

Achieving sustained improvement

A literature review for the years 2010–2021

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Foreword

This study represents the culmination of our two years studying Quality Management and Leadership at the Mid Sweden University. It is perhaps not the thesis paper either of us had envisioned when we entered the programme, but it is the one we both agreed was best suited to the special circumstances we found ourselves in at the start of 2021. All the same, it has been an arduous process, though immensely educational and rewarding. With this in mind, we would like to thank each other for perseverance during the long and demanding process of carrying out a literature review.

We would also like to thank our supervisor, Pernilla Ingelsson, for her enthusiastic support and valuable feedback throughout this process.

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Abstract

Change and improvement are complex matters, and there are many aspects that can impact if the results are sustainable over time. The aim of this study was to investigate what was required for an improvement, as a result of a major organisational change, to become sustainable over time in a real-world setting. The study used an inductive approach and the chosen method was a literature review. Systematic searches were carried out in the databases Academic Search Elite, Business Source Complete, and SCOPUS for articles published between the years 2010–2021, which yielded 39 articles for analysis. A thematic analysis was carried out using an affinity diagram, through which eight themes emerged. These were: *Collective visions and goals*, *Communication*, *Leadership*, *Personal growth*, *Positive organisational culture*, *Reduce variability*, *Resources*, and *System thinking*. The eight themes contained related sub-themes, elements and factors. The conclusions of the study were that change sustainability is a complex field. While this study revealed eight themes to consider, it does not automatically mean that they must be given equal attention; contextual needs of the improvement could determine what to prioritise. Limitations of the study included that nearly all of the 39 articles were set in western countries and in a healthcare setting, both of which somewhat limit the generalisability of the study.

Keywords: affinity diagram, change sustainability, literature review, major organisational change, sustained improvement

Sammanfattning på svenska

Förändring och förbättring utgör komplex materia, och det finns många aspekter som kan påverka om resultaten blir hållbara över tid. Syftet med denna studie var att undersöka vad som krävdes för en förbättring, som ett resultat av en större organisatorisk förändring, att bli hållbara över tid i ett verkligt sammanhang. Studien hade en induktiv ansats och den valda metoden var en litteraturstudie. Systematiska sökningar gjordes i databaserna Academic Search Elite, Business Source Complete och SCOPUS för artiklar publicerade under åren 2010–2021, vilket resulterade i 39 artiklar för analys. En tematisk analys genomfördes med hjälp av ett släktskapsdiagram, genom vilket åtta teman framkom. Dessa var: *Kollektiva visioner och mål*, *Kommunikation*, *Ledarskap*, *Personlig utveckling*, *Positiv organisationskultur*, *Minska variation*, *Resurser*, och *Systemtänkande*. Dessa åtta teman innehöll relaterade subteman, element och faktorer. Studiens slutsatser var att hållbar förändring är ett komplext område. Även om denna studie påvisade åtta teman, innebär detta inte per automatik att alla teman måste ges samma uppmärksamhet; förbättringens kontextuella behov kan avgöra vad som ska prioriteras. Begränsningar i studien omfattade att nära nog alla 39 artiklar ägde rum i västerländska länder och i en vårdkontext. Dessa båda aspekter begränsade studiens generaliserbarhet till viss del.

Nyckelord: släktskapsdiagram, hållbar förbättring, litteraturstudie, större organisatorisk förändring, hållbar förändring

Contents

LIST OF TABLES	VI
LIST OF FIGURES.....	VI
1. INTRODUCTION	1
1.1. Purpose and research question.....	2
1.2. Disposition	3
2. THEORETICAL BACKGROUND.....	4
2.1. Episodic versus continuous improvement	4
2.1.1. Change, improvement and implementation	4
2.1.2. Organisation and organisational change	5
2.1.3. The role of change management	6
2.2. Quality management	6
2.2.1. The Plan-Do-Check-Act cycle.....	7
2.2.2. Lean.....	8
2.3. The evaluation of change sustainability	9
2.4. Sustaining change	9
2.4.1. Securing change sustainability.....	11
2.4.2. Obstructing factors.....	12
2.4.3. Complexity	12
3. METHODS.....	13
3.1. Philosophical worldview, research design, method choice and approach	13
3.2. Data collection method	13
3.2.1. Search: selecting and delimiting the reviewed articles.....	15
3.2.2. Appraisal: quality assessment of reviewed articles.....	18
3.2.3. Synthesis: compile and describe the results	19
3.2.4. Analysis: analysis and data processing.....	20
3.3. Authors' prior knowledge	20
3.4. Clarity, validity and auditability	20
3.5. Ethical considerations.....	21
4. FINDINGS AND ANALYSIS	23
4.1. Data for the included articles	23
4.1.1. Number of articles per year.....	23
4.1.2. Journals the articles were published in	24
4.1.3. Study setting and geographical location	24
4.1.4. Studies using the same population	26

4.2.	Which themes to create sustained improvement are described in current research regarding major organisational change?	27
4.2.1.	Theme 1: Collective visions and goals.....	30
4.2.2.	Theme 2: Communication.....	32
4.2.3.	Theme 3: Leadership.....	34
4.2.4.	Theme 4: Personal growth	36
4.2.5.	Theme 5: Positive organisational culture	37
4.2.6.	Theme 6: Reduce variability	38
4.2.7.	Theme 7: Resources	41
4.2.8.	Theme 8: System thinking.....	42
5.	CONCLUSIONS	44
5.1.	Themes to create sustainable improvement	44
6.	DISCUSSION	46
6.1.	Discussion of findings.....	46
6.2.	Practical and theoretical contributions.....	47
6.3.	Methods discussion	48
	REFERENCES	50
	APPENDIX A. OVERVIEW OF RESEARCH PROCESS	57
	APPENDIX B. SCOPING REVIEW SEARCH PARAMETERS	58
	APPENDIX C. OUTCOMES OF EACH DATABASE SEARCH	59
	APPENDIX D. FLOW CHART ACCORDING TO <i>PRISMA</i>.....	60
	APPENDIX E. QUALITY ASSESSMENT PROTOCOL.....	61
	APPENDIX F. OVERVIEW OF STUDIED ARTICLES	62
	APPENDIX G. AFFINITY DIAGRAM OVERVIEW.....	76
	APPENDIX H. RELATIONS BETWEEN THE ARTICLES AND THE THEMES	77

List of tables

Table 1 The inclusion and exclusion criteria for the study.....	16
Table 2 Core concepts of quality assessment for different types of studies.....	19
Table 3 Journals with one article each in the study	24
Table 4 The emerging eight themes for sustained improvement, with related sub-themes and elements ..	27
Table 5 Themes and sub-themes	45
Table 6 Search parameters for the scoping review: databases, search terms, delimitations and sorting.....	58
Table 7 Outcomes of each database search, including search terms and database filters that were applied: each consecutive column lists the number of articles remaining after the previous step.....	59
Table 8 Quality assessment protocol for the study, based on Booth et al. (2016), Forsberg and Wengström (2016), Friberg (2017a), Hannes (2011) and Jesson et al. (2012)	61
Table 9 Overview of articles included in the study (inspired by Friberg, 2017c)	62
Table 10 Matrix displaying relations between the studied articles and the emerging themes	77

List of figures

Figure 1 The cornerstone model of TQM as described by Bergman and Klefsjö (2012).....	7
Figure 2 The Plan-Do-Check-Act cycle for improvement	7
Figure 3 The improvement kata, a behavioural pattern to continuously improve (based on Rother, 2010/2013)	8
Figure 4 Number of articles per year included in the study.....	23
Figure 5 Journals with two articles or more in the study.....	24
Figure 6 Study setting: Number of articles	25
Figure 7 Geographical location: Number of articles per country	26
Figure 8 Number of unique articles per theme.....	29
Figure 9 Affinity diagram for theme 1: Collective visions and goals.....	31
Figure 10 Affinity diagram for theme 2: Communication.....	33
Figure 11 Affinity diagram for theme 3: Leadership.....	35
Figure 12 Affinity diagram for theme 4: Personal growth.....	36
Figure 13 Affinity diagram for theme 5: Positive organisational culture	39
Figure 14 Affinity diagram for theme 6: Reduce variability	40
Figure 15 Affinity diagram for theme 7: Resources.....	41
Figure 16 Affinity diagram for theme 8: System thinking	43
Figure 17 Flow chart for the research process	57
Figure 18 Flow chart according to PRISMA (based on Booth et al., 2016, and Forsberg & Wengström, 2016)	60
Figure 19 Affinity diagram: overview of the 8 themes and 15 sub-themes	76

*In any given moment we have two options:
to step forward into growth or step back into safety.*

Abraham Maslow, psychologist

1. Introduction

“The map is not the territory” (Korzybski, n.d., p. 750). With this quote, philosopher Alfred Korzybski tried to illustrate the difficulty of combining an abstract model of something, or a reaction to such a model, with reality. Models and concepts for managing change in organisations provide support for our understanding of reality and how to implement change, but there are many factors and levels of complexity in an organisation that are simply impossible to predict using a basic map (Dhillon & Vaca, 2018). To date, there is an abundance of research on, as well as concepts and models for, organisational change. Should an organisation fail to account for this complexity, change can become a costly failure (Jacobs et al., 2013).

According to Bergman and Klefsjö (2012) the fundamental rule of quality improvement is that there is always a way to achieve higher quality at a lower cost, which requires change. This need for change has increased as a result of new technology, raised expectations from customers, increased competition and greater product and service complexity, to name a few examples (Price & Chahal, 2006; Sörqvist, 2004). Adding to this, Yukl and Kaulio (2012) state that the foremost task in leadership is to manage change, and that everything else is secondary. Thus, change has become a far more common occurrence in organisations, and it is carried out using some type of improvement programme, such as Total Quality Management (hereafter TQM), Six Sigma, etc. (Sörqvist, 2004). Several studies have shown, however, that it is difficult to implement change successfully, and recurring statistics state that around 70%¹ of all change initiatives fail (see Ates & Bititci, 2011; Beer & Nohria, 2000; Burnes, 2004; Bushe & Nagaishi, 2018; among others), although some claim that the failure rate varies based on type of change (Smith, 2002). It is also worth mentioning that the “70%” statistic has been criticised. Hughes (2011, p. 460) asserts that there is a lack of empirical evidence to support these numbers, and that the earliest mentions are predominantly built on “magazine articles and practitioner books lacking discussion of methodologies, epistemologies, and reference to organizational-change research and scholarship”.

Even though there is some dissension regarding the rate of failure for change, it is clear from previous research that implementing change successfully may be difficult. There are several possible reasons for this. For instance, change is far more multi-faceted than many organisations realise or change projects are badly planned (Jacobs et al., 2013), that the organisation fails to factor in contextual factors when they adopt an improvement programme (Harkness et al., 1996), or that the too-high expectations are not met leading to future change failing in turn (Schneider et al., 1996). Other pitfalls include a lack of commitment from management, resistance from middle managers and/or employees or that the improvement project is too ambitious (Sörqvist, 2004). Management models within TQM are often presented as a “quick fix” and, according to

¹ Sometimes the rate of failure is described as “two thirds” (see Ates & Bititci, 2011) or as “75%” (see Bushe & Nagaishi, 2018).

Foley (2004, p. 53, quoted in Bergman & Klefsjö, 2012, p. 429), management literature has left out “how very long it could take to implement the behavioural and cultural change quality management demands”. It is also common for TQM initiatives to fail when implementation begins as a result of not addressing the philosophical, strategic and measuring dimensions of the concept (Lau & Anderson, 1998). In conjunction with this, Ahrne and Papakostas (2005) describe that an inability to change may be due to insufficient resources, or are impacted by established decision processes, rules and hierarchies. Another cause could be due to an inability to see the possibilities for or the need to change (Ahrne & Papakostas, 2005).

Even when pitfalls are avoided, success factors are harnessed and the implementation goes well and the change is fait accompli, much work remains; an improvement is not complete until its intended results are sustained (Sörqvist, 2004). An example of a danger post-implementation is not being able to maintain the results over time, i.e., that they are only temporary or are forgotten and thus return to square one (Bateman & David, 2002; Meyer & Stensaker, 2006; Sörqvist, 2004). The sustainability of a change programme does not necessarily depend on the chosen improvement concept, but on other factors such as implementation and the goals of management (Brännmark & Benn, 2012). Thus, the change must be secured so that the outcome endures, which can be achieved in different ways (Sörqvist, 2004). As an example, Schneider et al. (1996) describe that both organisational culture and climate have important roles to play in creating sustainable change, but that no particular type of culture or climate are considered better than any other.

Buchanan et al. (2005) claim that change sustainability is a field that has only been given limited attention in research, due to varying reasons. Their study aimed to map the emerging literature on change stability, with the intent to further theoretical understanding and develop a provisional model that meets three criteria: to articulate the complexity of the process; to explain different outcomes, both sustainability and decay; and to support future empirical research. Buchanan et al. concluded that their study did not reveal any simple solutions to reach sustainable change, but that strategies that consider context, complexity, ambiguity, uncertainty, competing stakeholders, and possibly interlinked influences are to be recommended.

It has thus been established that change and improvement are complex matters, and that there are many aspects that can impact if the results are sustainable over time. But are there any universal factors that always lead to sustainable results, independent of context? The literature review by Buchanan et al. (2005) could not find any clear answers to this question. All the same, 15 years have passed since their study; new findings may have emerged since. With this in mind, it is certainly relevant to more closely study what is required for implemented change initiatives leading to improvement to become sustainable over time.

1.1. Purpose and research question

The purpose of this study is to investigate what is required for an improvement, as a result of a major organisational change, to become sustainable over time in a real-world setting. The research question of the study is: *Which themes to create sustained improvement are described in current research regarding major organisational change?*

1.2. Disposition

This opening chapter has provided an introduction to and a rationale for the study. Chapter 2 gives the theoretical background and chapter 3 the methodological procedure. In chapter 4 the results of the study are presented, along with an analysis of the same. This is followed by conclusions in chapter 5. Rounding off the study, chapter 6 contains a discussion of methods and results, as well as practical and theoretical contributions, and limitations of the study. The study is also accompanied by eight appendices.

*It is a capital mistake to theorize before one has data.
Insensibly one begins to twist facts to suit theories, instead of theories to suit facts.*

Arthur Conan Doyle, writer

2. Theoretical background

2.1. Episodic versus continuous improvement

To take a closer look at change and how to define it, it is imperative to determine the nature of change and how it emerges and develops over time (Porras & Silver, 1991, cited in Bouckennooghe, 2010). It has been argued that “groups are in a continual process of adaptation, rather than a steady or frozen state” (Cummings et al., 2016, p. 36). This statement challenges common assumptions held by traditional change management literature, which claim that change begins and ends in a constant (McCabe, 2020).

