weak in each organisation;
- if there was internal variation of perceptions within the organisations;
- if respondents were consistent in their answers within each quality value;
- if there were any correlations between answers about behaviours and/or importance; and
- if differences between organisations were statistically significant.

The fifth (i.e. the last) workshop in the project took place in June 2016. The purpose was to evaluate the measurement tool for quality culture and the project as such.

A way of collaborating between practitioners and academia

Research conducted in collaboration between practitioners and researchers stresses the importance of separating the roles of practitioner and researcher. Also, it emphasises reflection and distance, both in time and space, to achieve the goal of critical research (Johannisson *et al.*, 2008; Shani *et al.*, 2008). This project is based on an interactive research approach where research has made contributions to:

- creation of scientifically valid knowledge;
- practical concerns, and
- creation of knowledge and competencies of the parties involved in the research process.

The research has both a practical and theoretical purpose. The practical purpose and challenge addressed by the seven Swedish organisations participating in this project was to measure and develop their own quality culture (Eriksson *et al.*, 2016). The theoretical purpose was to develop a framework for:

- what quality culture is;
- what it consists of;
- how it can be measured; and
- how it can be developed.

The collaborative research approach is characterised by the mutual sharing of responsibility for the other partners' learning and knowledge (Shani *et al.*, 2008). Hence, the practitioners will benefit if the researchers succeed in formulating an innovative framework for quality culture. Further, the researchers will gain if the practitioners try out the measurement tool for quality culture and if this results in scientifically interesting results (Shani *et al.*, 2008). Chisholm and Elden (1993) described a spectrum of researcher roles with "researcher-dominated" at one end and "collaboratively managed" at the other end. In the researcher-dominated scenario, the researcher develops the research model, generates information used and makes the key decisions during the research process. In collaboratively managed projects, the research model is jointly developed and information used is jointly generated. Also, the decisions during the process are made by mutual agreement.

This was a collaboratively managed project, where the researchers prepared the workshops, but the practitioners also had assignments prior to each workshop and actively influenced the outcome. After each session, the researchers gathered, analysed and revised the collected material. It was then sent out to representatives of the participating organisations for feedback. After the pilot tests, each organisation made a presentation during the workshop in March 2016 and shared examples of how they worked with best practice in quality culture. Figure 1 visualises the meetings/workshops between the research system and the practitioner system, where new insights and knowledge are created (Ellström, 2008).

Quality culture according to practitioners and academia

In preparation for the first workshop in March 2015, each organisation described, according to their view, what quality culture is and what it consists of. The practical view on quality culture was then clustered and visualised on the left-hand side of a whiteboard (Figure 2).

Quality culture according to the practitioners ended up in 18 values: long-term perspective, social responsibility, prevention, performance management, visualisation, interaction, competence development, learning from others, agility, dialogue, clear normal situation, standardisation, process orientation, customer orientation, everyone's participation, management commitment, base your decisions on facts and continuous improvement.

The theoretical perspective on quality culture resulted in six values, which were visualised on the right hand side of the whiteboard (Figure 2): focus on customers, focus on

Figure 1.
The interactive
research process

Source: Ellström (2008)

Figure 2.
Quality culture
according to
practitioners and
academia

Note: The notions of the values were slightly modified when they were agreed upon by both practitioners and researchers, see below and Table II

processes, fact-based decisions, continuous improvements, everybody's commitment and management commitment (Hellsten, 1997; Bergman and Klefsjö, 2003).

Agreed values of quality culture

The practical view and the theoretical view on quality culture were visualised as two parts of a Venn diagram (Venn, 1880). The next step of the process was to analyse which values from the two perspectives were overlapping. This resulted in six values being common from both practitioners and research and agreed upon (Figure 2).

After these results had been presented to the participating organisations they suggested adding three more values: interaction, proactivity and competence. After discussions during the second workshop in May 2015, it was agreed that interaction and competence are already included in the common values. Thus, proactivity was the only value that was added to the framework of quality culture. The final quality culture values were formulated: *customer orientation, process orientation, committed management (including proactivity), participation and cooperation, continuous improvements and base decisions on facts.*

Behaviours of a quality culture

Measuring quality culture is not an easy task. In some way, the values, as given above, need to be quantified. How could this be done? One way is to find objective “hard” measurements for each value, e.g. number of customer complaints for (lack of) customer orientation, but these types of measurements are too distant from the culture of the everyday work. Another way would be to ask the employees if the values exist, e.g. “To what degree do you agree that you have customer orientation?” The problem with this approach though, is that most employees have different (or no) mental models of what “customer orientation” is. We need to describe situations and narratives that are easy to understand. Therefore, we need to define behaviours that either support or obstruct the values of a quality culture. Hence, the practitioners and researchers prepared definitions/narratives of behaviours for the second workshop held in May 2015. During the workshop, each value in the framework was analysed to identify the behaviours that constitute the values. The exercise resulted in 67 described behaviours for the seven values in the framework. The researchers gathered after the workshop to further analyse the results and develop the narratives.

