Exploring real teamwork and sustainable quality culture, focusing on top management teams

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Abstract

Purpose – The purpose of this paper is to describe the perception of real teamwork and sustainable quality culture as well as success factors for achieving a sustainable quality culture within an organisation, focusing on top management teams (TMTs). An additional purpose is to explore the relationship between real teamwork and sustainable quality culture.

Design/methodology/approach – A mixed-methods design focusing on TMTs was used. Four TMTs were open-sampled and located in different parts of Sweden. The data were collected through questionnaires and focus group discussions between April 2022 and December 2022. Follow-up meetings were thereafter held with the participants. A meta-analysis was conducted of the data from the four TMTs.

Findings – Two overarching conclusions of this study were: to follow the developed methodology can be one way to increase TMTs' abilities for real teamwork alongside a sustainable quality culture, and the results also showed the importance of a systems view, emotional commitment and continuous improvement for improving real teamwork and creating a sustainable quality culture.

Practical implications – Practical implications were suggestions on how to increase the TMTs' abilities for real teamwork alongside a sustainable quality culture. A deepened understanding of real teamwork and a sustainable quality culture was also achieved by the participants.

Originality/value – The novelty of this paper is the use of a new methodology for assessing teamwork and sustainable quality culture. To the authors' knowledge, no similar research has previously been performed to investigate teamwork alongside a sustainable quality culture, focusing on TMTs.

Keywords Quality culture, Real teamwork, Success factors, Sustainable quality culture, TMT, Teamwork, Top management team

Paper type Research paper

1. Introduction

One challenge for organisations today is how to adapt to continuously changing environments (Fundin *et al.*, 2018). Organisations need to be more flexible and adaptable to master the shifting needs of their customers. One way of asserting oneself within this competition is to apply total quality management (TQM). TQM can be described as a set of values, methodologies and tools that are viewed from a systemic perspective (Bergman *et al.*, 2022; Bergman and Klefsjö, 2020). Dean and Bowen (1994) described total quality (TQ) as a philosophy or approach to management characterised by a set of principles (customer focus, continuous improvement and teamwork). Each of these principles should be implemented

through a set of practices supported by techniques. Dale *et al.* (2007) also include teamwork as a key feature of an organisation's approach to TQM.

Nowadays, working in teams is more important than ever, due to increasingly complex organisational challenges (Kozlowski and Ilgen, 2006; Richardson, 2011; van Kemenade, 2021). There is a greater propensity for team working, both within and across organisational boundaries, to try and achieve greater effectiveness, flexibility and adaptability (e.g. Kozlowski and Ilgen, 2006; Thompson, 2004). Edmondson (2013) argues "that fast-moving work environments need people who know how to team, people who have the skills and the flexibility to act in moments of potential collaboration when and where they appear" (pp. 43–44). Furthermore, today's organisations are often adapting new technologies and innovations, which require changed roles and responsibilities, as well as new ways of how employees interact and collaborate. This may pronounce a new era for teams and teamwork, which has the effect that previous research and practices need to be reviewed and compared with today's demands on teams and teamwork (Benishek and Lazzara, 2019).

As early as 1993, Katzenbach and Smith stated that top management teams (TMTs) working as "real" teams, would be increasingly important in the future as more organisations are confronted with the need to manage major changes within their organisation. Barrick *et al.* (2007) found that TMTs with high interdependence (i.e. real teams), including being more cohesive and with more communication, had higher team and subsequent firm performance.

Schein (2009) argues that culture and leadership are intertwined, and Henri (2006) claims that culture affects nearly all aspects of organisational interactions as well as activities at the top management level. Consequently, the TMT plays a crucial role in creating the motivation, values and behaviours for implementing TQM (Dale *et al.*, 2007). How the TMT of an organisation acts and makes decisions and how it involves employees in working with improvements will influence the organisation's ability to foster a quality culture (Bergman *et al.*, 2022).

To summarise, due to increasingly complex societal and organisational challenges, working in teams seems to be more crucial than ever in order to create value for customers and citizens. More research is needed on how teamwork practices can be adjusted to today's demands on teams and teamwork, especially when it comes to the TMT's ability to work as a "real" team alongside with sustainable quality culture, aiming at creating sustainable organisational performance.

Based on this background, the purpose of this paper is to describe the perception of real teamwork and sustainable quality culture as well as success factors for achieving a sustainable quality culture within an organisation, focusing on TMTs. An additional purpose is to explore the relationship between real teamwork and sustainable quality culture.

2. Theoretical background

2.1 Teams

Research on teams is extensive, and there are various definitions and perspectives presented on the concept of "teams" in the literature. One analysis of teams is provided by Katzenbach and Smith (1993), who introduced the concept of the "Team Performance Curve" - a curve showing performance impact in relation to team effectiveness. According to Katzenbach and Smith (1993), the different types of teams along this curve are working groups, pseudo teams, potential teams, real teams and high-performance teams. Many teams strive to become real teams or even high-performance teams, but what does a team need to climb the curve?