One way to consider change, is to distinguish between episodic and continuous change. The former is intentional, and therefore planned, in order to systematically achieve a purpose. It is also intermittent and discontinuous, while the latter, continuous change, tends to consist of organisational changes that are ongoing, gradual, emergent, and cumulative (Orlikowski, 1996, cited in Bouckennooghe, 2010). This study will focus on changes that are episodic. As such, changes that are intended to episodically implement a model for continuous change are also included, but not continuous changes by themselves.

2.1.1. Change, improvement and implementation

When discussing change and improvement, there appears to be limited agreement regarding how to define these concepts. Some make the distinction that change is about doing something different, and that this is strongly connected to implementation, but not necessarily about bettering something (Bushe & Nagaishi, 2018). Another outlook is that improvement projects have the goal to improve performance in ways that have not been predetermined, while in implementation projects the solutions are decided before the start of implementation (Larson et al., 2016). Improvement could also be considered as being connected to organisational development. In this view, the process of change is executed in a specific way, where stakeholders are involved from the beginning to design the goal and the strategy to get there, hence bettering something according to a set goal (Bushe & Nagaishi, 2018). Other definitions of improvement include deliberate actions to secure positive change (Portela et al., 2015), and transitioning to a higher level of results, which often occurs in a multi-dimensional way (Sörqvist, 2004). Adding to the latter, the most important dimensions are those of technology and attitudes, respectively. Additionally, Sörqvist asserts that improvement always has a positive direction, as it is bettering something, whether this something was good or bad to begin with. Change within organisations can also be viewed as a deliberate, but reactive, and forced process to gradually adapt (Demers, 2007).

This study makes use of a broad definition of improvement as the goal of a change process that is bettering the organisation in mind. The concept of *change* will hereafter, aside from being

intended and episodic, be understood as a process with the goal to reach improvement. With this in mind, *change* and *improvement* are used interchangeably in this study.

2.1.2. Organisation and organisational change

Selznick (1957, p. 5, quoted in Price & Chahal, 2006, p. 238) emphasised the difference between organisations and institutions:

[organisation] suggests a certain bareness, a lean, no-nonsense system of consciously co-ordinated activities. It refers to an expendable tool, a rational instrument engineered to do a job. An ‘institution’, on the other hand, is more nearly a product of social need and pressures – a responsive, adaptive organism.

On the same note, another definition for organisation was provided by Huczynski and Buchanan (2013, p. 8), who defined it as “a social arrangement for achieving controlled performance in pursuit of collective goals”. Forsell and Westerberg (2007) supply a more detailed definition, and describe that to organise something can be done in a more or less fixed way. To organise, then, becomes an organisation when there are formalised and expressed purposes or goals, the people in it are interchangeable, there are developed structures which distribute responsibility and authority, the organization is stable over time, and it has an identity which makes it unique (Forsell & Westerberg, 2007). In this study an *organisation* is defined as organised in a fixed way fulfilling all these basic characteristics mentioned by Forsell and Westerberg.

McCabe (2020) describes organisational change as the organisation moving to a new and desired state, at which point it is embedded by institutionalising the new approach. Adding to this, organisational change can be viewed in terms of its process and its content, where the former refers to how change occurs, and the latter describes what is changing in the organisation (Barnett & Carroll, 1995). Additionally, Barnett and Carroll state that organisational change involves the transformation of an organisation over time. Thus, to study the content of organisational change, i.e., what this transformation yields, is compared to the original state. Major organisational change, when based on content, contains either several elements of structural change or radical shifts in a single element of structure (Barnett & Carroll, 1995). Lastly, Smith (2002, p. 26) defines major organisational change as “any intentional change in the way the organization does business that affects the strategic position of the organization vis-à-vis its competition”.

It is also possible to distinguish types of organisational change by considering the level that the change is meant to affect. Price and Chahal (2006) differentiate between change at the process or operational level, which requires incremental changes in the day-to-day tasks, and change at a strategic level, which is meant to have an impact on the direction of an organisation and therefore needs step-by-step changes. Similarly, Neal and Naylor (2007) make a distinction between incremental and transformational change, where the former involves an ongoing process of adaptation, and the latter involves a more profound change that requires considerable change to both culture and process.

For the purposes of this study, the following key elements of *major organisational change* are combined to define the concept:

- There are either several elements of structural change or radical shifts in a single element of structure (Barnett & Carroll, 1995)

- The change is strategic and implemented through step-by-step changes (Price & Chahal, 2006)
- The change is intentional (Smith, 2002)
- The change aims to change the way the organisation does business by affecting the strategic position of the organisation in relation to its competition (Smith, 2002)

2.1.3. The role of change management

Change management can be described as any act taken to enact a smooth transition of a business process, consisting of a group or an individual, from a present state to a future desired state of being (Varkey & Antonio, 2010). Another definition is presented by Neal and Naylor (2007), who define it as a discipline that in the constancy of change needs to adapt to the environment where it functions. In their view, change management theorises the application of knowledge tools and resources, which, in an organised and systematic manner are needed to effectuate change.

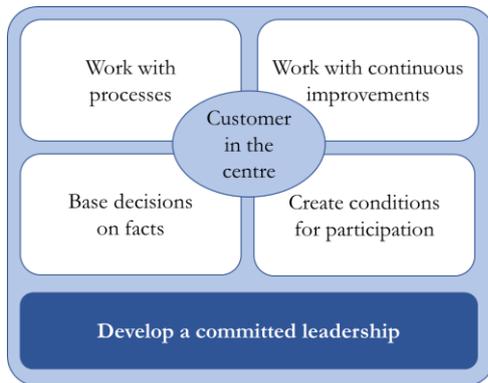
Another perspective from which to view change management is through the lens of management or leadership. McCabe (2020), drawing on Lewin's and Kotter's respective models of change, posits that management is often viewed as leaders with the task of unfreezing employees, empowering them to act by creating and communicating visions. According to Kotter (1995/2007), the first step to achieve intended change is to create a sense of urgency, which will show that change is needed in order to motivate people to leave their comfort zone and actively contribute to change. Adding to this, Drew et al. (2004) state that not many managers consider their employees' mindsets, as they are hidden and difficult to influence. To help set expectations for employee behaviour, strong leadership is required, as whether or not change is sustained relies on how employees feel about management. This involves a range of emotions, from trusting the leaders and feeling motivated, to fearing the impact of change or being suspicious of their leaders' motives. Thus, resistance to change has a negative impact on how enduring change will be. Sörqvist (2004) provides several examples of ways to reduce resistance: having involved and committed top level managers, impacting employees' mindset and attitudes, having external support from an experienced coach, combining well designed education with practical training, and choosing projects that yield early successes.

2.2. Quality management

TQM is a concept including values, methods, and tools regarding how organisations that produce goods and/or services may reach higher levels of customer satisfaction by using less resources, through improving the quality of their products and processes (Bergman & Klefsjö, 2012). In the view of Bergman and Klefsjö, TQM relies on the cornerstone model (see Figure 1), which is used to actualise the philosophy behind the concept. The model revolves around placing the customer in the centre, i.e., having a customer focus. Around this centre the four cornerstones are found: base decisions on facts, work with processes, work with continuous improvements, and create conditions for participation. Lastly, the model rests on a foundation of developing a committed leadership. In addition to these cornerstones, Bergman and Klefsjö stress the importance of system thinking to succeed with quality improvement.

Figure 1

The cornerstone model of TQM as described by Bergman and Klefsjö (2012)



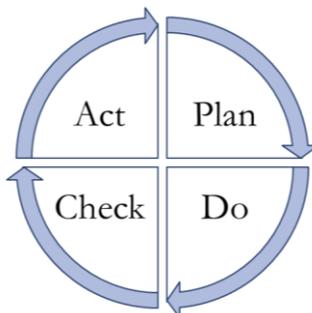
2.2.1. The Plan-Do-Check-Act cycle

As outlined above, TQM contains a variety of methods. One such method is the improvement cycle which, as the name implies, is used for carrying out improvements (Bergman & Klefsjö, 2012). An example of such a cycle is the Plan-Do-Check-Act, or PDCA, cycle (see Figure 2). Bergman and Klefsjö describe the phases thusly:

- **Plan.** Involves systematically determining what the problem is, through the use of one or more TQM tools, followed by using a fact-based approach for charting the course of action for change. Larger issues need to be split up into smaller, more manageable issues.
- **Do.** The suggested measures are implemented, either incrementally in small steps or as a full-scale simultaneous implementation. An integral part in this phase is to ensure that all stakeholders are committed to the issue and the decided solutions.
- **Check.** Studying the effects of the implemented measures, through the use of one or more TQM tools, to ensure that they have led to the intended improvement. Once the measure is proven to have had the desired effect, it is vital that the improvement is sustained.
- **Act.** Constant learning is a key aspect throughout the PDCA cycle and improvement in general. Past experiences inform future improvements, so that the cycle of improvement may continue, either within the same area as before or in a new one.

Figure 2

The Plan-Do-Check-Act cycle for improvement



2.2.2. Lean

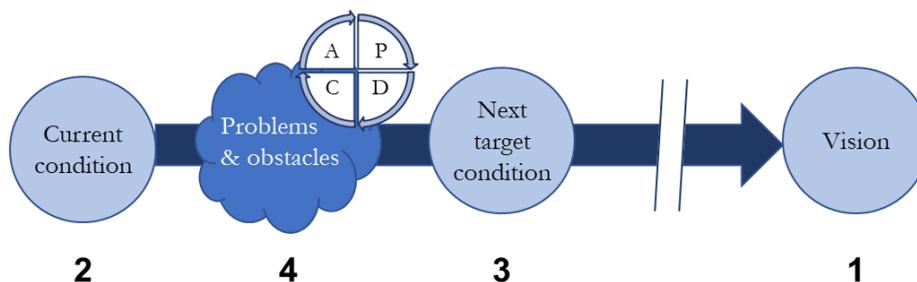
According to Bergman and Klefsjö (2012), Lean can be viewed as a set of practices or an improvement programme under the TQM umbrella, with the express purpose of reducing waste in order to create customer value. Runebjörk and Wendleby (2013) contrast this by stating that Lean is more than tools or methods. They assert that at its core, Lean is a management philosophy that should be viewed as a system for learning. This system or philosophy, then, rests on the following key principles: respect for people, continuous improvement, learning organisations, eliminating waste, and customer focus (Runebjörk & Wendleby, 2013). A similar overview of Lean is found in the 4P-model: Philosophy, i.e., long-term planning and decision-making; Process, i.e., waste-elimination through process management; People/partners, i.e., respect, challenge, and allow people and partners to grow; and Problem solving, i.e., through continuous improvements and learning (Liker, 2004/2009). One aspect that Liker emphasises is that Lean is a system that places trust in people, by providing them tools for continuous improvement. By extension, this means that it is more than a set of efficiency or improvement techniques; it is a culture, which requires several conditions to be met (Liker, 2004/2009). There must be a focus on teamwork-strengthening actions, in order to ensure that everyone may participate in problem-solving. Leaders also need to be trained in and committed to Lean, so that they can act as coaches and role models. This is then augmented by suitable education for the staff. Ultimately, this results in an organisational culture where everyone, from the lowest employee to the top management, subscribes to the habit of supporting improvements (Liker, 2004/2009).

A more practically oriented aspect within Lean is the so-called Kata, which is a repetitive behavioural pattern or routine that describes how to take action in order to continuously improve (Rother, 2010/2013). According to Rother, there are two basic katas: the improvement kata, through which improvement is achieved, and the coaching kata, through which leaders teach the improvement kata to employees. To put it succinctly, Rother states that the improvement kata consists of the following steps (see Figure 3):

1. Have a vision, direction, or goal to work towards
2. Grasp the current condition through first-hand knowledge
3. Define the next target condition on the path towards the goal
4. Strive to reach the target condition by overcoming the next obstacle through rapid PDCA-cycles

Figure 3

The improvement kata, a behavioural pattern to continuously improve (based on Rother, 2010/2013)



The coaching kata, then, is considered a dialogue of knowledge-transfer between a mentor and a learner, or, in organisational terms, a leader and an employee (Rother, 2010/2013). Rother states that the main focus of the coaching kata is not improvement in itself, however, but rather about increasing the employees' capacity for improvement.

2.3. The evaluation of change sustainability

Theories of Change are concepts that illustrate how an organisation expects to realise its mission and may thus be used at the organisational level. Therefore, it can be defined as “the hypothesis about the way that a program brings about its effects” (Dhillon & Vaca, 2018, p. 65). An alternative definition is “the mental representations and theoretical assumptions that explain how and why activities of an initiative (e.g., projects, programmes, organizations) generate particular changes” (Mason & Barnes, 2007, quoted in Oberlack et al., 2019, p. 106). There are many models built on this theory, but for the purpose of this study, which does not include implementation strategies, the focus will be on the theory about evaluation of change initiatives concerning change sustainability. One way to critically consider evaluation, is to reflect on the nature of change, and if it is possible to capture the change that has occurred when evaluating said change (Dhillon & Vaca, 2018). There may be areas that are not recognised, acknowledged, or understood. Dhillon and Vaca assert that it is possible to believe that change has occurred, when, in fact, it has not, or that improvement is the result of an intentional implementation, even though there may be other factors that impacted the outcome. Change can thus occur without specific models or programmes. This could affect the evaluation of sustainability factors, as there could be confounding factors impacting the results. Additionally, the evaluator's own perspectives and values may affect the evaluation. It is therefore important that those involved in and impacted by the change are heard in the evaluation process (Dhillon & Vaca, 2018).

2.4. Sustaining change

Sustained outcomes, i.e., maintaining the benefits that improvement has brought about (Silver et al., 2016), are integral to all organisational change. It is thus equally important to succeed with the implementation of an improvement, as it is to secure its lasting impact (Sörqvist, 2004). This lasting impact, however, cannot be assessed too soon following the implementation, and Ovreteit (2018) asserts that the post-implementation follow-up must extend over at least two years to be able to determine if the change has been sustained. If the improvements are not secured, Sörqvist (2004) maintains that there is considerable risk that the results relapse and the improvements become temporary. To achieve sustainability, the concept of quality improvement is emerging as an effective and efficient approach, according to Schalock et al. (2016).