A methodological consideration when describing the quality culture as narratives was to avoid bias. Most employees know or have heard that customers and processes are supposed to be “good”. As the next step of the research process was to measure the quality culture and get answers from the practitioners that were not coloured or biased towards what are supposed to be “good answers”, all behaviours were consciously stated in a “good” way. There should not be a good and a bad answer to choose from but rather a good statement supporting a quality culture and a good statement obstructing a quality culture (but supporting something else). Accordingly, for each value narratives were formulated: two behaviours that support a quality culture and two behaviours that obstruct a quality culture. The developed framework with supportive and obstructive behaviours in quality culture was then analysed and revised by both practitioners and researchers during the third workshop held in August 2015. The results from that workshop are presented in Table II.

Survey design and analysis considerations

Another aspect of asking questions is that stakeholders – both customers and employees – when asked, tend to think “everything is important”. Gregorio and Cronemyr (2011) presented the development and usage of a trade-off importance model that reduces the “everything is important” problem by letting the respondents make trade-offs between

Table II.
Statements
describing
behaviours, within
six quality values,
that either support or
obstruct the creation
of a quality culture
(developed in this
project)

Quality values	Customer orientation	Process orientation	Committed management (*Proactivity)	Participation and cooperation	Continuous improvements	Base decisions on facts
<i>Supportive behaviour 1</i> <i>vs</i>	We cooperate to satisfy the customer's needs	We adhere to our agreed guidelines and working methods	Our leaders encourage suggestions for improvements and look at problems as a way to improve	Development of our activities involves all co-workers based on their competences	We evaluate and improve our working methods	When we have a problem, we find out what the root cause is before we decide on a solution
<i>Obstructive behaviour 1</i>	In our organisation, specially appointed staff solve the customer's problems	Each person chooses individually how to work	Our leaders assume that we do things right from the beginning to avoid problems	Our improvement work is managed by our leaders or specialists	We solve problems when they arise	We solve problems as quickly and easily as possible
<i>Supportive behaviour 2</i> <i>vs</i>	We find out what needs and expectations the customers have and adapt our products and services	We cooperate between departments and functions as we develop our business	Our leaders ask for customer consequences in decision situations	We work to achieve the organisation's overarching objectives	We work on improvements in a structured fashion	We gather information and measurement results which we use to develop our business
<i>Obstructive behaviour 2</i>	We develop products and services that are as good as possible. We offer these to customers	We focus on developing our business within the group and our own department	Our leaders ask for efficiency when decisions are made	We work to achieve our team's objectives	We adapt our improvement work to the situation	We develop our business based on the knowledge and experience of our co-workers
<i>Supportive behaviour 3</i> <i>vs</i>			Our leaders prioritise preventive work*			
<i>Obstructive behaviour 3</i>			Our leaders prioritise solutions to problems that have arisen*			

Note: The behaviours of proactivity were later incorporated into the analysis of committed management

scenarios where one scenario is good and bad (in our case supportive and obstructive), whereas the other scenario is bad and good (in our case obstructive and supportive) in two different aspects. The model was a synthesis and development of the Kano model (Kano *et al.*, 1984; Berger *et al.*, 1993), SERVQUAL (Parasuraman *et al.*, 1985; Parasuraman *et al.*, 1991), Taguchi's loss function (Taguchi, 1987; Phadke, 1989) and importance performance analysis (IPA) (Martilla and James, 1977; Slack, 1994). The trade-off importance model (Gregorio and Cronemyr, 2011) (Figure 3) has been used in the development of the survey in this project, and the IPA (Martilla and James, 1977; Slack, 1994) (Figure 4) has been used in the analysis of the results from the survey.

When developing the survey in this research project the participants expressed a wish to have a survey that was not "the same type as all other surveys" with questions of the type "To which degree do you agree with the following statements?". Because those surveys sometimes have the "everything is important" problem, it was decided to use the trade-off importance model in this project: a type of survey the participants had never used before.

A measuring tool

To analyse using the IPA, both the perceived performance and the importance of the quality values were investigated. But – which is important to stress – the questions did not mention any of the quality values, e.g. customer orientation, etc. Instead, the statements on different behaviours were used. The rating of the quality values was calculated from the respondents' ratings of the stated behaviours. Furthermore, all behaviours were randomly mixed in the questions, both:

- the order of the values; and
- varying the order of the behaviours; supportive/obstructive (and opposite) the quality values.