Summarising previous research, eleven prerequisites for a "real" team can be identified (see Sten *et al.*, 2023):

    (1) *Team communication:* regular communication between team members with the aim of adapting behaviours to function better collectively (e.g. Kock, 2007; Lyubovnikova *et al.*, 2014)

(2) *Team competences and learning:* unique or complementary skills and learning within the team (e.g. Katzenbach, 1998; Katzenbach and Smith, 1993)

(3) *Team composition, structure and membership:* a bounded set of individuals (more than two) who perceive themselves and are perceived by others as a clearly defined social unit (e.g. Hackman, 2002; O'Leary *et al.*, 2011; Rasmussen and Jeppesen, 2006)

(4) *Team context:* embedded in an encompassing organisational system, with boundaries and linkages to the broader system and task environments (e.g. Kozlowski and Ilgen, 2006; Richardson *et al.*, 2010)

(5) *Team culture:* a positive, supportive and appreciative atmosphere (e.g. West, 2013)

(6) *Team flexibility and adaptability:* flexible and adaptable to changes in the broader system (e.g. Salas *et al.*, 1993)

(7) *Team leadership and team decision-making:* shared leadership, mandate and autonomy for team decisions (e.g. Salas *et al.*, 1993)

(8) *Team purpose and objective(s):* a shared purpose, outcome and accepted common goals (e.g. Gremyr *et al.*, 2020; Hackman, 2002; O'Leary *et al.*, 2011; Salas *et al.*, 2015; Tannenbaum and Salas, 2020; Woods and West, 2010)

(9) *Team reflexivity and continuous improvement*: collective reflection on performance and goal achievement and how to improve working methods (e.g. Richardson, 2011)

(10) *Team roles and responsibilities:* specified roles and shared responsibilities (e.g. O'Leary *et al.*, 2011)

(11) *Team tasks and coordination:* interdependent working to carry out relevant team tasks (e.g. Katzenbach and Smith, 1993)

2.2 Top management teams

A TMT is usually described as a small group of managers at the top of an organisation. For example, Simsek *et al.* (2005) define a TMT as a group of senior managers whose decisions impact an organisation's future. Webber and Donahue (2001) add that a TMT also has an important impact on organisational outcomes. Cannella *et al.* (2008) describe a TMT as a relatively small group of the most important managers at the apex of an organisation. In all of these definitions, the members of a TMT have a management role. Based on the argument that teams should be comprised of members that are best suited to the purpose and objectives of the specific team, Edmondson (2013) states that one way of enhancing strategic leadership effectiveness in a complex organisation is to encourage senior executives to adapt team processes and compositions for specific situations. Katzenbach and Smith (1993) argue that too many upper management groups are constrained from becoming real teams due to the assumption that team goals must be identical to corporate goals and that the roles of team members should be determined by their positions rather than their skills.

2.3 Teamwork, team collaboration, teamworking and teaming

Teamwork is a process of organisation that involves characteristics of teams, like boundedness, interdependency and autonomy (Rasmussen and Jeppesen, 2006). Salas *et al.* (2007) refer to teamwork as a dynamic process of contributing to team performance and performance outcomes. Reeves *et al.* (2018) discuss different types of interprofessional practices as teamwork, collaboration, coordination and networking and how these concepts can be distinguished. Sten *et al.* (2021) define team collaboration as "co-workers collaborating within and between hospital

units based on shared views of person-centred care, continuous learning and sharing of knowledge, and with a focus on communication, coordination, structure and fact-based decisions" (pp. 47–48). Whilst Mueller *et al.* (2000) use the term "teamworking", Edmondson (2013) refers to "teaming"; she argues that teaming is emphasising the process of interactions. Teaming is "both a mindset that accepts working together actively and a set of behaviours tailored to sharing and synthesising knowledge" (p. 45). In this paper, the term "teamwork" is used and it is treated as a synonym for "team collaboration", "teamworking" and "teaming".

2.4 Organisational culture and sustainable quality culture

Schein (2009) argues that the culture of an organisation can be understood from three levels. The first level, artefacts, includes visible organisational structures and processes. The second level, espoused values, includes goals, strategies and philosophies that exist within and create an image of the organisation. The third level, underlying assumptions, refers to a deeper level of shared knowledge founded in the history of the organisation. These underlying assumptions represent a culture created through common learnt values and beliefs that have become taken for granted.

A quality culture is formed by common core values or cornerstones (Bergman *et al.*, 2022; Bergman and Klefsjö, 2020). The cornerstones or core values described by Bergman *et al.* (2022) are "focus on customers", "focus on processes", "improve continuously", "base decisions on facts", "let everyone take an active part" and "develop committed leadership". All cornerstones in the model help to form a sustainable quality culture; they are mutually dependent and should be viewed as a system in combination with working methods and quality tools (Bergman and Klefsjö, 2020).

Lagrosen and Lagrosen (2019) propose a conceptual model of cultural requirements for sustainable quality management. The basis of this model consists of five categories that describe underlying mechanisms: commitment, equality, innovative dynamism, sustainable thinking and learning. These categories are seen as the underlying assumptions of Schein's (2009) theory. Together with this basis, there are six expressed cultural pillars, transparency, flat management, consensus, service, performance and leadership that guide the behaviour of an organisation (Lagrosen and Lagrosen, 2019). These pillars are present at the level of espoused values (Schein, 2009).