Sustainability as a concept has many definitions. In their literature review, Lennox et al. (2018) found five distinct definitions of sustainability in healthcare:

- **Continued programme activities;** maintaining programme activities suitable to the local setting, after external financial aid has been discontinued
- **Continued health benefits;** maintaining health benefits in the population
- **Capacity built;** using inter-organisational affiliations as a potential foundation for cooperative problem-solving capacity

- **Further development (adaptation);** adapting successfully to change and offering a variety of valued service delivery possibilities and practices effectively and efficiently
- **Recovering costs;** producing outputs with a satisfactory value, in order to obtain sufficient inputs to maintain stable or increasing production

Linked to the sustainability of change are two concepts called the “honeymoon effect” and the “sleeper effect”. The honeymoon effect asserts that while there may be an improvement directly after change has been implemented, this improvement tends to decrease within a few months (Campbell et al., 1970, cited in Boyatzis, 2006). Thus, when a positive change has been observed, there may be reasonable doubt as to its sustainability. Confounding the issue further, the honeymoon effect tends to overshadow the sleeper effect, which asserts that sustainable change on an individual level will not emerge until up to a year after the implementation (McClelland, 1970, cited in Boyatzis, 2006). According to Boyatzis the sustainability of changes, therefore, is often overlooked as the effects of the interventions are discontinuous.

A point of contention regarding sustained change, is sustainability of change as a terminus. Rapport et al. (2018) argue that this is indeed the case, and that sustainability is the logical endpoint of implemented change. Once change becomes sustainable, a feedback loop is created, cycling through the action phases of an intervention and thereby increasing the power of the intervention. To ensure that the intervention, and therefore the change, becomes solidly embedded, these feedback loops require phases of monitoring, adoption, and extended uptake (Rapport et al., 2018). However, Rapport et al. stress the importance of not only measuring the success of the change, but to consider the complexities of the real-world context for change to be sustainable, as the context provides valuable insights regarding which resources are required to achieve sustainability.

Sustainability can also be viewed from the perspectives of when to assess it. In their literature review, Lennox et al. (2018) found that the most common approach was to view sustainability as a prospective process, i.e., as implementation is ongoing, while it was less common to view it as a linear process, i.e., retrospectively post-implementation, or as a combination of both prospective and retrospective aspects. To view sustainability in a linear view has been criticised, however. For instance, Pluye et al. (2004) argue that a linear understanding of sustainability does not consider the recursive or reflexive nature of sustainability, nor that sustainability is a process that needs constant adjustments. This is also seen in Quality management and in the use of the PDCA-cycle (see chapter 2.2.1., above). For the purpose of this study, *to investigate what is required for an improvement, as a result of a major organisational change, to become sustainable over time in a real-world setting*, it could be argued that the factors of sustainability in the analysed data need to be a result of a sustained change. At the same time, this does not imply that the outcome must be the endpoint of a process.

A more expansive definition of change sustainability is “as the process through which new working methods, performance goals and improvement trajectories are maintained for a period appropriate to a given context” (Buchanan et al., 2005, p. 189). For this study’s aim, this expansiveness is necessary due to the multi-contextual data that will be required to find common structural organisational needs and basic requirements for sustained change.

2.4.1. Securing change sustainability

There are different ways to secure change sustainability. Sörqvist (2004) mentions that common routines and continuous steering, either quantitatively through measurements of critical factors or qualitatively through reviews or revisions, are examples of how to secure the implemented improvements. Other aspects that impact sustainability are the organisational climate and the organisational culture, where the former consists of an organisation's policies, practices, and procedures, and the latter its employees' values and beliefs (Schneider et al., 1996). Schneider et al. concluded that the climate and the culture within an organisation are both important in achieving sustained change, although no specific climate or culture is more suited than any other. Examples of climate practices that enhance change sustainability include: employees consider their work challenging; employees are able to participate in decisions on achieving change; and employees experience a sense of mutual trust. The organisational culture, on the other hand, is not as readily accessible as the organisational climate, though Schneider et al. suggest that the culture can be targeted through a focus on climate. An example of this is practices that prove to the employees that management values quality. The role of management is also evident in the writings of Yukl and Kaulio (2012), who describe that leaders have an important role in the implementation of major organisational changes. The success of which rely on how well leaders manage to impact the values and perceptions of the employees. This is reflected in Boyatzis (2006), who states that for change to become sustainable, intentional efforts are required, and that these efforts in turn require effective leadership.

In the process of change it is important that there is room for on-going possibilities to give feedback, learn, and to continuously evaluate the work being done, in order for the change to stick (Brännmark & Benn, 2012). In a similar vein, Sörqvist (2004) asserts the importance of communication to counteract individual errors following change. Examples of this include:

- **Determine the need for information.** Identifying required information to avoid misunderstandings, as well as remembering that information is a two-way street.
- **Study and clarify key information flows.** Mapping how information flows in order to maintain the flow without interruptions and errors.
- **Standardise and secure the language.** Implementing a common and clear language, adapted to the recipient.
- **Choose suitable channels of information.** Selecting a contextually appropriate method of passive or active communication.
- **Ensure reception and understanding.** Verify that the recipient has received and understood the information as intended.

Bateman and David (2002) have developed a model to evaluate the sustainability of process improvement programmes for manufacturing companies, who can use the model to map their own activities for improvement. In order to understand the factors that could impede or enable sustainability, it is vital to properly spread the improvement programme throughout the company. If a company does not discover these factors, then it cannot act to secure sustainable improvements (Bateman & David, 2002). All the same, models that display factors for sustainable improvement can only *indicate the probability* of sustainability. Thus, they cannot be used to

determine if an improvement programme will lead to a sustained process of continuous change (Brännmark & Benn, 2012).

2.4.2. Obstructing factors

Factors which obstruct change sustainability are often not discussed in current research. Abrahamsson (2009) investigated organisational changes with a goal of creating flat organisational structures and to make work more team based. In this study, the impact structural inequality issues can cause towards the sustainability of change are explored. Examples of these structural issues include items such as gender division in areas like territories, positions, and task assignments, but also how these divisions could work as instruments to restore the previous status quo if they were not challenged. Abrahamsson highlighted how those who possessed power, or had a position that was traditionally viewed as masculine, did not wish for changes to happen as this would reduce their power, despite the fact that the removal of said power was essential to sustain the desired changes.

Other factors that can have a negative impact on the sustainability of organisational change include: when the implementation has pushed aside the day-to-day tasks and thus created a change fatigue (Meyer & Stensaker, 2006), that the employees transition back to the original routines due to force of habit (Sörqvist, 2004), or that managers fail to understand how easily technical improvements can revert (Drew et al., 2004).

2.4.3. Complexity

Modern organisational models and concepts to implement change have built-in contradictions and paradoxes Abrahamsson (2009). This could inhibit the sustainability of a change made in an organisation. Examples of these contradictions and paradoxes are: favouring flat organisations while strengthening the existing hierarchies, or to point out the importance of structural socio-technical changes while focusing on measures linked to attitudes and behaviour. There is often also a simultaneous focus on self-leadership, teamwork, and becoming a learning organisation, at the same time as management literature describes the employees as a function of the leader's actions. Lastly, the promotion of standardisation and behavioural control tends to occur alongside describing the need for individual performance measurements (Abrahamsson, 2009).

McCabe (2020, p. 20) describes that “the context of inequality that change interventions emerge through and reproduce is rarely mentioned”, and that by focusing on context, the focus also shifts to management. Change, then, is seen as something complex and multi-faceted, which must be clearly defined in order to understand its context and to be able to manage it effectively. This interest in “the context”, therefore, becomes a way to support the power of management, which confirms the belief that change is something that managers can execute. Adding to this is the notion that change is driven by certain agents; the actions and powers of which are taken to be limited by the context (McCabe, 2020). The thought of the change sustainability process as nonlinear and complex, where change, adaptation and uncertainty are to be expected, comes from system theory. According to the complex systems theory, the impact on sustained change comes from not only the broader organisation, but from the interaction between this and sociocultural context, the initiative, and the setting. Therefore, the initiatives of change are “introduced to complex adaptive systems that change and adapt in response to interactions with the environments, individuals and wider context” (Lennox et al., 2018, p. 8).

*The first rule in deciphering a message
is to guess what it means.*

William of Baskerville, in Umberto Eco's *Name of the Rose*

3. Methods

3.1. Philosophical worldview, research design, method choice and approach

The study is founded on the pragmatic worldview, as it is focused on finding a solution or an answer to what makes change that leads to improvement sustainable over time (Creswell & Creswell, 2018). Creswell and Creswell state that this worldview, as a rule, tends to use a research design based on mixed methods. Thus, the purpose and research question(s) guide the choice of data collection methods, which typically means using a combination of qualitative and quantitative methods.

For this study, however, the research design is predominantly qualitative rather than mixed methods, as the choice of method is a systematic literature review. The rationale for this is that a literature-based method is typically used: to summarise current knowledge within a field (Forsberg & Wengström, 2016), to find gaps and/or contradictions in the knowledge base (Jesson et al., 2012), or to describe how the results of different studies relate to one another (Booth et al., 2016). All of the above fits the aim of this study, to investigate what is required to sustain improvement, as well as its research question, which themes may be found in current research. Additionally, literature-based degree papers should develop and deepen the student's knowledge in their main field of study (Dahlborg Lyckhage, 2017), which is one of the aims of the Master's thesis in Quality Management (Lilja, 2021).

Another motive to carry out a literature study is that it is an unusual method within quality management (P. Ingelsson, personal communication, February 5, 2021). This is confirmed by Jesson et al. (2012) who claim that the development and practice of systematic reviews within the business and management field has been slow, even though progress has been made in the first two decades of the 21st century. All the same, Jesson et al. state that many subjects are found under this umbrella, with their own distinct ontological, epistemological, and methodological perspectives, making it complicated to adopt a common view of what a systematic review involves. Thus, this study may contribute to the knowledge development within the field.

This study makes use of the inductive approach common to qualitative studies, which involves using data as building blocks to construct themes. These themes, in turn, lead to a generalised theory. With this approach, theory becomes an end point, which is a distinct difference from the more theory-driven deductive approach typically associated with quantitative studies (Creswell & Creswell, 2018).

3.2. Data collection method

Booth et al. (2016, p. 15) summarise the core concept behind a research synthesis, the forerunner of literature reviews, thusly: "Gathering the published research, getting rid of the rubbish, and summarising the best of what remains characterises the science of research synthesis." These

aspects are still visible in how Booth et al. describe literature reviews, with the addition that these should have an approach that is *systematic*; a keyword that should be present regardless of the type of review that is undertaken.

As a method, literature reviews are often described on a spectrum from traditional or general reviews to systematic reviews (Booth et al., 2016; Forsberg & Wengström, 2016; Jesson et al., 2012). At one end of the spectrum, the traditional review is found, which aims to either compile a descriptive background with the purpose of justifying a following empirical study, or to describe the knowledge base within a specific field (Forsberg & Wengström, 2016; Friberg, 2017b). Jesson et al. (2012) add that critics of traditional reviews tend to dismiss them as “unscientific”, or as biased accounts, as they often lack distinct methodological descriptions and systematic search protocols. These faults, then, mean that the reader cannot evaluate how complete these studies are. At the other end of the spectrum, one finds the “gold standard” for literature reviews: the systematic review, with its exhaustive search, rigorous checklists for quality assessment, complex synthesis, and sophisticated analysis (Booth et al., 2016). Systematic reviews also have a transparent method for data collection, which aims to minimise the one-sidedness that is ascribed to non-systematic reviews (Jesson et al., 2012). Lastly, Mulrow and Oxman (1997, referenced in Forsberg & Wengström, 2016) have defined the systematic review as a review based on a clearly formulated question which is researched systematically by identifying, selecting, evaluating, and analysing relevant research.

Between these two extremes one finds various types of reviews, which, according to Booth et al. (2016), involve different activities in each of the key steps in the framework **SALSA**: *Search*, *Appraisal*, *Synthesis* and *Analysis*. This study employs the type that Booth et al. label as a *literature review*, which they describe as a form of systematic review that looks at recent or current literature that may cover a wide range of subjects. This type of review relates to SALSA as follows:

- **Search.** May be exhaustive, which in its most extreme form may involve using several different search strategies, such as manually searching through reference lists of scholarly articles as well as database searches using specific keywords (see also Forsberg & Wengström, 2016).
- **Appraisal.** Quality assessment is possible, but not strictly speaking necessary for this type of review. If such assessment is carried out, it is often done so through predetermined checklists or review protocols (see also Jesson et al., 2012).
- **Synthesis.** Narrative synthesis.
- **Analysis.** May be chronological, conceptual or thematic.

How this study relates to SALSA is described in more detail later in this chapter. Additionally, Appendix A provides an overview of the research process for this study.

A *literature review* was selected with respect to the elements in the mnemonic **TREAD**: *Time/Timeframe*, *Resources*, *Expertise*, *Audience and Purpose*, and lastly, *Data* (Booth et al., 2016). What Booth et al. refer to is that the authors' available time and timeframe, resources (other than time), expertise in the domain of carrying out a review, the audience and purpose of the study as well as the characteristics of the data to be included must all be considered. For this study, the time and timeframe were limited to a total workload of 20 weeks part-time for each author. The resources were limited to those databases that the authors had access to through the Mid Sweden University; no additional funding or other resources were provided from any instance for this

study. In terms of expertise, the authors had basic research skills acquired through undergraduate study as well as introductory lectures with a librarian from the Mid Sweden University library. The intended audience and purpose of the study were fellow students in the Master's Programme (one year) in Quality Management and Leadership as well as supervisors and examiners of the thesis. The study could also be of interest to researchers and practitioners within the field of quality management or surrounding fields. Lastly, the available data was expected to primarily be qualitative, rather than quantitative, in nature.

Taken altogether, these factors, and the limitations they indicated, meant that it was not possible to do a more exhaustive systematic review. Meanwhile, the aim of the study would not allow for a more limited general review. This led to the selection of a *literature review*, as a compromise between the two extremes.

3.2.1. Search: selecting and delimiting the reviewed articles

The first step in SALSA, Search, can be divided into five distinct stages (Booth et al., 2016):

- 1. Initial or scoping search.** Search for existing reviews, determine which databases to use in the full search, identify search terms, and develop and document a search strategy.
- 2. Conduct search.** Search identified databases, search for unpublished or grey literature, consider methodological search filters, and document any changes to the search.
- 3. Bibliography search.** Search through reference lists of the included studies, identify key citations, and consider hand searching specific journals.
- 4. Verification.** Ask an information specialist/librarian for advice on optimal search strategies, consult with experts in the field to identify additional studies, and check indexing of any relevant papers that were missed in the search.
- 5. Documentation.** Record details of each search, e.g., strategies used, number of references found etc. This should be done parallel to stage 1 through 4.

While this study has progressed through each of these phases, they have not all been accorded equal attention or depth. With respect to the elements of TREAD, as depicted above, emphasis was placed on stages 1, 2 and 5, although stage 2 was limited to carrying out the main search. Stage 3 was only applied during the scoping search, mainly due to time constraints, while stage 4 was reduced to only seeking assistance from a librarian.