The survey started with explanations on the survey and the research project. The respondents were also asked some contextual information like position, age, time in company, etc. Finally, there were some open questions about possible problems or suggestions to the organisation or to the researchers. All answers were anonymous.

If everything else were the same, WHICH WOULD YOU PREFER?					
	Months				
INSPECTION REPORT delivery time	0.5	1	1.5	2	2.5
	0	0	0	0	0
Spare part DELIVERY after the confirmed date	15	12	8	4	0
	Days Late				

Note: The top scale is good to bad, and the lower scale is bad to good. The respondent has to set an X on the grey line at the desired trade-off

Figure 3.
A Survey question
using the trade-off
importance model
from Gregorio and
Cronemyr (2011)

Figure 4.
IPA – Importance
performance analysis

Source: Martilla and James (1977), Slack (1994)

Survey Part 1: Perceived performance of behaviours

The first part of the survey consisted of 13 questions, corresponding to the 13 pairs of supportive and obstructive behaviours presented in Table I. Sometimes, the supportive behaviour statement was given to the left and the obstructive to the right, and sometimes it was the opposite. Below is an example from the English survey showing the first question in the survey (Figure 5).

As can be seen, the first pair of behaviours in the committed management value are presented (but the respondents do not know which value is being investigated; it does not say “Committed Management”). The respondent must choose which behaviour occurs most often at his/her own workplace. There are eight different answer alternatives. Seven for different grades of the two behaviours and one if neither of the behaviours occurs.

In this case, the supportive behaviour is to the left, and the obstructive behaviour is to the right, but of course, the respondent is not told about such “supportive” and “obstructive” categories. When responses are analysed, this is taken into account. An answer in the far-left box would give seven points to the value committed management, whereas an answer to the far right (of the scale) would only give one point to committed management. An answer in the box outside the scale would give “–1” but would be treated as “no answer” and would not be used in the following analysis.

Survey part 2: Importance

The second part of the survey consisted of 15 questions. In this case, only the first pair of behaviours from each quality value were used, i.e. six pairs of behaviour statements were used (not all 13 pairs). See Note 2 under Table I.

In this part, hypothetical scenarios are presented to the respondents which they have to choose from. In this case, the trade-off importance model is used, see description above.

In the left scenario, one supportive behaviour of an (untold) quality value is combined with an obstructive behaviour of another (untold) quality value. To the right, behaviours of

The first part of the questionnaire contains question about behaviours that you recognize from your own workplace.

Each question describes two behaviours that you are to consider how often they occur at your own workplace. Choose one end of the scale if only one of the behaviours occurs or the other end of the scale if only the other behaviour occurs. There are seven response alternatives, and you choose the one in the middle (the fourth) if you think both behaviours occur equally often. If you, however, feel that neither of the two behaviours occurs, please mark the box on the far right, outside the response scale.

Our leaders encourage suggestions for improvements and look at problems as a way to improve

Our leaders assume that we do things right from the beginning to avoid problems

Both behaviours occur equally

The first occurs more

The second occurs more

Figure 5.
An introductory text
and the first question
in the survey; first
part with questions
about perceived
performances

the same values are presented but supportive/obstructive have switched places. So “good/bad” on one end of the scale and “bad/good” on the other. The respondent may not think in terms of good or bad, but rather which behaviour to prefer. He/she just has to choose one box from one to seven which he/she would prefer, given that one has to choose.

Because each question combines a pair of behaviours from one quality value with a pair of behaviours from another quality value and, given there are six quality values, the number of questions becomes 15 [$n = 6$; $(n^2 - n)/2 = 15$].

As in the first part, supportive and obstructive behaviour statements were given randomly to the left and to the right. Below is an example from the English survey showing the first question in the survey’s second part (Figure 6).

Here, the first pair of behaviours from customer orientation have been combined with the first pair of behaviours from process orientation, even though – once again – the values are not mentioned. The respondent must choose which scenario of behaviours he/she would prefer, if one has to choose.

In this case, the supportive behaviour of customer orientation is to the left, and the obstructive behaviour is to the right, whereas it is the opposite for process orientation. When responses are analysed, this is taken into account. An answer in the far-left box would give seven points to the value customer orientation and only one point to process orientation, whereas an answer to the far right would give the opposite points. If a respondent consistently answers that behaviours of a certain (untold) value are preferable, then respondent will give higher points to that specific value than the other values.