Snyder *et al.* (2008) define sustainability in organisations as "the responsiveness of a living system to changes in the environment". Organisations must have the ability to adapt to changing environments to achieve sustainable performance. Linnenluecke and Griffiths (2010) refer to the concept "corporate sustainability" and argue that many scholars present this as being achieved through the implementation of a sustainability-oriented organisational culture. Examining the concept of corporate sustainability and its links to organisational culture they find that corporate sustainability principles can provide a helpful context for changes in employee values and beliefs and even their core assumptions. A sustainable organisational culture is one of the most important intangible assets and drivers of competitiveness for organisations (Štreimikienė *et al.*, 2021) and the influence of sustainable quality culture on performance is supported by previous research (see, for instance, Abdullahi Hassan and Haim, 2016; Valmohammadi and Roshanzamir, 2015).

2.5 TMT, teamwork and sustainable quality culture

Sharma and Jain (2013) argue that leaders influence their environment in three ways: how they establish goals and performance standards, how they establish the values of the organisation and how they establish business and people concepts (products, services, process, etc.). Thus, leaders have an important role in shaping their organisations. Schein and Schein (2017) state that the core of leadership is to create and maintain an organisational culture and that the behaviour of managers plays a crucial role in the creation of

organisational culture. Similarly, Ingelsson (2013) argues that managers need to be present amongst their co-workers and aware of how their actions affect the formation of a strong quality management culture. In a study by Štreimikienė et al. (2021) leadership was seen as a driving force for understanding the business world and people's needs. Thus, the importance of how the leadership acts, specifically TMTs, has an important impact on the culture of an organisation. However, Sharma and Jain (2013) deem that individual leaders cannot easily create or change cultures by themselves, as they are a part of the organisation and culture "is a long-term, complex phenomenon" (p. 314). Although, TMTs may directly affect the competitiveness and future sustainability of organisations, since they are at the heart of decision-making and development (Xu et al., 2019).

The results of a study by Petty et al. (1995) indicate that an organisational culture emphasising teamwork seems to be more conducive to organisational effectiveness and performance than one that does not foster collaborative behaviours. In addition, in a literature review investigating the future development of quality management in relation to the 21st century context, van Kemenade (2021) identifies four emerging patterns where co-creation is one.

3. Research design

3.1 Design

A mixed methods design focusing on TMTs was used to answer the research purpose. This paper builds on a previous paper describing a new developed methodology for assessing teamwork and sustainable quality culture focusing on TMTs (Sten et al., 2023). The main aim of using this methodology was to support TMTs to work as real teams along with sustainable quality culture within their organisations. However, the results were also valuable in deepening the understanding of how real teamwork and sustainable quality culture relate.

The methodology named: Assessing Teamwork in TMTs and Sustainable Quality Culture, includes a questionnaire, focus group discussion and a follow-up meeting for presenting, discussing and validating results (Sten et al., 2023). The questionnaire and the interview guide for the focus group discussion were developed based on previous research. Data from the questionnaire and focus group discussion were collected within a short space of time, and the design can therefore be seen as convergent (Creswell and Creswell, 2018; Creswell and Plano Clark, 2017).

The developed methodology includes five steps (see Figure 1). The first step is to introduce the participants (members of a TMT), and the second step is to conduct an electronic questionnaire and a focus group discussion. The results are then being analysed by data collection method, merged and interpreted. Lastly, after merging and interpreting results, a follow-up meeting is held with the participants. The purpose of this meeting is to discuss the results and propose suggestions for improvements for working as a real team and with sustainable quality culture.
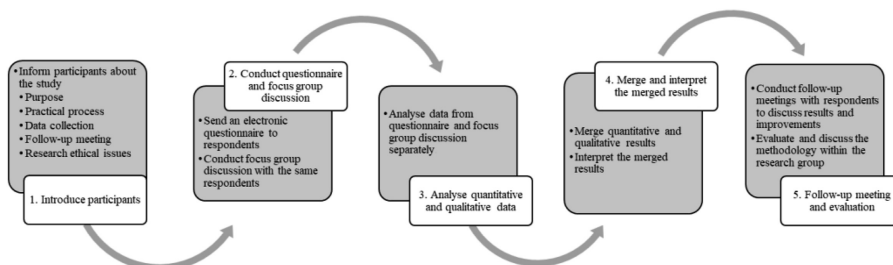
Source(s): Figure by authors

Figure 1.
The methodology by Sten et al. (2023) was used for measuring teamwork and sustainable quality culture, focusing on TMTs

3.2 Ethical considerations

This study was advised by the Mid Sweden University ethical review board (D-number MIUN 2022/6). This board recommended that the study should be exempted from ethical legislation in Sweden as it does not use highly sensitive data. Moreover, prior to responding to the questionnaires and attending focus group discussions, the participants were informed about the study both verbally and in writing. They were also informed about the ethical aspects of the research study, including that the data would be handled confidentially and anonymously and that they had the right to withdraw their participation at any time.