Stage 1. In stage 1, a scoping review was conducted with the aim to provide an overview of current research, as well as to provide inspiration for search terms for the more systematic review that was to follow (Booth et al., 2016; Forsberg & Wengström, 2016). This scoping review was carried out using Business Source Complete and SCOPUS on January 19, 2021, by both authors. The following search terms were used: “organisation”, “change”, “change management”, “sustain”, “endure”, and “lasting”. To these terms, Boolean logic alongside wildcard and truncation symbols were applied to refine the searches (Booth et al., 2016). For a complete overview of the search parameters for the scoping review, see Appendix B.

For each search listed in Appendix B, titles and abstracts for the top ten results were reviewed, to see if their content was suitable for the topic of this study: sustainable organisational change. Several articles were omitted from further reading, as they either focused on ecological,

economical and/or social sustainability, or they did not have a focus on organisational change. The remaining articles, 23 in total, were read in full to see if they could contribute to the introductory or theoretical chapters of this study. Out of these, six were deemed as unsuitable, as they were either lacking in their methodological descriptions or reference management, or did not focus on change in the context of this study. An additional ten articles were also found through the reference lists of the remaining 17 articles, i.e., by using a snowball sampling (Bryman, 2012).

Based on the experiences from the scoping review, the search terms were refined. It was determined that the following terms should be added in order to specify the search further: “stick”, as in “making change stick”; “improve”, as the aim of the study had been refined to *change that leads to sustained improvement*; and “quality management”, in order to find studies that were connected to this field. With consideration to the refined aim, it was also determined that this study would be delimited to investigate major organisational change leading to improvement in different types of organisations, i.e., organisations in private, public or non-profit sectors. It follows that the study does not consider more limited change projects or small-scale continuous improvement, other than in those instances when it is initially implemented.

As a bridge between stage 1 and stage 2, the inclusion and exclusion criteria were determined (see Table 1), based on the purpose of the study, its research questions and the research design and type. These criteria list delimitations in terms of publication date, type of article, research designs, full-text availability, language, and article content. The ten-year time span for publication was deemed suitable, both with regards to looking into development since the literature study by Buchanan et al. (2005), but also in order to only include relatively recent research. As for only including peer-reviewed and published articles, in the case of the former, the authors expected articles that were peer-reviewed to be of a higher standard compared to articles that were not (Bryman, 2012). Regarding the latter, this delimitation was made with the awareness that some potentially relevant studies could be excluded, due to publication bias (Jesson et al., 2012). In the case of the latter, the authors estimated that the literature review would include enough studies without including conference papers or unpublished articles, i.e., articles in-press. To only allow full-text articles in English was a consideration based on available funds as well as the authors’ language skills, both of which relate to the Resource dimension of TREAD. The last two criteria, article content, were designed with the aim of the study in mind, so that only articles with relevant content would be considered for inclusion.

Table 1
The inclusion and exclusion criteria for the study

Inclusion criteria	Exclusion criteria
Published between January 1 st 2010 and March 17 th /18 th 2021 ²	Published before January 1, 2010
Peer-reviewed and published article in a scientific journal	Other types of documentation than peer-reviewed and published articles, such as books, trade journals or conference papers
Any type of research design	Non-original article
Access to full-text	Not access to full-text

² The variation in end date is due to the searches for the databases being carried out on separate dates.

Inclusion criteria	Exclusion criteria
Language: English	Any language other than English
Change leading to sustained improvement is described in the findings or conclusions.	Change leading to sustained improvement is not described in the findings nor the conclusions.
Focuses on how major organisational change, as defined in this study, that leads to improvement can be made sustainable over time in a real-world setting.	Meets one or more of the following criteria: <ul style="list-style-type: none"> • Does not focus on improvement as a result of major organisational change, as defined in this study (e.g., managing change by itself, with no improvement dimension present) • Focuses on implementation by itself, without any factors of sustaining the change or improvement • Focuses on other types of sustainability (e.g., economic, ecologic and/or social sustainability) • The findings are not derived from a real-world setting.

As a final consideration during stage 1, it was determined that the databases that would be used were Business Source Complete, SCOPUS, and Academic Search Premier; all of which are recommended databases for the quality management field. The last of these was added after an experimental search that followed, but was not part of, the scoping search.

Stage 2. With respect to the aforementioned criteria and the refined search terms, a search strategy was determined in stage 2. This strategy encompassed modifying the specific search operators for each database that the study made use of, as well as considerations involving thesaurus searching, limits, search filters, and grey literature (Booth et al., 2016). As the scoping search yielded a substantial number of results, the authors expected the same would be true for the search proper, and thus decided to forego thesaurus searching entirely. Search filters were also disregarded, though for a different reason: to not risk missing relevant articles by omitting certain subjects or research designs. Limits, however, were considered to the extent that they supported the inclusion and exclusion criteria. For this study, this meant limiting the results according to document type, e.g., articles and reviews, but not conference papers, book chapters etc. Lastly, grey literature, i.e., information from such sources whose primary activity is not publishing, was not included. Although including such material would reduce the risk of publication bias (Booth et al., 2016), it simply was not feasible with respect to the Time/Timeframe dimension of TREAD.

The search strategy for each database and their respective outcomes can be found in Appendix C, which also provides details for each phase of selection. These phases were:

- Phase 1: Selection based on title and abstract, with respect to the last inclusion and exclusion criteria (see Table 1, above).
- Phase 2: Selection based on full-text documents, with a focus on the findings and/or conclusions, with respect to the second-to-last inclusion and exclusion criteria (see Table 1, above).
- Phase 3: Selection based on quality assessment protocol (see chapter 3.2.2., below).

Additionally, Appendix D offers an overview of the step-by-step application of the inclusion and exclusion criteria through a flow chart according to *PRISMA*³ (Forsberg & Wengström, 2016).

Stage 3. The bibliography search was only applied during the scoping search. The authors decided that the potential gains presented by checking reference lists of included articles, citation searching based on key articles, author searching, as well as hand searching select journals (Booth et al., 2016), did not correspond to the time and effort these activities would require, with respect to the purposes of this study and the limitations set by TREAD.

Stage 4. Similar to the considerations during stage 3, for stage 4 the authors opted to limit this stage to only consulting with a librarian at the university library. This consultation occurred both before the project began and at the early stages of the project.

Stage 5. Throughout each of the preceding stages, the process was documented to ensure the transparency and reproducibility of the study.

3.2.2. Appraisal: quality assessment of reviewed articles

The second step in SALSAs, Appraisal, is not a strict requirement in a *literature review* as defined by Booth et al. (2016). However, in order to ensure that all articles that were included in this study met a minimum threshold of quality, the authors decided to assess the quality of those studies that would be considered for inclusion.

While there are no clear-cut evaluation processes that span all scientific fields, there are some common questions such evaluations should touch upon. These include, but are not limited to; What was the purpose of the study? What were the results? How were these results achieved? Are the results reasonable? Are the results generalisable? (Booth et al., 2016; Forsberg & Wengström, 2016; Friberg, 2017c). Such questions are especially important to consider for systematic reviews within management-related subjects, as there are no published checklists for quality assessment within this field (Jesson et al., 2016). Rather, each author must come up with their own checklist, either through modifying an existing one, from a different field, or by inventing one of their own. For this study, an assessment protocol was developed by adapting the checklists suggested by Forsberg and Wengström (2016), Friberg (2017a), and Jesson et al. (2016), as well as theoretical considerations by Booth et al. (2016), Forsberg and Wengström (2016), and Hannes (2011). Thus, elements of the questions above as well as core concepts of quality assessment (see Table 2) were considered and used to create the assessment protocol. Aspects related to qualitative studies were given greater consideration in the creation of the protocol, as the authors predicted that the review would predominantly include qualitative studies. This prediction was based on the fact that all the studies found through the scoping review were qualitative. Before finalising the protocol, a pilot test was conducted on three of the articles found in the scoping review. Based on this pilot test, a few of the questions were reworded and one question was removed entirely.

³ *PRISMA* stands for *Preferred Reporting Items for Reviews and Meta-Analyses*.

Table 2

Core concepts of quality assessment for different types of studies

Quantitative studies (Booth et al., 2016)	Quantitative studies (Forsberg & Wengström, 2016)	Qualitative studies (Forsberg & Wengström, 2016)	Qualitative studies (Hannes, 2011)
<ul style="list-style-type: none"> • <i>Validity</i>. Are the results of the study true? • <i>Reliability</i>. What are the results? • <i>Applicability</i>. Can we generalise the results? 	<ul style="list-style-type: none"> • <i>Internal validity</i>. Does the study display any systematic bias? • <i>Precision/Reliability</i>. How trustworthy are the results? • <i>External validity</i>. To what degree can the results be generalised? 	<ul style="list-style-type: none"> • <i>Overall description</i>. Does the study display awareness of perspective, internal logic and good ethics? • <i>Results</i>. Do the results display a wealth of content, orderly structure and additions to theory? • <i>Reasonability/Validity</i>. Are the results and their interpretations reasonable? 	<ul style="list-style-type: none"> • <i>Credibility</i>. Do the findings hold true? • <i>Transferability</i>. Can the findings be transferred to other settings? • <i>Dependability</i>. Is the research process logical, traceable and clear? • <i>Confirmability</i>. Can the findings be qualitatively confirmed (through analysis being grounded in data as well as by examining the audit trail)?

The final assessment protocol contained 18 “yes”/”no”-questions (see Appendix E). All questions had to be answered for all articles, although two questions – no. 11 and 18 – could be marked as “not relevant”. As each article completed the assessment, the percentage of “yes” out of the 16–18 maximum was calculated. Articles with less than 70% “yes”-answers were deemed as “low quality” and excluded from further consideration, while articles with medium (70 – 80%) or high quality (80% and above) were included in the final selection of articles. These limits were based on the results of the pilot test, as it was determined that methodological concerns were key in the quality assessment. This means that an article that received too many “no”-answers in the methodology block would be omitted. The same would be true for an article with a few methodological issues combined with deficiencies in other areas. As a result, the limits were on the one hand grounded in the desire to be inclusive, while also maintaining a minimum level of methodological quality. On the other hand, the limits were set with respect to the Time/Timeframe element of TREAD, as each search yielded a substantial number of articles for consideration.

The 39 articles that were ultimately considered for inclusion underwent a final review by both authors jointly, as a concluding quality check to ensure congruence. These 39 articles are presented in Appendix F, where the following information is provided for each of them:

- Basic bibliographic data, i.e., author(s), article title, journal, and publication year.
- Content overview, i.e., purpose, methodology, and findings of relevance to this study.
- Quality assessment.

3.2.3. Synthesis: compile and describe the results

The third step in SALSAs, Synthesis, relates to how the collected data is compiled and described, i.e., “what the literature *says*” (Booth et al., 2016, p. 240). For this study, the suggested narrative

synthesis was employed, meaning the results of the included studies were presented using descriptive text, tables, and other graphical illustrations.

3.2.4. Analysis: analysis and data processing

The fourth and final step in SALSA, Analysis, concerns identifying patterns, similarities, differences, and subgroups, in the collected and synthesised data, i.e., “what the literature *means*” (Booth et al., 2016, p. 240). For this study, a thematic analysis was chosen as it is suitable for identifying key principles and characteristics. Additionally, Booth et al. recommend this type of analysis for novice reviewers.

At its core, a thematic analysis identifies themes in the body of research. This involves a three-step process, which was also the approach used in this study, of firstly coding the findings, followed by organising these codes into related themes, and finally, analysing these themes (Booth et al., 2016). The first step, coding, was done by extracting the key words and phrases relating to factors of sustainability that each study had identified. These factors are found in Appendix F, in the column labelled “Findings of relevance to this study”. For the second step, the organisation of themes was done iteratively through an affinity diagram (see Appendix G), as this allowed for the structuring of large amounts of verbal, or in this case written, data into naturally related groupings (Bergman & Klefsjö, 2012). The diagram was created by principally following the directions given by Klefsjö et al. (1999), with a few modifications. Firstly, the clustering was done on three levels instead of the described two, due to the large amount of data. Secondly, those factors that occurred multiple times, i.e., duplicates, were colour-coded for emphasis. The final step, analysis, involved making sense of the emerging themes by using the theoretical background of the study.

3.3. Authors’ prior knowledge

One of the authors has previously studied business administration, where courses on organisational theory have included theories on organisational construction, change and improvement, behaviour and attitudes, incentives as well as resistance to change. Parallel to carrying out this study, the same author has also taken a course in organisational change with regard to sustainability in times of crisis; a course that placed a heavy emphasis on different theoretical perspectives such as Theory of Change, Resilience, Transition management and Three horizons, as well as system thinking and how this can be applied to issues relating to change.

The other author has no prior academic experience regarding change leading to improvement, beyond the scope of the courses in the Master’s Programme in Quality Management and Leadership. However, this author has had practical workplace experience of projects that involve implicit change that should lead to improvement.

3.4. Clarity, validity and auditability

According to Booth et al. (2016) there are many reasons to have a systematic approach when carrying out a review. The three main considerations can be summarised as: *clarity*, *validity*, and *auditability*. This includes having a structure for the systematic review that makes it easy to navigate and interpret through a clear methodological description; the clarity of the study. The final product must also be defensible against both selection bias (i.e., selecting studies that

support preconceived notions) and publication bias (i.e., the greater likelihood of publication of positive outcomes as opposed to negative ones); the validity of the study. Lastly, the study needs to show that the author's conclusions are based on the collected data, rather than fabricated arguments in support of a preconceived conclusion; the auditability of the study (Booth et al., 2016).

This study meets the first of these, clarity, through a straightforward disposition that presents methodological considerations transparently. Regarding the selection bias of validity, the authors have not allowed any preconceived notions on the topic to impact the selection or assessment of included studies. However, the study cannot provide any guarantees in regards to publication bias, as the authors of this study are reviewing published studies and thus cannot say if there were (unpublished) studies with a negative outcome that could have changed the results. Concerning the last consideration, auditability, the study provides flowcharts and other figures, tables, and textual descriptions of the collected and analysed data, so that readers may review the strength of the study independent of the authors' findings.

3.5. Ethical considerations

In all scientific research it is necessary to consider ethical issues that could occur at any given point in the research project (Bryman, 2012; Creswell & Creswell, 2018). As a foundation, there are four ethical principles that should guide all research involving human subjects. These are *harm to participants*, *lack of informed consent*, *invasion of privacy*, and *deception* (Bryman, 2012). As this study does not involve human subjects, these are not applied directly. Regardless, Forsberg and Wengström (2016) assert that it is important that the studies included in the review meet these requirements and that the studies have been approved by an ethical committee, when required. This study meets this requirement by considering ethics when it has been relevant to do so, such as scrutinising included articles to ensure that they have been ethically approved, when needed.