Analysis of results from the pilot test of the survey

Below a summary of the different types of analysis are presented. Only sample results are given. The analysis tool is currently developed further with the aim of a more standardised tool.

Analysis of means in perceived performance and importance

What values and behaviours were strong or weak in each organisation?

Each respondent answered all 13 + 15 questions. For each respondent, the average points of the questions for each quality value was calculated, i.e. one average for each value in Part 1 about perceived performance and one average for each value in Part 2 about importance. Then averages of all the organisation’s respondents’ averages were calculated. Because each answer could be a number between 1 and 7, naturally one could expect the averages of averages to be close to 4.0 points. That is not a problem (we look at variation below). We still want to see which quality values have a little higher or lower value than others. Therefore, the overall averages were ranked in order from smallest to greatest and given numbers in the size order to get “more spread in values”. These rank numbers should only be used for internal evaluation of strengths and weaknesses using the IPA model.

An example of an IPA evaluation is given in Figure 7.

As seen, all averages are close to 4.0 ranging between 3.6 and 4.1 for performance and between 3.6 and 4.2 for importance. That might look like very small differences, but it requires a quite significant difference in responses to move the average away from 4.0. So, the ranking of the averages is important and interesting. By ranking and introducing “more spread”, the strengths and weaknesses of the organisation can be analysed *internally* with the IPA. This organisation (X) was strong on continuous improvement but needed to improve in the values process orientation, customer orientation and participation and cooperation. Hence, Company X was asked to present in a workshop to the other six participating organisations how they worked with continuous improvement, sharing best

You've now got to the second part of the questionnaire: Importance

The second part of the questionnaire contains questions in which you are asked to consider two separate, made-up options. Which of the two options presented would you prefer, if you had to choose?

Each option is described by two different behaviours. In other words, the two behaviours to the left are one option and the two behaviours to the right are the other option. If you had to choose, which would you prefer?

The questions in this part also have seven response alternatives. Choose the middle (fourth) alternative if you would prefer both options equally as much, or equally as little. Since you have to choose, there is no response alternative to the right outside the scale in this part of the questionnaire.

1

Prefer the first alternative

"We cooperate to satisfy the customer's needs" *and* "Each person chooses individually how to work"

If I had to choose, I would prefer both alternatives equally as much/as little

Prefer the second alternative

"In our organization, specially appointed staff solve the customer's problems" *and* "We adhere to our agreed guidelines and working methods"

Lean towards the first

Lean towards the second

Figure 6.
An introductory text
and the first question
in the second part of
the survey; questions
about importance

Company X

Number of respondents=90

Summary: Behavior performance and Importance

Quality Perspective	Importance			Performance		
	Average Rank	Score	Average Rank	Score	Average Rank	Score
Customer	4,2189	2	7,3	3,7	4	4,0
Process	4,23	1	8,6	3,9	3	5,0
Management	3,757	5	3,2	3,6	5	3,0
Participation	4,0993	3	5,9	3,6	6	2,0
Improvement	3,6278	6	1,9	4,1	1	7,0
Facts	4,065	4	4,6	4,0	2	6,0

Absolute averages
(average of all
respondents)

Relative averages (score)
for internal comparison

Figure 7.
A sample evaluation
of responses from
“Company X”

Note: Absolute values to the left and relative values in the IPA to the right

practice. Then they got tips on how to work with process orientation, customer orientation and participation and cooperation from the other participants.

Analysis of variation within organisations

Were there internal variations in perceptions within the organisations?

The averages of averages presented above do not show the variation in perceptions within the organisations. Hence, box plots (as well as histograms and dot plots not shown here) of the internal variation were done (Figure 8). The variation could be analysed based on contextual values, e.g. gender, age, position, etc. The significance of differences between the quality values was analysed using ANOVA (not shown in the graph).

As seen, continuous improvement has the highest average, as well as the smallest variation of the perceived performances and also the smallest average and variation for importance. This means the respondents in Company X grade the behaviours and importance related to that quality value in a similar way.

Analysis of variation between organisations

Were there significant differences between organisations?

Seven different organisations participated in the research project. Employees from these organisations answered the survey. Strengths and weaknesses in the organisations could be discussed by comparing practices between organisations.

Note: Notice, middle line indicates median, + indicates average. * are outliers outside $\pm 3\sigma$

Figure 8. A box plot for the respondents' averages in "Company X", for each quality value, both perceived behaviour performance and importance

The comparison between organisations for the quality value of customer orientation is given in [Figure 9](#).

Analysis of consistency in answers

Were respondents consistent in their answers within each quality value?