3.3 Sampling

The four TMTs (TMT 1–4) participating in the study (study objects) were open sampled and located in different parts of Sweden and from different organisational contexts. Two TMTs were selected by the researchers because they had a good reputation of working successfully to improve quality in their organisations, and two TMTs wanted to participate due to their interest in enhancing their ability for "real" teamwork and sustainable quality culture. Thus, all the participating TMTs had an interest in and knowledge about teamwork, quality improvements and quality culture.

3.4 The study objects

Data about the study objects can be found in Table 1.

3.5 Methodology

1. Introduce participants

Participants were informed about the purpose, the practical process, data collection methods, analysis, follow-up meeting as well as ethical aspects of the research.

2. Conduct questionnaire and focus group discussions

Data were collected through questionnaires and focus group discussions between April 2022 and December 2022. An electronic survey tool was used to distribute the questionnaire to all members of the four TMTs. The time given to answer the questionnaire was two weeks, but an extension could be granted at a respondent's request. A reminder was also sent out to each member of the four TMTs. All members answered the questionnaire, except one in TMT 4. See Table 2.

Characteristics	TMT 1	TMT 2	TMT 3	TMT 4
Number of members of the TMT	7	7	7	9
Role composition of the TMT	3 managers 2 controllers 1 business developer 1 communicator	5 managers 1 controller 1 development leader	4 managers 1 controller 1 development leader 1 HR specialist	8 managers 1 secretary
Organisation type	Regional board	Association of municipalities	Private manufacturing company	Municipally owned company

Table 1.
Description of study objects

Source(s): Table by authors

Four focus group discussions were conducted with the same TMTs that answered the questionnaire. All focus groups followed the previously developed interview guide (Sten *et al.*, 2023). Three of the four focus groups contained seven participants and the other contained nine. All focus groups were conducted by two of the authors, with one asking questions and the other taking notes and observing gestures. The researchers tried to manage all focus groups such that everyone had an opportunity to speak. The focus group discussions lasted about 45–60 min. They were digitally recorded and transcribed.

3. Analyse quantitative and qualitative data

Analysis of questionnaire

The results from the questionnaires were analysed by the researchers using Statistical Package for Social Sciences (SPSS) shortly after all members of each TMT had answered the questionnaire. As there were few members in each TMT, no deeper statistical analysis could be made with reliable results. Minimum, maximum, mean and standard deviation were calculated for statements and factors and for each respondent group. Mean and standard deviation values could provide an indication of the results for the respondent groups. From the results, the authors categorised each statement and factor as low (a mean of 1–3.99 on the Likert scale) or high (a mean of 6–7 on the Likert scale). The authors also analysed the differences in the results for each statement measuring teamwork and for each factor measuring sustainable quality culture. This was done for each respondent group. Statements and factors with a standard deviation above 1.0 were further analysed. The authors also analysed missing values for each statement, factor, dimension and for each group of respondents.

Analysis of focus group discussions

The transcribed texts from the focus group discussions were analysed shortly after the interviews were conducted. This included a deductive content analysis using prerequisites for real teamwork and factors for sustainable quality culture as an analytical framework (see Table 3). All transcribed interviews were read through by each of the authors.

The authors then compared their analyses. If the authors' analyses differed, they discussed the differences and agreed upon a common view.

Time period	Apr 2022	Apr 2022	Nov 2022	Nov 2022	
Respondents to questionnaire	*TMT 1*	*TMT 2*	*TMT 3*	*TMT 4*	*Total (N)*
Respondents (n)	7	7	7	7	28
Response rate	100%	100%	100%	88%*	
	May 2022	*May 2022*	*Dec 2022*	*Nov 2022*	
Focus group discussions	*TMT 1*	*TMT 2*	*TMT 3*	*TMT 4*	*Total (N)*
Informants (n)	7	7	7	9	30
	Jun 2022	*Jun 2022*	*Feb 2023*		
Participating in follow-up meetings	*TMT 1*	*TMT 2*	*TMT 3*	*TMT 4*	*Total (N)*
Participants (n)	7	7	7	–	21

Note(s): *The questionnaires were sent to eight members of TMT 4, as instructions by the CEO. The ninth member was a secretary. Seven of eight respondents answered the questionnaire
Source(s): Table by authors

Table 2.
The procedure for the study, including respondents, informants attending in focus groups and participants of follow-up meetings

Prerequisites for real teamwork	Factors for sustainable quality culture
Team communication	Focus on customers
Team competences and learning	Let everyone take an active part (consists of Development, Influence and Get informed)
Team composition, structure and membership	Develop committed leadership (consists of Empathy, Integrity and Presence/communication)
Team context	Improve continuously
Team culture	Base decisions on facts
Team flexibility and adaptability	Long-term and sustainable thinking
Team leadership and team decision-making	Pride
Team purpose and objective(s)	Internal systems view
Team reflexivity and continuous improvement	External systems view
Team roles and responsibilities	
Team tasks and coordination	
Source(s): Table by authors	

4. Merge and interpret the results

Following the analysis, the authors merged the results. The quantitative and qualitative results were presented side by side for each TMT and theme. The authors then interpreted the merged results for each TMT. Similarities and differences for each theme and TMT were discussed. From the interpretation of the results, the authors agreed on suggestions for each TMT for possible improvements regarding real teamwork and creating a sustainable quality culture within the organisation.