Alongside the ethical principles, there are specific ethical issues to consider in the selection of articles and presentation of results. Several of these are directly applicable to a literature-based study (Creswell & Creswell, 2018; Forsberg & Wengström, 2016):

- **Sharing data with others.** Describing the study design so that others may assess the credibility of the study on their own.
- **Disclosing only positive results.** Reporting the full range of findings, as opposed to only those that the researcher agrees with.
- **Falsifying authorship, evidence, data findings, or conclusions.** Providing an accurate account of the information, which could include validating the accuracy of the gathered data across multiple sources.
- **Plagiarism.** Giving credit for the work of others, i.e., not claiming someone else's work as your own.
- **Keeping raw data and other materials.** Preserving the data used for a reasonable period of time (up to ten years), as well as discarding data appropriately after this time has passed.

This study meets these issues by providing proof of a transparent selection of articles and an unbiased presentation of results; the latter is accomplished through textual, tabular, and

graphical descriptions. By using a literature review, the findings are inherently validated by being an aggregate of multiple and independently published articles. Data from these articles, as well as other sources used in this study, are presented by the authors with proper attribution, in order to avoid plagiarism. Lastly, all 39 articles included in this study will be archived digitally by both authors for ten years after its publication, i.e., until June 2031.

*I pass with relief from the tossing sea of Cause and Theory
to the firm ground of Result and Fact.*

Winston Churchill, from *The Story of the Malakand Field Force*

4. Findings and analysis

4.1. Data for the included articles

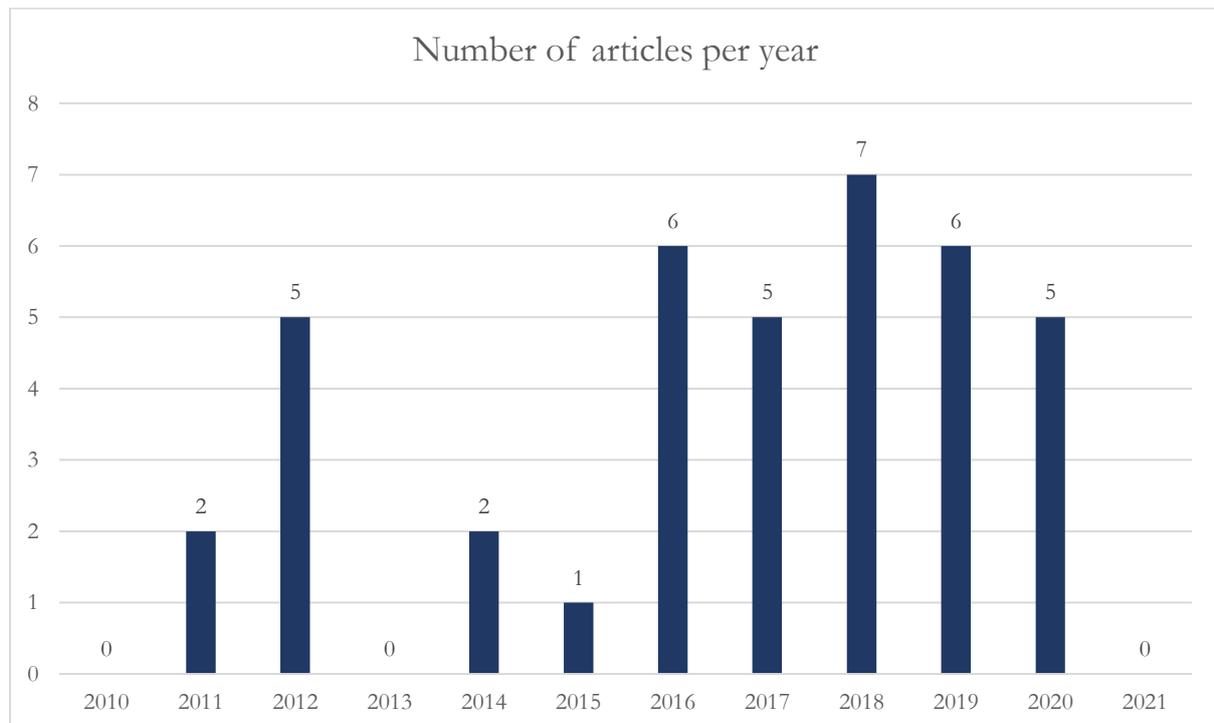
In the following sections, some key statistics and pertinent information for the 39 articles included in the study are presented, such as when they were published, in which journals they were published, and where the studies they cover took place. All data below has been extracted from Appendix F. In some cases, data has been clustered before diagram creation. When this is the case, there are notes indicating this.

4.1.1. Number of articles per year

Close to 75% of the articles included in this study were published in the latter half of the investigated period, 2016-2021, meaning only 25% were published in the earlier half, 2010-2015 (see Figure 4). None of the included articles were published in the years 2010, 2013 or 2021, as no articles from these years met the inclusion criteria and/or passed the quality assessment for the study.

Figure 4

Number of articles per year included in the study



4.1.2. Journals the articles were published in

While the articles included in this study were published in 25 unique journals, eight of those journals contained two or more articles each (see Figure 5). Altogether these eight journals covered more than half of the articles with a total count of 22. Consequently, the remaining 17 journals contained one article each (see Table 3). It is also worth noting that all journals, save one, were connected to healthcare, with the one exception being *Total Quality Management & Business Excellence* with its three articles.

Figure 5
Journals with two articles or more in the study

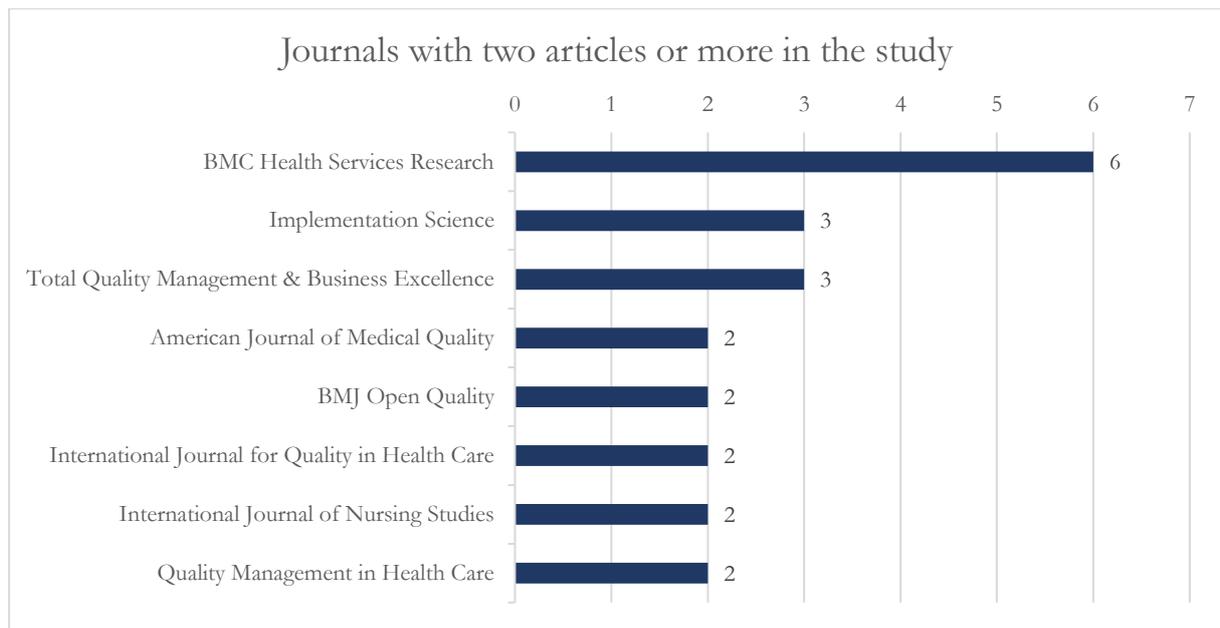


Table 3
Journals with one article each in the study

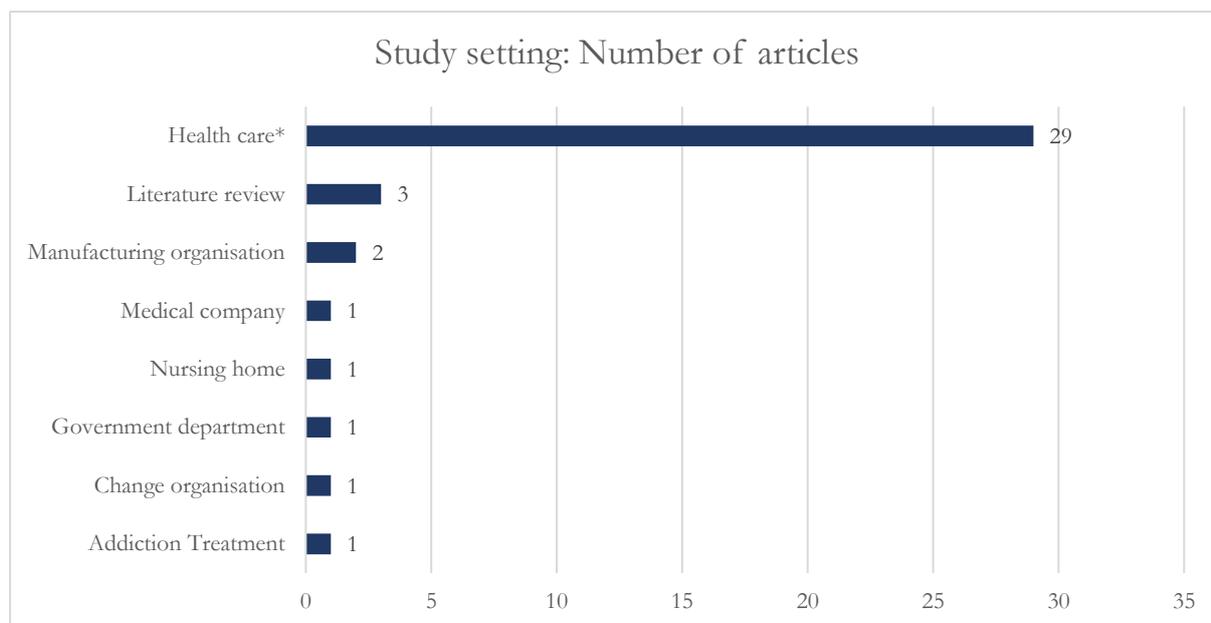
Addiction Science & Clinical Practice	Health Services Research	Journal of the American Board of Family Medicine
Advances in Skin & Wound Care	Journal of Clinical Nursing	Leadership in Health Services
Australian Journal of Primary Health	Journal of Health Organization and Management	Scandinavian Journal of Occupational Therapy
BMJ Quality and Safety	Journal of Nursing Management	The American Journal of Surgery
Canadian Journal of Surgery	Journal of Pediatric Nursing	The Health Care Manager
Critical Care Nurse	Journal of Public Health Management and Practice	

4.1.3. Study setting and geographical location

Regarding the study setting, i.e., the organisational context where each study took place, the data revealed a decided slant towards healthcare. This setting, which represents a cluster of labels, is reported in 29 articles, or almost 75% of all included articles (see Figure 6). When related study

settings were added, e.g., medical company, nursing home and addiction treatment (one article each), the total increased to 32 articles. As Figure 6 shows, the remaining seven articles covered three different settings, e.g., manufacturing organisation (two articles), government department (one article), and change organisation (one article), as well as literature reviews (three articles).

Figure 6
Study setting: Number of articles

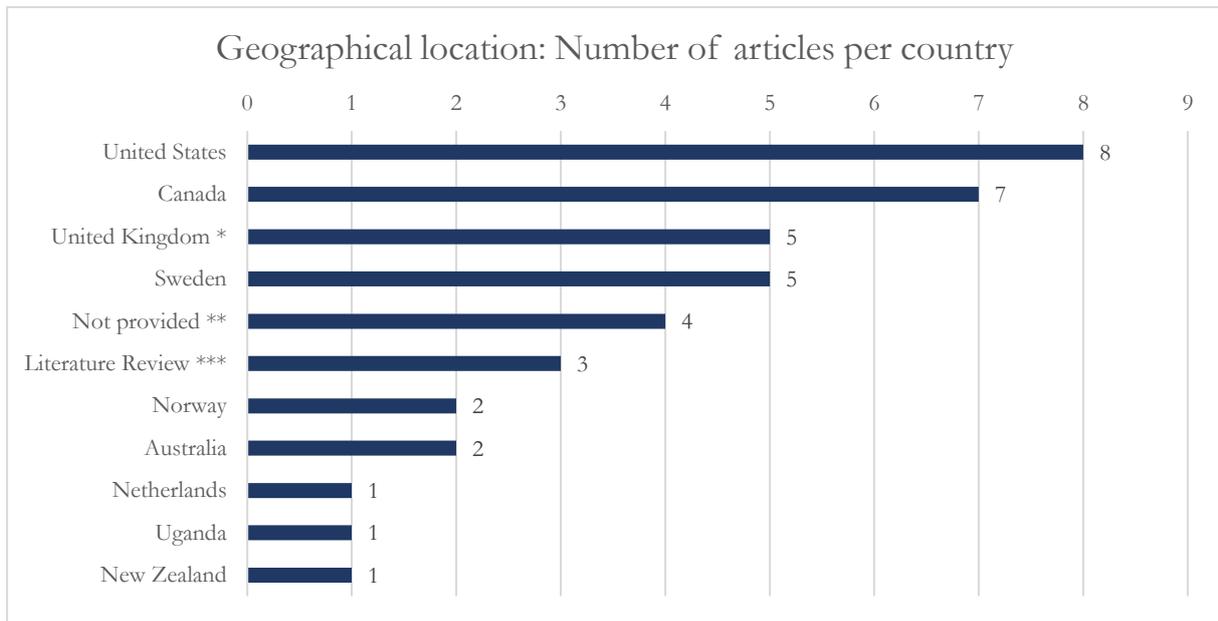


Note: * Health care is used as a clustered label for settings such as “hospital”, “medical centre”, “health board”, “health unit”, “outpatient facility”, and “phlebotomy (blood-drawing) laboratory”, among others.

As far as the geographical location of each study is concerned, the data for the articles were clearly weighted towards western countries (see Figure 7). When the data in Figure 7 was aggregated by continent, this was even clearer: North America was represented by 15 articles, Europe by 13, Oceania by 3, and Africa by 1. Asia and South America were not represented at all. Also, while four articles did not specify a geographic location (Featherall et al., 2019; Hung et al., 2019; Jones et al., 2019; Stumbo et al., 2017), it could reasonably be assumed by their content that they were also set in the United States. This brought the supposed total for North America to 19 articles, or nearly half of the included articles. For the three literature reviews that were included, no specific location was provided in the articles, nor extrapolated by the authors of this study.