Even though there naturally will be variation between employees' perceptions and opinions, one would prefer that one respondent's answers about behaviours within the same quality value not to have a big variation. Small variation means the selected behaviours are indicating the same thing, i.e. the (untold) quality value.

In this project, the ranges in answers have been analysed in the same way as the averages ([Figure 10](#)). The range is the difference between max and min points given by a respondent to behaviours within a specific quality value. For example, for behaviours within a quality value the Answers 4 and 5 give an average = 4.5 and a range = 1. Another way to show that variables are showing the same thing is to calculate Cronbach's alpha. However, because all supportive (or obstructive) behaviours of the same quality value may not necessarily be present, we have not used that here.

The respondents' uncertainty expressed as the ranges are lower for the perceived performances than for the importance. Theoretically, a randomly even distribution of answers between 1 and 7 could give ranges between 0 and 6 and would give an average range of 2.2 (and median of 2). Because the respondents' ranges in answers of perceived performances are somewhat lower than 2.2, the uncertainty is said to be low. The ranges of the importance are around 2, indicating higher uncertainty. So, there is a higher consistency in answers about behaviour performance than about importance.

Analysis of correlations

Were there any correlations between answers about behaviours and/or importance?

Figure 9.
Two box plots for the respondents' averages in all seven organisations, for the quality value customer orientation

Notes: Top: perceived behaviour performance;
Bottom: importance. Both have significant differences between organisations as seen by the ANOVA output

One more thing that could be investigated are the correlations between the points given to the perceived performances and the importance of the quality values. An example is given in [Figure 11](#). Correlation coefficients (c) are given only if significant ($p < 0.05$).

Furthermore, correlations in answers and contextual variables like gender, role, years in organisation, etc. could be analysed but are not included in [Figure 11](#).

As known to all quality academics and most practitioners, correlation does not imply causation, so the correlations need to be investigated further. However, the mostly positive correlations between perceived performances and mostly negative correlations between the importance of the quality values are a natural consequence of the survey design.

In this paper, we present a framework for quality culture: what it is and what it consists of. Quality culture is a topic widely discussed by both practitioners and researchers, but it has no clear definition. The QM literature is limited to the view of values as a set of underlying assumptions of how to view the organisation and its relation to customers, competitors and

suppliers (Dean and Bowen, 1994). The values are about people, organisations and change processes (Hackman and Wageman, 1995). Each value is implemented through a set of practices, which are activities designed to display and embody the values. The practices are, in turn, supported by various techniques to make them effective. Hence, the focus is on QM methodologies and tools – not on behaviours or actions that are there or not in an organisation. Thus, results like this, where each value of the quality culture is described by behaviours, are needed.

In this framework and various narratives, we have never mentioned the values directly (customers, processes, etc.). We have made an effort to describe these behaviours in concrete and easy to understand terms. Answering questions about distinct behaviours in a survey and presenting the results thereof also makes it easier for managers to take action and develop the quality culture based on these behaviours.

In this paper, we also propose a model and a tool for measuring and analysing a quality culture. The survey only uses statements about the behaviours not the values directly. Instead the performance and the importance of the values are derived from the respondents' answers on questions about the behaviours. This way of measuring soft values has been found to be missing within QM (Ingelsson *et al.*, 2010).

The web-based survey was answered by some 600 employees in the seven organisations. Answers were sent directly to the researchers who did the analysis and presented preliminary results to the participants from each organisation. The analysis of the model and tool itself is still ongoing.

In the first part of the survey, the respondent had to choose the behaviour – from one supporting and another one obstructing a quality culture – which occurs most often at his/her own workplace. The second part on importance used the trade-off importance model presented by Gregorio and Cronemyr (2011). This resulted in having to make a choice between somewhat more complicated scenarios. The main purpose of using this model was to avoid the “Everything is important” problem. As indicated by correlations, this was accomplished.

This research was co-created between academia and practitioners during several workshops, a mutual sharing of responsibility for the other partner's learning and knowledge as Shani *et al.* (2008) describe. We can conclude that the results were enriched by this cooperation. Also, the quality culture content and the described behaviours would not have been as exhaustive, as they became without the views from different types of organisations together with the views from academia. The results from this paper can be used to maintain a quality culture which Rigby and Bilodeau (2011) assert is as essential as strategy for organisations' success. The described values and behaviours in this paper can help managers to select what to focus on in their efforts to develop a quality culture. The results have been validated by the participating organisations; there was consensus that the values and behaviours were a good description of a quality culture.

The analysis and evaluation of the measurement tool and project as such is still ongoing. The conclusion so far is that the concept of using behaviours as a way to describe, diagnose and improve a quality culture looks very promising.

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