5. Follow-up meeting and evaluation

A follow-up meeting was held with three of the four TMTs to present and discuss the results and suggestions for improvement, as well as to validate the results and to create learning. All TMTs agreed on the results and found the suggestions useful for their further development. Two of the authors attended the follow-up meetings. These meetings lasted about an hour.

3.6 Meta-analysis of the results of studying four TMTs
For this paper, a meta-analysis was performed by merging the results from the four TMT studies. The analysis was conducted in two parts: Qualitative data and Quantitative data.

3.6.1 Qualitative data. The meta-analysis of the results from the four focus group discussions were carried out in four steps:

(1) Step 1: The authors individually read the analysis of the qualitative results as well as the suggestions for improvements from the four TMT studies. This was done by theme (teamwork and sustainable quality culture) and for each TMT.

(2) Step 2: A second scanning was conducted aiming to code text that directly corresponded to the different parts of the purpose for the paper (perception of real teamwork and sustainable quality culture, success factors for achieving a sustainable quality culture and the relationship between real teamwork and sustainable quality culture). The authors marked text with colours corresponding to the different parts of the research purpose.

(3) Step 3: The authors met physically to compare the coded texts, and they together decided on coded text that corresponded to the first part of the research purpose (perception of real teamwork). The coded texts were written on notes and put into a Mural template (a digital workplace). Notes were clustered into categories and given headings describing the content. Linked categories were gathered into bigger clusters and given headings describing their overall theme. Following this process, one author continued to extract coded text into the Mural template for the remaining parts of the research purpose. Notes were clustered into categories and given headings, first in small clusters and then larger ones.

(4) Step 4: Two authors held an in-person meeting to analyse all the extracted codes, categories and headings for the four parts of the research purpose. The aim was to validate the results from the analysis. Lastly, all authors read through the documented analysis again.

3.6.2 Quantitative data. The results from the questionnaire were analysed using SPSS and carried out in three steps:

Step 1: A one-way between-groups ANOVA with post-hoc test was conducted to assess whether the means from the four TMTs differed significantly. Depending on the result from this test, statements and factors were excluded if results showed that they could not be identified as one population.

Step 2: Minimum, maximum, mean and standard deviation were calculated for all statements and factors in the questionnaire.

Step 3: Internal consistency reliability was tested for the factors. This was done through calculating Cronbach's alpha coefficient for each of the factors. A value of 0.6 or more was seen as acceptable.

4. Results
The purpose of this paper was to describe the perception of real teamwork (1) and sustainable quality culture (2), as well as success factors for achieving a sustainable quality culture within an organisation (3), focusing on TMTs. An additional purpose was to explore the relationship between real teamwork and sustainable quality culture (4). This section starts with the first step in the quantitative analysis and is then structured according to the different parts of the research purpose including results from both quantitative and qualitative analysis.

4.1 One-way between-groups ANOVA with post-hoc tests
In order to investigate if the four TMTs differed from each other, the results from the four TMTs' questionnaires were tested for statistically significant differences by using one-way between-groups ANOVA with post-hoc tests. This showed a statistically significant difference at the $p < 0.05$ according to four statements measuring teamwork and two factors measuring sustainable quality culture.

4.1.1 Statements for teamwork.

(1) 4. "We depend on each other's work efforts to achieve the TMT's goals' ($F(3, 24) = 3.83$, $p = 0.023$). Effect size [1]: 0.33. Post-hoc comparisons using Tukey honestly significant difference (HSD) test indicated that the mean score for this statement for TMT 1 ($M = 7.00$, $SD = 0.00$) was significant different from TMT 3 ($M = 6.29$, $SD = 0.49$).

(2) 8. "Leadership in our TMT varies depending on whose skills are important at the time" ($F(3, 24) = 3.96$, $p = 0.020$). Effect size: 0.33. Post-hoc comparisons using Tukey HSD test indicated that the mean score for this statement for TMT 2 ($M = 3.43$, $SD = 2.23$) was significant different from TMT 3 ($M = 5.86$, $SD = 0.69$) and TMT 4 ($M = 6.14$, $SD = 0.90$).

(3) 10. "We regularly reflect on how we manage to achieve our TMT's goals' $F(3, 24) = 4.38$, $p = 0.014$). Effect size: 0.35. Post-hoc comparisons using Tukey HSD test indicated that the mean score for this statement for TMT 3 ($M = 5.14$, $SD = 1.07$) was significant different from TMT 1 ($M = 6.71$, $SD = 0.49$) and TMT 4 ($M = 6.43$, $SD = 0.79$).

(4) 11. "We trust each other in our TMT" $F(3, 24) = 12.20$, $p = 0.00$). Effect size: 0.60. Post-hoc comparisons using Tukey HSD test indicated that the mean score for this statement for TMT 2 ($M = 5.00$, $SD = 1.00$) was significant different from TMT 1 ($M = 6.86$, $SD = 0.38$), TMT 3 ($M = 6.43$, $SD = 0.54$) and TMT 4 ($M = 6.71$, $SD = 0.49$).

As there was a significant difference between the TMTs regarding to the these statements, they were removed from further analysis.