Figure 7

Geographical location: Number of articles per country



Notes: * United Kingdom also includes England and Scotland; ** Location was not provided for three of the articles; *** Location not specified for literature reviews

4.1.4. Studies using the same population

Two pairs of articles (Fleischer et al., 2016a, 2016b; Hovlid et al., 2012a, 2012b) used the same population in their respective studies. They did so in slightly different ways, with slightly different outcomes of relevance to this study. As a result, these pairs of studies are treated differently in the analysis of this study, as outlined below.

The two articles covering the sustainability of a best practice guideline programme by Fleischer et al. (2016a, 2016b) had different purposes, where one article (2016a) focused on how unit leaders influenced sustainability, while the other (2016b) focused on the overall sustainability of the programme. The different purposes resulted in these two articles having different findings and therefore different factors for sustainability. In the analysis section, these articles are thus treated as separate studies, and factors from both articles are counted separately.

In contrast, while the two articles reporting on the sustainability of interventions at a Norwegian hospital by Hovlid et al. (2012a, 2012b) also had different purposes as well as methodology, their findings on the topic of sustainable improvement were somewhat similar. Both articles related six factors for sustainability, although different parts were described in each article. In the analysis section, these two articles, and the factors they present, are therefore treated as one study with two sources, so as not to give these findings disproportionate impact on the analysis and conclusions.

4.2. Which themes to create sustained improvement are described in current research regarding major organisational change?

As the data was analysed using an affinity diagram (see Appendix G for a general diagram), eight distinct themes for sustainable improvement emerged. These eight themes are: *Collective visions and goals*, *Communication*, *Leadership*, *Personal growth*, *Positive organisational culture*, *Reduce variability*, *Resources*, and *System thinking*. Table 4 provides an overview of the themes and their related sub-themes and specific elements for sustained improvement.

Table 4

The emerging eight themes for sustained improvement, with related sub-themes and elements

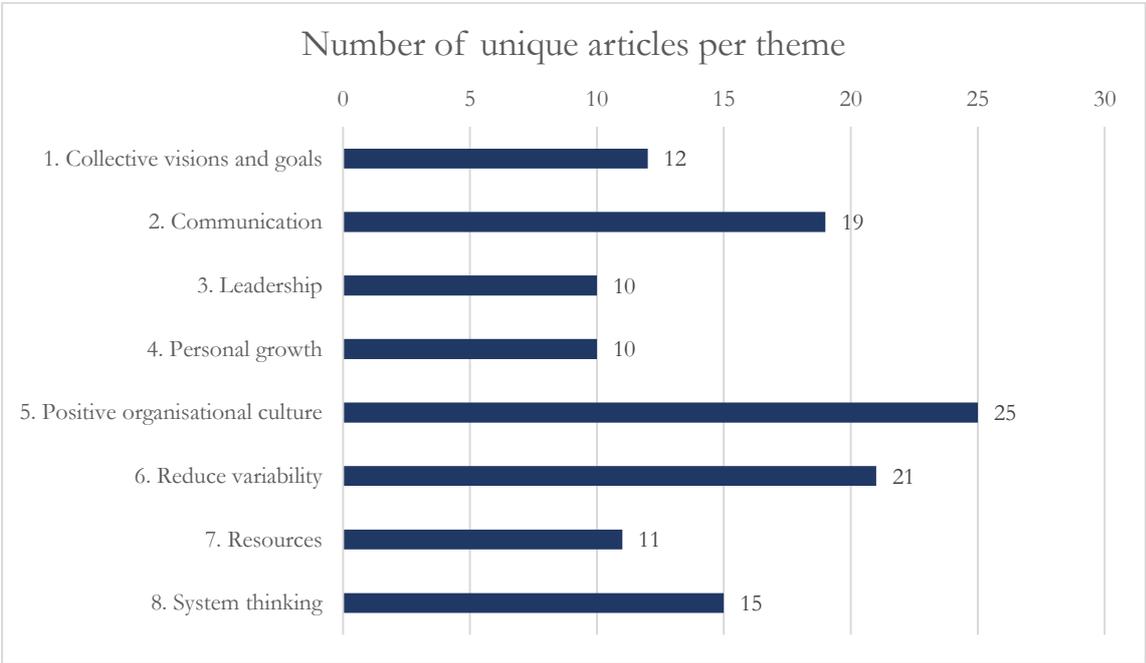
Themes	Sub-themes	Elements
1. Collective visions and goals	1.1. Adapt, prioritise, and focus the improvement throughout implementation	1.1.1. Adapt improvement concept based on local context and feedback
		1.1.2. Extend the initial implementation
		1.1.3. Prioritise and focus the quality of improvement projects
		1.1.4. Use small-scale change implementation tests
	1.2. Operationalise strategies from shared visions and goals	1.2.1. Operationalise strategies from shared visions and goals
2. Communication	2.1. Develop transparent communication and inter-professional information sharing and feedback structures to be able to act on lessons learned	2.1.1. Be transparent
		2.1.2. Create an arena for transparent feedback and information sharing
		2.1.3. Develop a culture of information sharing and professionalism within teams
		2.1.4. Develop communication and discussion strategies
		2.1.5. Reflect and act on lessons learned
		2.1.6. Use computer applications to improve information sharing
	2.2. Strengthen the message by using one-way communication repeatedly	2.2.1. Provide client-oriented information
2.2.2. Use verbal and visual reminders repeatedly		
3. Leadership	3.1. Acknowledge the importance of the attributes of middle managers	3.1.1. Acknowledge the importance of middle managers
		3.1.2. Consider the importance of formal leaders' attributes
	3.2. Ensure that committed leaders use participative techniques and coaching at multiple organisational levels	3.2.1. Connect leaders at different organisational levels
		3.2.2. Ensure leaders' commitment for and promotion of the improvement
		3.2.3. Ensure that leaders connect with staff and spread knowledge
		3.2.4. Ensure that leaders employ coaching and participative techniques
4. Personal growth	4.1. Promote opportunities for personal growth through continuous staff education and training	4.1.1. Educate and train staff continuously, and disseminate information
		4.1.2. Promote opportunities for personal growth

Themes	Sub-themes	Elements	
5. Positive organisational culture	5.1. Ensure shared accountability and alignment of attitudes and values within teams to promote a culture of continuous improvement	5.1.1. Enable team self-organisation and shared accountability	
		5.1.2. Ensure that collective attitudes, values and beliefs are aligned with improvement goals	
		5.1.3. Promote a culture of continuous improvement	
	5.2. Solidify teamwork and collaboration through stakeholder participation and team stability	5.2.1. Create a sense of ownership through early staff engagement	
		5.2.2. Develop collaboration between staff	
		5.2.3. Enable participation in decision-making	
		5.2.4. Ensure staff well-being	
		5.2.5. Ensure stakeholder participation to achieve buy-in	
		5.2.6. Promote teamwork and team stability	
	5.3. Transform individual attitudes to align with organisational goals through positive reinforcement and positive peer pressure	5.3.1. Exert positive peer pressure through purposefully appointed individuals	
		5.3.2. Show that change is needed	
		5.3.3. Transform individual employee attitudes and beliefs to align with organisational goals	
		5.3.4. Use positive reinforcement and incentives	
6. Reduce variability	6.1. Demonstrate that the improvement is successful through continuous measurement and evaluation	6.1.1. Demonstrate that the improvement is successful	
		6.1.2. Measure and evaluate performance over time	
	6.2. Reduce variability through standardisation of processes, roles and mandates	6.2.1. Adopt QI process to identify and overcome barriers to implementation	
		6.2.2. Have an agreed-upon change methodology	
		6.2.3. Have clear roles and mandates	
		6.2.4. Promote and improve standardised processes	
		6.2.5. Reduce variability through standardisation	
	7. Resources	7.1. Secure necessary resources and support and retain them post-implementation	7.1.1. Maintain internal and external support post-implementation
			7.1.2. Secure necessary resources (time, staff, finances, etc.) and use them creatively
8. System thinking	8.1. Acknowledge the complexity of change by employing system thinking and multi-level integration	8.1.1. Accept and manage the dualities of change	
		8.1.2. Employ system thinking	
		8.1.3. Integrate improvement focus into other initiatives, policies and the organisational structure	
	8.2. Adapt and align processes and practices based on the local context	8.2.1. Adapt processes based on local context	
		8.2.2. Find alignment between business-centred and client-centred practices	
		8.2.3. Take swift action to correct mistakes	

In the following, each theme is described through their respective sub-themes, and analysed in relation to the theoretical background provided in chapter 2. Additionally, there are accompanying affinity diagrams for each theme, displaying parts of the affinity diagram for the study as a whole. A note on colour-coding in these diagrams: White denotes factors that only occurred once in the data, yellow denotes a factor that occurred twice, and orange denotes a factor that occurred three or more times. The colour-coding emphasises those factors that occurred at least twice, as the process of constructing an affinity diagram inherently removes duplicates (Klefsjö et al., 1999). As part of the data analysis, all the factors found in every article were initially included, but duplicates were later omitted or merged with other factors to simplify the visual presentation. In total, 183 factors were initially found in the studied articles. After removing and merging duplicates, 131 unique factors remained, and it is these 131 factors that form the data set for the affinity diagrams (see Appendix G, and Figures 9 through 16).

Another way to consider the findings of this study is to relate the studies to the emerging themes, by analysing how many unique articles contributed to a given theme (see Figure 8). Additional data for Figure 8 is found in Appendix H, which reveals that the majority of articles contributed to two to six themes (33 articles), with a contribution to three themes being both the mean and the median (13 articles). Also, no articles contributed to seven or all eight themes, and five articles contributed to only one theme each.

Figure 8
Number of unique articles per theme



4.2.1. Theme 1: Collective visions and goals

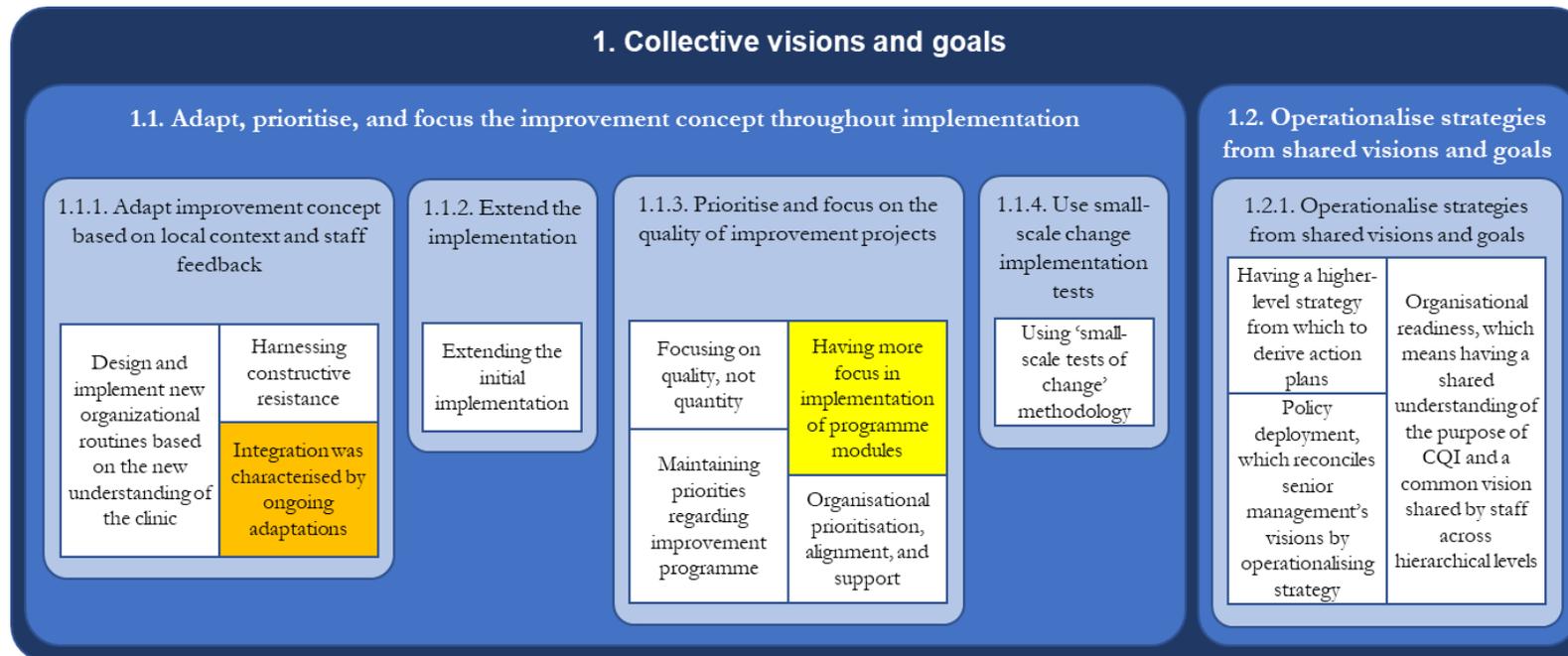
The first theme, *Collective visions and goals*, consisted of the two sub-themes *Adapt, prioritise, and focus the improvement throughout implementation*, and *Operationalise strategies from shared visions and goals* (see Figure 9).

Within the sub-theme *Adapt, prioritise, and focus the improvement throughout implementation* there were two elements that were of greater importance. One was that when designing the change implementation, it was important to adapt to the local context based on staff feedback, for instance when implementing new organisational routines. More importantly, several studies mentioned that ongoing adaptations of the integration of improvement initiatives was a way of achieving this. This aligns with previous studies, which have highlighted the need for organisations to be reactive and to continuously adapt based on context (Demers, 2007; Neal & Naylor, 2007). The data in the sub-theme also indicated a need to prioritise and focus the quality of projects of change, and two studies identified the need for prioritisation of implementation projects. It was also of importance for the creation of sustainable change that the prioritisation was maintained. This can be viewed in relation to the need for a more profound change, i.e., a major organisational change, to be more targeted in order to systematically change both culture and process (Neal & Naylor, 2007). According to one study it was important to initially test the change implementation on a small scale to make the intended change more sustainable, which can be compared to the cornerstone “base decisions on facts”, as a test could be viewed as a fact-finding mission (Bergman & Klefsjö, 2012). Extending the implementation may also be a way to make improvement more lasting, according to one study.

Operationalise strategies from shared visions and goals was the other sub-theme, which consisted of a single element with the same heading. The factors within this element revolved around organisational readiness and reconciling the visions of top management to all staff. The strategic and visionary dimensions of change are clearly illustrated in previous research, such as in Smith’s (2002, p. 26) definition of major organisational change: “any intentional change in the way the organization does business that affects the strategic position of the organization vis-à-vis its competition”. Additionally, Bushe and Nagaishi (2018), McCabe (2020), and Rother (2010/2013), all discuss the need for a vision to initiate change, which is then used to empower the staff in order to work towards a common goal.