4.1.2 Factors for sustainable quality culture.

(1) "Focus on customers" ($F(3, 24) = 8.00$, $p = 0.001$). Effect size: 0.50. Post-hoc comparisons using Tukey HSD test indicated that the mean score for the factor focus on customers for TMT 4 ($M = 5.05$, $SD = 0.59$) was significant different from TMT 1 ($M = 5.90$, $SD = 0.16$) and TMT 2 ($M = 6.24$, $SD = 0.46$).

(2) "Long-term and sustainable thinking" ($F(3, 24) = 10.27$, $p = 0.000$). Effect size: 0.56. Post-hoc comparisons using Tukey HSD test indicated that the mean score for the factor Long-term and sustainable thinking for TMT 3 ($M = 5.21$, $SD = 0.55$) was significant different from TMT 1 ($M = 5.90$, $SD = 0.46$), TMT 2 ($M = 6.54$, $SD = 0.22$) and TMT 4 ($M = 5.80$, $SD = 0.48$).

As there was a significant difference between the TMTs regarding these factors, they were removed from further analysis.

4.2 Real teamwork (1)
The quantitative and qualitative results according to perception of real teamwork, together with citations from the focus group discussions are presented in Table 4.

4.3 Sustainable quality culture (2)
The quantitative and qualitative results according to perception of sustainable quality culture by the participants, together with citations from the focus group discussions are presented in Table 5.

4.4 Success factors for creating a sustainable quality culture (3)
From the analysis of the four focus group discussions, four overarching categories with subcategories were identified with regard to success factors for creating a sustainable quality culture. These categories and subcategories are presented in Table 6.

4.5 Relationship between real teamwork and sustainable quality culture (4)
The qualitative results describing the relationship between real teamwork and sustainable quality culture, together with citations from the focus group discussions are presented in Table 7.

Quantitative results – for teamwork and sorted by mean value

Statements	Minimum value	Maximum value	Mean value	Standard deviation
3. We have stated internal rules for how to act and work in our TMT	5	7	6.82	0.476
16. We show each other respect in our TMT	5	7	6.64	0.559
7. We are mutually responsible for the performance of our TMT	5	7	6.61	0.567
18. I look forward to attending our TMT meetings	5	7	6.61	0.567
17. We always act on the basis of the decisions we have made together even if they are not taken in consensus	4	7	6.57	0.742
14. Everyone in our TMT is involved and committed to what we do	5	7	6.46	0.693
1. We have an explicit purpose for our TMT's internal work	5	7	6.43	0.690
9. We regularly reflect on how we can improve our working methods in our TMT	5	7	6.39	0.737
12. We have fun together in our TMT	5	7	6.32	0.723
5. We know each other's competencies and how we all contribute to achieving the goals of our TMT and the organisation	5	7	6.29	0.659
15. We always listen to each other in our TMT	2	7	6.29	1.117
13. We show each other appreciation for what we do in our TMT	3	7	6.25	1.041
2. We have long-term goals that apply to our TMT's internal work	4	7	5.93	0.997
6. Membership of our TMT is based on competence, not position, in the organisation	1	7	5.41	1.738

Qualitative results – identified categories for real teamwork from the focus groups

- Be innovative
- Clear purpose, mission and goals "touching the hearts"
- Clear rules for behaviours
- Clear structure
- Complementing competences
- Consensus in decision-making
- Continuously develop as a team
- Feeling community
- Making each other better
- Sustainable thinking
- Systems view

Citations for teamwork from the focus groups

– "I definitely think we are on our way to becoming that (a team)!"
– "The business needs it (being a team), but as an individual I also need it. I will also say that the job is more fun when I feel secure in a team and having colleagues I can ask for help … for my leadership and for myself. Absolutely, it's a lot of fun to work in a team."
– "We are a team that has achieved and celebrated successes, but we have also cried together …. That is building teams over time."
Source(s): Table by authors

Quantitative results – for sustainable quality culture and sorted by mean value

Factors	N statements	Minimum value	Maximum value	Mean value	Cronbach's alpha	Standard deviation
Internal systems view	3	6.00	7.00	6.62	0.877	0.450
Pride	3	5.33	7.00	6.55	0.721	0.507
Integrity	3	5.67	7.00	6.37	0.456	0.438
Continuously improve	3	5.00	7.00	6.20	0.693	0.637
Base decisions on facts	3	4.67	7.00	6.19	0.836	0.705
Empathy	3	4.67	7.00	6.14	0.736	0.542
Presence/communication	3	5.00	7.00	6.10	0.627	0.621
Influence	3	3.67	7.00	5.95	0.402	0.757
Development	3	3.33	7.00	5.89	0.831	0.978
External systems view	3	4.50	6.75	5.89	0.378	0.635
Get informed	3	3.67	7.00	5.82	0.703	0.740

Note(s): All factors except three reached the desired value when calculating Cronbach's alpha. The three factors "Integrity", "Influence" and "External systems view" were therefore not used in further analysis of the result (see Table 5)

Qualitative results – identified categories for sustainable quality culture from the focus groups

- Base decisions on facts
- Be persistent
- Clarifying customer expectations
- Common goals and purpose, touching the hearts
- Continuous improving and learning
- Establishing a good working environment
- A systems view
- Working with processes

Citations for sustainable quality culture from the focus groups

– "I don't think we sit and discuss how to build a sustainable quality culture, but how to build an organisation that is better every day, every month, every year and can be exist forever."
– "Quality is about how we act and how we work as humans."
– "There must always be a why we do things."
Source(s): Table by authors

Table 5.
Joint table presenting quantitative and qualitative results according to perception of sustainable quality culture

5. Discussion
5.1 Results discussion
From the analysis of the results, three main areas will now be further discussed. Firstly, similarities according to the identified categories for real teamwork and sustainable quality culture were found. One similar category heading was "Systems view". A systems view was described as important for both performing real teamwork and creating a sustainable quality culture. Performing real teamwork means taking context into consideration in order to achieve high performance. This is in line with the reasoning by Kozlowski and Ilgen (2006), who deem that a real team is embedded in an encompassing organisational system – a broader system and task environment. According to Bergman et al. (2022), a systems view is fundamental when it comes to creating a sustainable quality culture. Statistical analysis

Identified categories for success factors from the focus groups

Create emotionally commitment
- A clear mission and purpose – "touching the hearts"

Balancing between structure and culture

<u>Structure</u>
- Ability to act and make decisions together on facts
- Clear and common short- and long-term goals
- Simple structure for processes provides security

<u>Culture</u>
- Actively working with common values and behaviours
- Balance between structure and culture – they go hand in hand
- Building culture takes time, persistency and continuity
- The TMT is a role model for building the culture in an organisation and long-term thinking is important
- Working with communication and transparency

Apply a systems view
- Systems view

Continuously improve
- Continuous improvements by everybody in the organisation
- Everybody's participation and shared responsibility
- Learning quality in the organisation
- Working with processes, both operationally and strategically

Customer perspective
- Ensuring good quality for our customers, both external and internal

Citations relating to success factors from the focus groups

– "Have courage to make mistakes, redo and do it right."
– "There must be a purpose to everything we do. We don't just make things."
– "Structure, culture and systematics."

Source(s): Table by authors

Qualitative results – Identified categories regarding the relationship between real teamwork and sustainable quality culture

- Clear mission and goals
- Complementing competences, no hierarchy and shared responsibility
- Constant collaboration and learning
- Constant dialogue with customers
- Consensus in decision-making
- Leadership creates prerequisites
- Living agreed values and behaviours
- Systems view
- Systematics in follow-ups and continuously improvements
- Understanding of interdependency

Citations regarding the relationship between real teamwork and sustainable quality culture from the focus groups

– ". . . by seeing the value of it (the support from your colleagues), you also see the value of working together in a TMT. I think that affects the fact that we have a team feeling."
– "We are good at basing decisions on facts."
– "We want forward, together."

Source(s): Table by authors

showed that the factor "Internal systems view" had the highest mean value. When the participants in the focus groups described the relationship between real teamwork and sustainable quality culture, they referred to having a systems view. For example, a systems view was described as being used to weave together the business and review organisational boundaries from a systemic perspective. A systems view was also seen as a success factor for creating a sustainable quality culture.

Another aspect of systems view found in this research is the knowledge of how team members are aware of the interdependency when working on a team task. "Understanding interdependency" was also an identified as a category when describing the relationship between real teamwork and sustainable quality culture. Wageman *et al.* (2012) argue that a real team "completes an interdependent task in close interaction, performing coordinated activities and exchanging resources. People do their separate tasks, but they work together and accomplish what they set out to do" (p. 302). Similarly, Lyubovnikova *et al.* (2014) propose that an individual is a real team member when they report that their team's task requires them to work interdependently.

A second overarching main area was the need to agree on common and clear mission, purpose, objectives and behaviours. This was discussed in the focus groups when describing both real teamwork and sustainable quality culture. The results from the questionnaire showed that the responses to the statements concerning common goals for the TMT ("We have long-term goals that apply to our TMT's internal work" and "We regularly reflect on how we manage to achieve our TMT's goals") had a low mean value and higher standard deviation, respective was excluded due to a significant difference between the TMTs. This may indicate differences in the understandings of common objectives for the TMTs. Katzenbach and Smith (1993) argue that many TMTs are constrained from becoming real teams due to the assumption that team goals must be identical to corporate goals and that team members' roles should be determined by positions rather than skills. Thus, it is important that the TMT decide on their own goals. The participants emphasised the importance of a meaningful and inspiring purpose and objectives, both within the TMT and for everyone in the organisation. Starting with the mission and trying to present it in emotional terms – "touching the hearts". When participants talked about the relationship between real teamwork and sustainable quality culture, they described the importance of clear mission and goals. In this regard, success factors described by the participants included: create emotional commitment (by a clear mission and purpose) – "touching the hearts", structure (by clear and common short- and long-term goals) and culture (by actively working with common values and behaviours). Previous research describes the importance of a clear purpose and objectives for real teamwork (i.e. Hackman, 2002; O'Leary *et al.*, 2011; Salas *et al.*, 2015), but the results of this study also emphasise the importance of emotionally "touching the hearts" of those in the team and the organisation.