Figure 9

Affinity diagram for theme 1: Collective visions and goals



Factor that occurred once in the data
Factor that occurred twice in the data
Factor that occurred three or more times in the data

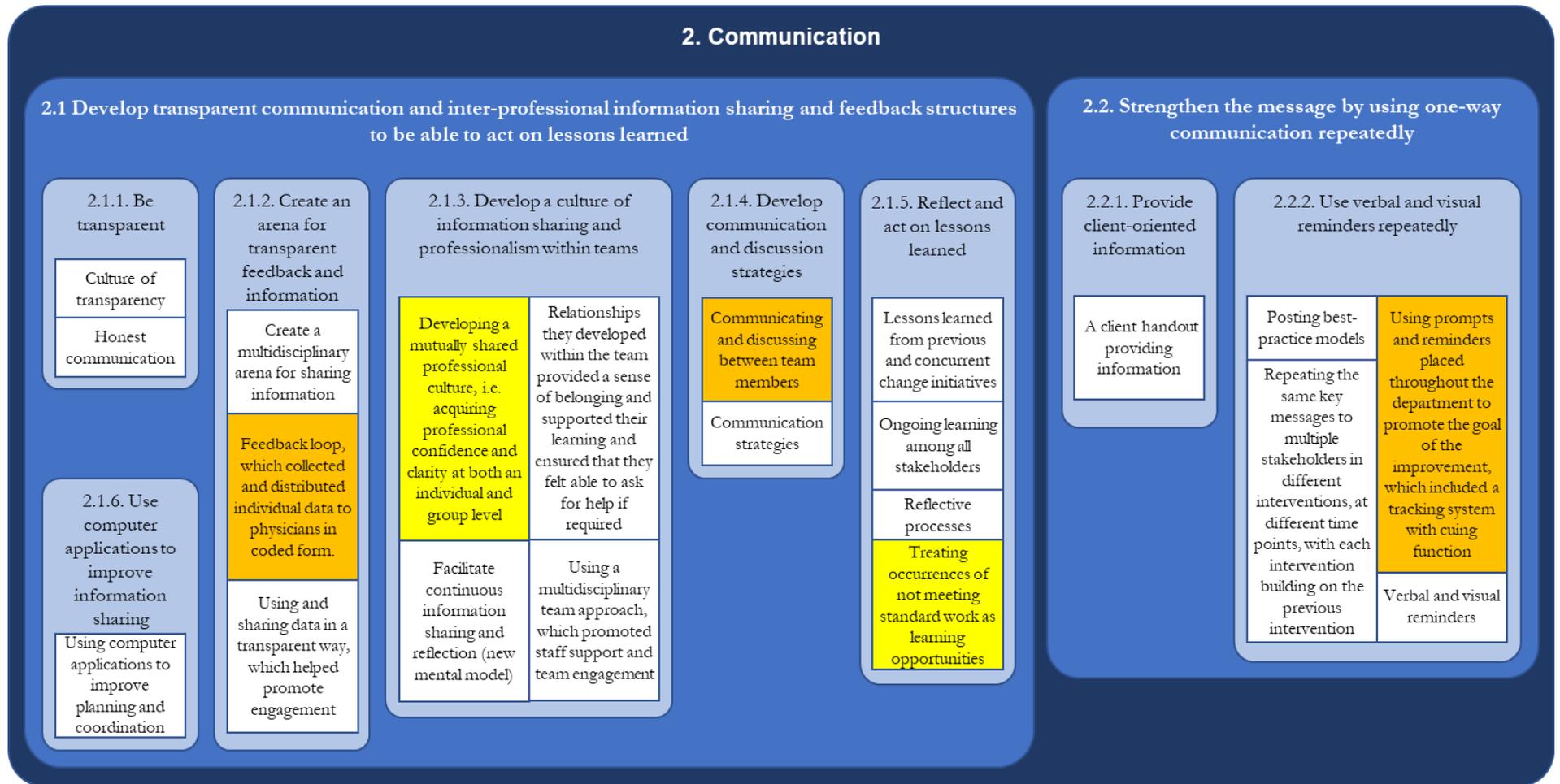
4.2.2. Theme 2: Communication

Communication as a theme contained two sub-themes: *Develop transparent communication and inter-professional information sharing and feedback structures to be able to act on lessons learned*, and *Strengthen the message by using one-way communication repeatedly* (see Figure 10).

Within the first sub-theme, *Develop transparent communication and inter-professional information sharing and feedback structures to be able to act on lessons learned*, several of the included elements appear to be of significance. These elements stressed the importance of enabling data and information sharing, shared team culture, communication within teams, and reflection and ongoing learning. Communication as an enabler for learning and as a countermeasure for errors, as well as providing direction for improvement are all highlighted in previous research (Brännmark & Benn, 2012; McCabe, 2020; Sörqvist, 2004). To a lesser extent, transparency and the use of computer applications were also mentioned in this sub-theme.

The second sub-theme, *Strengthen the message by using one-way communication repeatedly*, highlighted the need for visible and repetitious reminders regarding the improvement. Examples of this were posting best-practice guidelines or repeating the message to multiple stakeholders, which can be seen in relation to Sörqvist (2004), who stresses the need to map information flows, to choose a contextually appropriate information channel, and to ensure that the information has been received and understood.

Figure 10
Affinity diagram for theme 2: Communication



4.2.3. Theme 3: Leadership

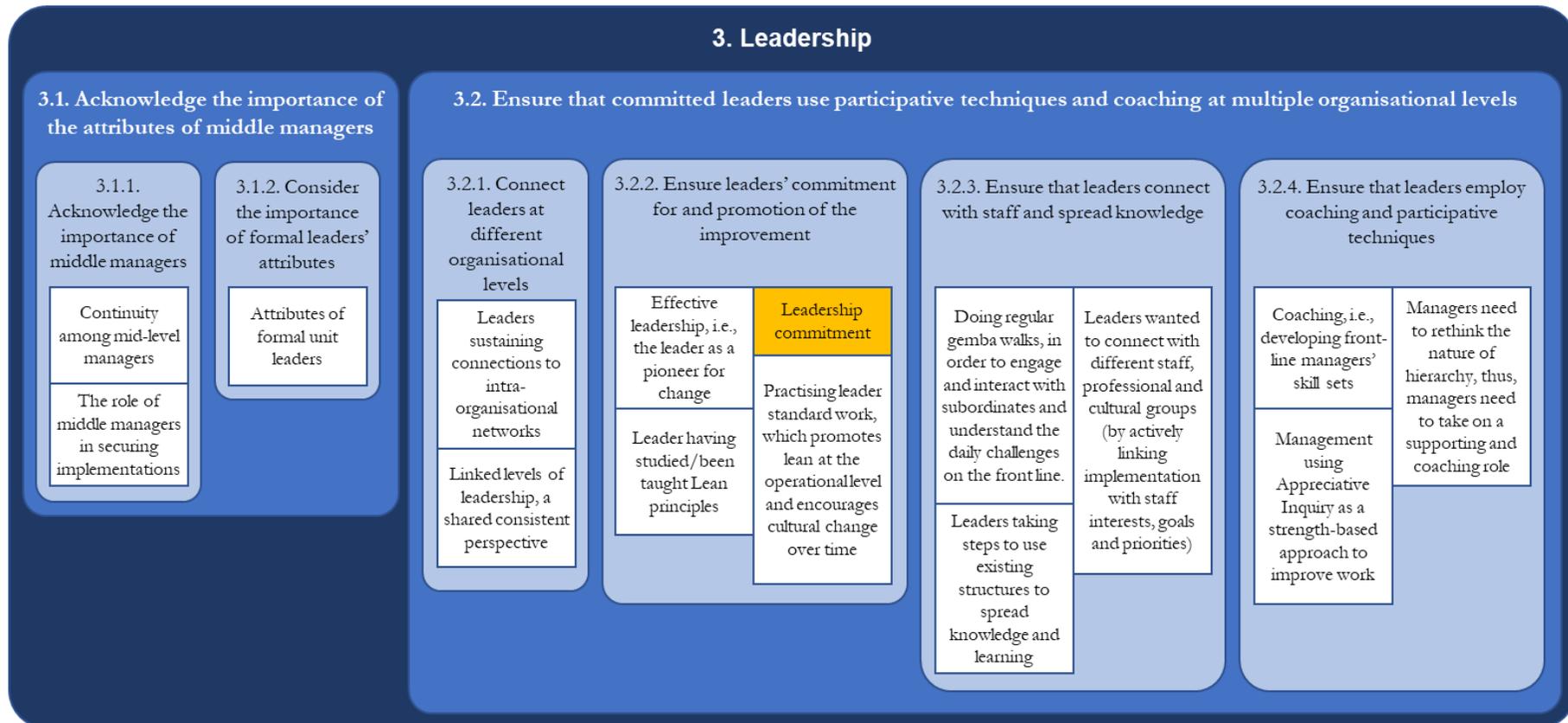
The theme of *Leadership* included two sub-themes. These were *Acknowledge the importance of the attributes of middle managers*, and *Ensure that committed leaders use participative techniques and coaching at multiple levels of the organisation* (see Figure 11). In general, this theme was characterised by an overall “uniqueness” in the factors, i.e., that each factor it contained was only mentioned once, with one notable exception. The exception was leadership commitment, which is to be understood as the commitment a leader has for the improvement initiative.

Out of the two sub-themes, the second one, *Ensure that committed leaders use participative techniques and coaching at multiple levels of the organisation*, emerged as the more dominant, as it contained both more elements and more factors. Firstly, the aforementioned commitment of leaders, or the leader as a pioneer for change, was of particular importance, which is also stated by Bergman and Klefsjö (2012), Liker (2004/2009) and Sörqvist (2004). Additionally, Sörqvist highlights that committed leadership is one way to reduce employee resistance to change. Building on this, Bergman and Klefsjö (2012), Liker (2004/2009), and Schneider et al. (1996) all assert the need to ensure the participation of all employees in problem-solving, which links to other examples within the sub-theme. These examples included leaders acting as a hub for knowledge and learning by connecting with both their subordinates and other organisational levels, and the need for leaders to act in a supporting and coaching way towards their staff. The last of these, the leader as a coach, is seen in both Liker (2004/2009) and Rother (2010/2013), where the latter especially stresses coaching as a way to increase the employees’ capacity for improvement.

The other sub-theme, *Acknowledge the importance of the attributes of middle managers*, was less cohesive; its three factors mentioned managerial attributes and continuity as key indicators for success. The importance of managerial attributes can only be inferred from previous research, such as managers failing to understand the influence employees’ mindsets have on change sustainability (Drew et al., 2004). On the other hand, McCabe (2020) stresses that contextual factors impact the execution of change to a greater extent than managers do.

Figure 11

Affinity diagram for theme 3: Leadership

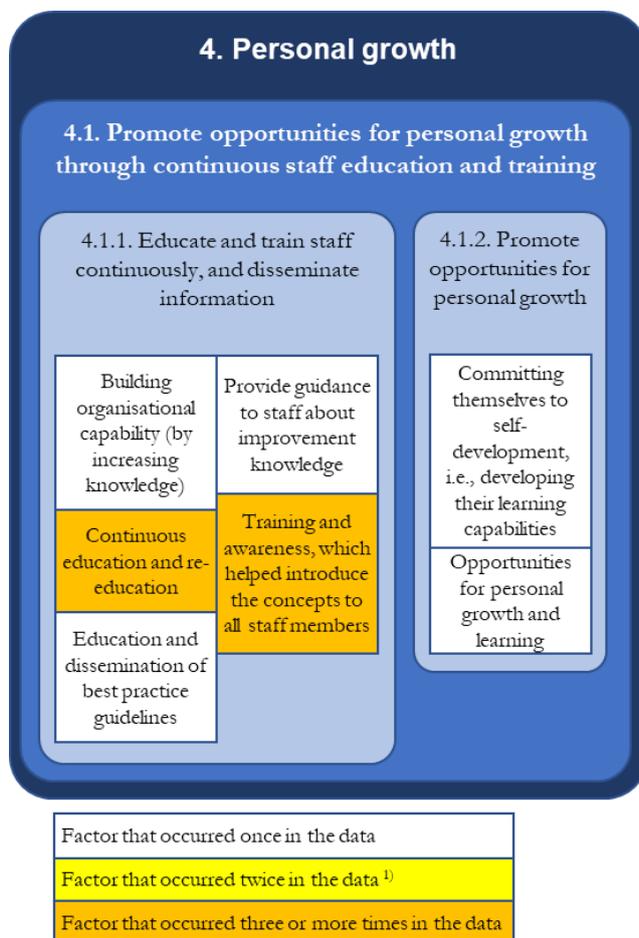


4.2.4. Theme 4: Personal growth

The fourth theme, *Personal growth*, consisted of only one sub-theme: *Promote opportunities for personal growth through continuous staff education and training* (see Figure 12). This sub-theme was dominated by the need for continuous education, training, and awareness, in order to ensure a level playing field for all staff members. All of these aspects are mentioned by Sörqvist (2004), as a means to reduce staff resistance to change. Additionally, providing prospects for personal growth and self-development was mentioned by a few of the articles, which is related to those aspects of Lean that emphasise respect for people in order to promote learning and growth (Liker, 2004/2009; Runebjörk & Wendleby, 2013). In contrast, Abrahamsson (2009), provides an account of the contradictions in change between self-leadership and managerial leadership. This duality is also visible in this study, through the present theme of *Personal growth* alongside the previously presented theme of *Leadership*.

Figure 12

Affinity diagram for theme 4: Personal growth



Note: 1) There were no factors that that occurred exactly twice within the theme of *Personal growth*.

4.2.5. Theme 5: Positive organisational culture

The theme of *Positive organisational culture* comprised of three sub-themes (see Figure 13):

- *Ensure shared accountability and alignment of attitudes and values within teams to promote a culture of continuous improvement*
- *Solidify teamwork and collaboration through stakeholder participation and team stability*
- *Transform individual attitudes to align with organisational goals through positive reinforcement and positive peer pressure*

The sub-theme *Ensure shared accountability and alignment of attitudes and values within teams to promote a culture of continuous improvement* had elements of the importance of creating a culture that shares responsibility, as a result of the staff being empowered to investigate problems and counteract these. This can be done by creating new routines and assessments, such as implementing a system similar to the improvement and coaching kata (Rother, 2010/2013). Additionally, the sub-theme presented a way to create a positive culture sustaining a change, which was to ensure that the attitudes, beliefs, and especially values of the employees were aligned with the goals of the improvement that the organisation wanted to implement. This means targeting organisational culture through a focus on organisational climate, as the former is far more difficult to impact; i.e., targeting the visible policies, practices and procedures, rather than the invisible employee values and beliefs (Schneider et al., 1996). Several studies emphasised leaders taking measures to drive change and to foster this kind of positive culture in all employees. A positive culture can also be fostered in another way, by creating and nurturing continuous improvement as a part of this culture, which can be seen in relation to the cornerstone “work with continuous improvements” (Bergman & Klefsjö, 2012), and the need to trust people and provide them with the appropriate tools to create a culture of continuous improvement (Liker, 2004/2009).