A third main area for real teamwork and sustainable quality culture was continuous improvement, individually, as a team and across the organisation. Participants in the focus groups described the importance of making each other better, including supporting and coaching each other to develop, sharing information and communicating effectively and learning from each other. They also described the importance of being innovative. Participants saw themselves as having "creative responsibility", requiring them to have an open mind and not get stuck in old routines – "to rethink and re-evaluate". According to Borrill *et al.* (2000), team reflexivity is a team working process by which team members collectively reflect on objectives, processes and environment to improve. Edmondson (2013) states that reflection is a basis for effective teaming and more of a "behavioural tendency than a formal process" (p. 47). Edmondson describes this as constantly reflecting aloud on observations and thoughts as a way of figuring out how to work together more effectively. In relation to a sustainable quality culture, improving continuously was described by participants as stopping and questioning – having

the courage to take a big step back and to improve from mistakes and continuously striving to become better. When describing the relationship between real teamwork and sustainable quality culture, the participants stated that continuous improvement included systematic follow-ups of teamwork processes, but that this also is a part of a sustainable quality culture. Success factors described by the participants relating to improvements and reflection included, e.g. continuous improvement by everybody in the organisation and working with processes, both operationally and strategically. To improve continuously is one of the quality core values in the cornerstone model by Bergman *et al.* (2022).

5.2 Methodological discussion
The methodological discussion will focus on sampling, focus group discussions and statistical analysis.

The participating TMTs had a good understanding of teamwork and organisational culture, either having received rewards for quality work or having a reputation for working successfully with quality improvements. This might have contributed to the high responding values in the questionnaire. As their knowledge about quality was good it was also expected that they would be familiar with the terms used in the questionnaire and questions in the focus groups discussions. They had also in different ways worked with improving working processes within their TMTs and their organisations.

When performing focus group discussions there are different aspects to consider. Two aspects were given significant attention during the focus groups. Firstly, it was ensured that all participants had equal opportunities to talk. As a moderator, this required balancing the conversation between participants. Secondly, it was ensured that the moderator created a safe atmosphere in which participants could talk freely and openly without fear of possible negative consequences. Before the focus group discussions, the moderators emphasised the importance of openness to the results and urged that what was said in the focus groups was left there. Focus groups as a data collection method were chosen before conducting individual interviews as they could contribute to a learning between the members of the TMT. Questionnaires were used to complement the focus groups.

As the members of the TMTs were few in number, no deeper statistical analysis could be made and it was not possible to calculate correlations between statements and factors in a statistical reliable way, in order to identify statistically significant relationships between teamwork and sustainable quality culture. This might be possible in a further developed, tested and validated version of the questionnaire. Despite this, the results from the conducted questionnaires did complement the results from the focus groups and provided results that otherwise might have been missed.

6. Conclusions, implications, limitations and future research
This research, can be summarised into two overarching conclusions, pointing to the relationship between real teamwork and sustainable quality culture:

(1) Following the developed methodology used in this paper can be one way to increase TMTs' abilities for real teamwork alongside a sustainable quality culture

(2) Results from the research showed the importance of a systems view, emotional commitment and continuous improvement for real teamwork and sustainable quality culture

6.1 Theoretical implications
Benishek and Lazzara (2019) address that theories and methodologies regarding teams and teamwork require some modernising, as the landscape of teams looks very differently in

today's society. Results from this research might be helpful in developing theories and methodologies regarding teams and teamwork. For example, this research brings theoretical implications such as a deepened understanding of real teamwork and sustainable quality culture, as well as insights into how these concepts relate. The research has also raised new knowledge regarding the content of real team prerequisites.

6.2 Practical implications

Besides, theoretical implications, this research has also resulted in practical contributions in form of suggestions on how to increase the participating TMTs' abilities for real teamwork alongside a sustainable quality culture. The members of the participating TMTs have also deepened their understanding of real teamwork and sustainable quality culture by discussing these concepts in focus group discussions.

6.3 Limitations

Limitations of this research is the number of participating TMTs. However, by continuing to use the methodology, it will become more validated and developed and as a result more robust. Another limitation is that the results on the perceived sustainable quality culture only reflect the members of the TMT. Another suggestion is therefore to extend the part of the questionnaire regarding sustainable quality culture, to include co-workers. Results from both members of the TMT and co-workers may show differences or similarities between their perceptions on sustainable quality culture within the organisation. These insights could provide valuable information for TMTs and researchers when making suggestions on how to strengthen the sustainable quality culture.

6.4 Future research

Future research should incorporate the findings from this research into developing the new methodology. For example, by addressing emotional commitment.

A significant amount of research has focused on the relationships between working with quality, quality improvements and an organisation's financial performance (see, for instance, Boulter *et al.*, 2013; Hansson and Eriksson, 2002). This research raised thoughts on how to further develop the used methodology, with regard to sustainable organisational performance including environmental, economic and social perspectives. One way for this development could be to extend the questionnaire and the interview guide with questions on performance seen from these three perspectives.

Note

1. According to Cohen's (1988, pp. 284–287), would an effect size up to 0.6 be considered as small.

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