In the sub-theme *Solidify teamwork and collaboration through stakeholder participation and team stability* there were different elements to highlight. Firstly, the results of several studies showed that it is important to make it possible for everybody to participate in the implementation of a change, as this helps routinise the changes. Other factors were that staff engagement can lead to a cultural change, which is why it is important to enable engagement early in the process of a change so that everyone can have a say. On that note, there were several articles that presented an element of external stakeholder participation such as partners, clients, and patients. This aligns well with the *Do*-phase of the PDCA cycle, which emphasises stakeholder involvement (Bergman & Klefsjö, 2012), as well as the view of Bushe and Nagaishi (2018), who stress the need for early participation of stakeholders. Another element found in the sub-theme was the need for developing collaboration between staff, and especially optimising this was a key factor mentioned in several studies. An element of staff participation in a dynamic process of decision making was also mentioned, which directly relates to the assertion by Cummings et al. (2016) that teams are in a constant state of flux, rather than being unchanging solid states. Lastly, the sub-theme showed the importance of the work environment as a healthy one and with enough staff, which enabled teamwork as well as stabilizing and promoting it, which could be seen as connected to the teamwork-strengthening actions in Lean (Liker, 2004/2009).

Transform individual attitudes to align with organisational goals through positive reinforcement and positive peer pressure was, as mentioned, the last sub-theme. One initial element implementation-wise of

sustaining change was to show that the change was needed, which aligns with Kotter's (1995/2007) assertion that change must begin by creating a sense of urgency. There was also an important element of transforming employees' attitudes and beliefs to align with the organisational goal of a change, in order to create self-organisation. This is related to Sörqvist (2004), who states that improvement is seen as transitioning to a state of superior outcomes, which requires a shift in employee attitudes. One study stated the importance of renewing one's professional identity as a part of this. This transformation can be achieved with the help of incentives and/or positive reinforcement, such as celebrating favourable project outcomes, which was a fourth element of this sub-theme. One way to achieve this is to choose improvement projects that generate early successes (Sörqvist, 2004). In contrast, Abrahamsson (2009) asserts that there is often a dichotomy between focusing on the structural aspects of change and the actions that impact attitudes and behaviour, which inhibit change sustainability.

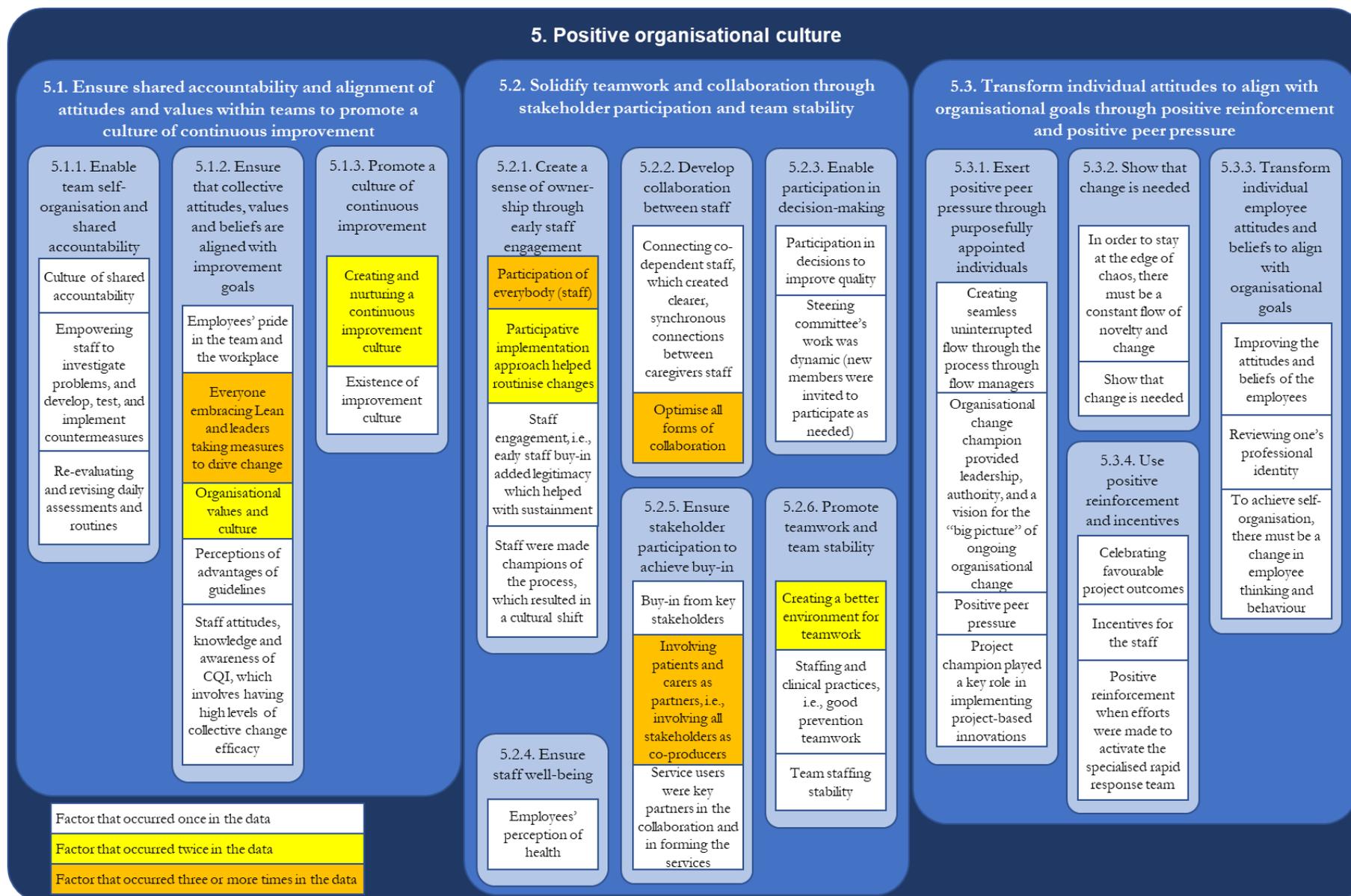
4.2.6. Theme 6: Reduce variability

The sixth theme, *Reduce variability*, had two sub-themes, namely *Demonstrate that the improvement is successful through continuous measurement and evaluation*, and *Reduce variability through standardisation of processes, roles and mandates* (see Figure 14).

Within the first sub-theme, *Demonstrate that the improvement is successful through continuous measurement and evaluation*, two main factors emerged as especially central: the need to continuously measure and evaluate performance, and to demonstrate that change is having the intended impact. These factors were seen in both of the elements included in this sub-theme. This can be related to the *Check*-phase of the PDCA cycle, which highlights the need to study the implemented changes in order to ascertain that the intended goals have been reached (Bergman & Klefsjö, 2012), as well as continuous steering and evaluation as a way to secure change sustainability (Brännmark & Benn, 2012; Sörqvist, 2004).

The second sub-theme, *Reduce variability through standardisation of processes, roles and mandates*, contained a wider variety of elements. Even so, two elements appeared as somewhat more important. These were the need for clear roles and mandates for all improvement work, and standardisation as a means to reduce ambiguity and thereby variability. Other elements included promoting standardisation in various ways, such as a defined quality improvement (QI) process, formalised change methodology, or having standardised processes in general. This sub-theme can be linked to the cornerstone "work with processes" in the cornerstone model by Bergman and Klefsjö (2012), as well as the *Process* dimension of the 4P-model (Liker, 2004/2009). All the same, there may also be contradictions between a strive to standardise and thereby control behaviour, and the endeavour to measure each employee individually (Abrahamsson, 2009).

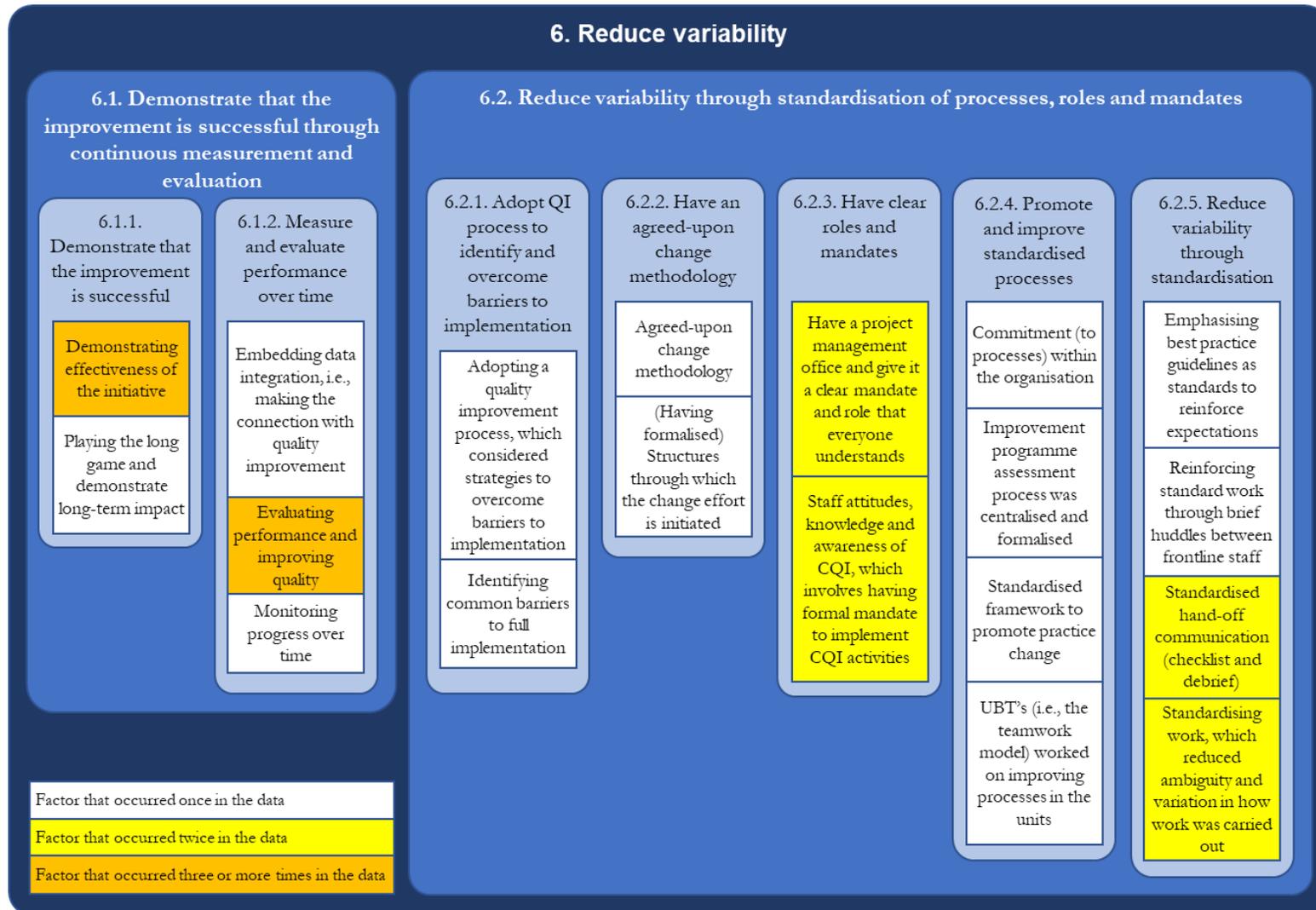
Figure 13
Affinity diagram for theme 5: Positive organisational culture



Factor that occurred once in the data
Factor that occurred twice in the data
Factor that occurred three or more times in the data

Figure 14

Affinity diagram for theme 6: Reduce variability

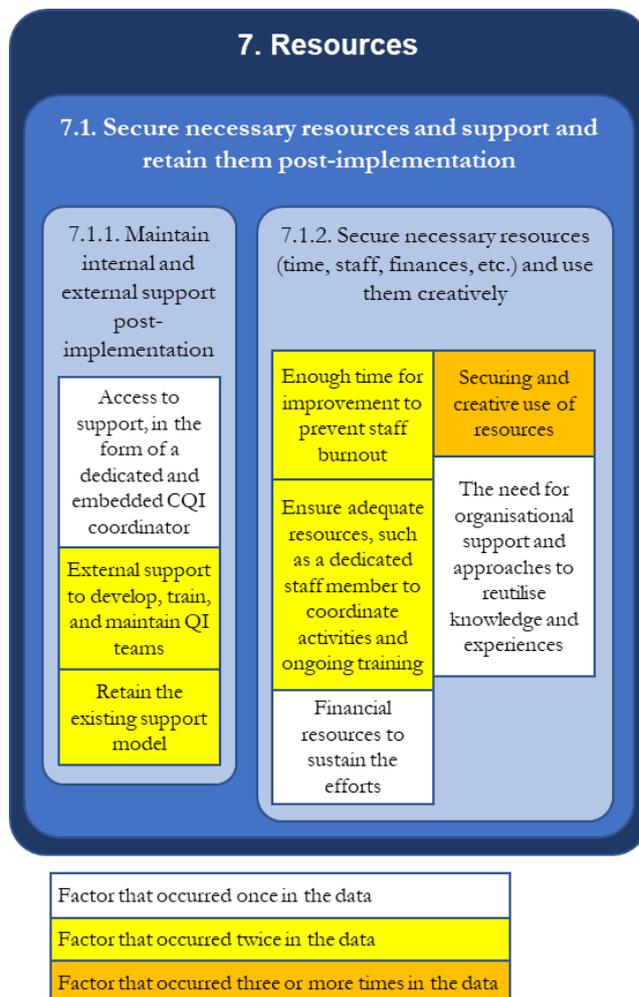


4.2.7. Theme 7: Resources

The penultimate theme, *Resources*, contained a single sub-theme, which was *Secure necessary resources and support and retain them post-implementation* (see Figure 15). While this sub-theme only contained two elements, both of these were characterised by having factors that were mentioned by multiple studies, thus corroborating the importance of these factors.

The single most mentioned factor was found in the second element and it was, plainly put, the significance of having the needed resources for the improvement. Some studies specified this as having enough time, or money, or staff, which can be connected to Rapport et al. (2018), who emphasised the need to consider the required resources in relation to the context. The other element added to this by stressing the need for external support and to maintain this support over time; the support provided by an external coach may also be a way to reduce resistance to change (Sörqvist, 2004).

Figure 15
Affinity diagram for theme 7: Resources



4.2.8. Theme 8: System thinking

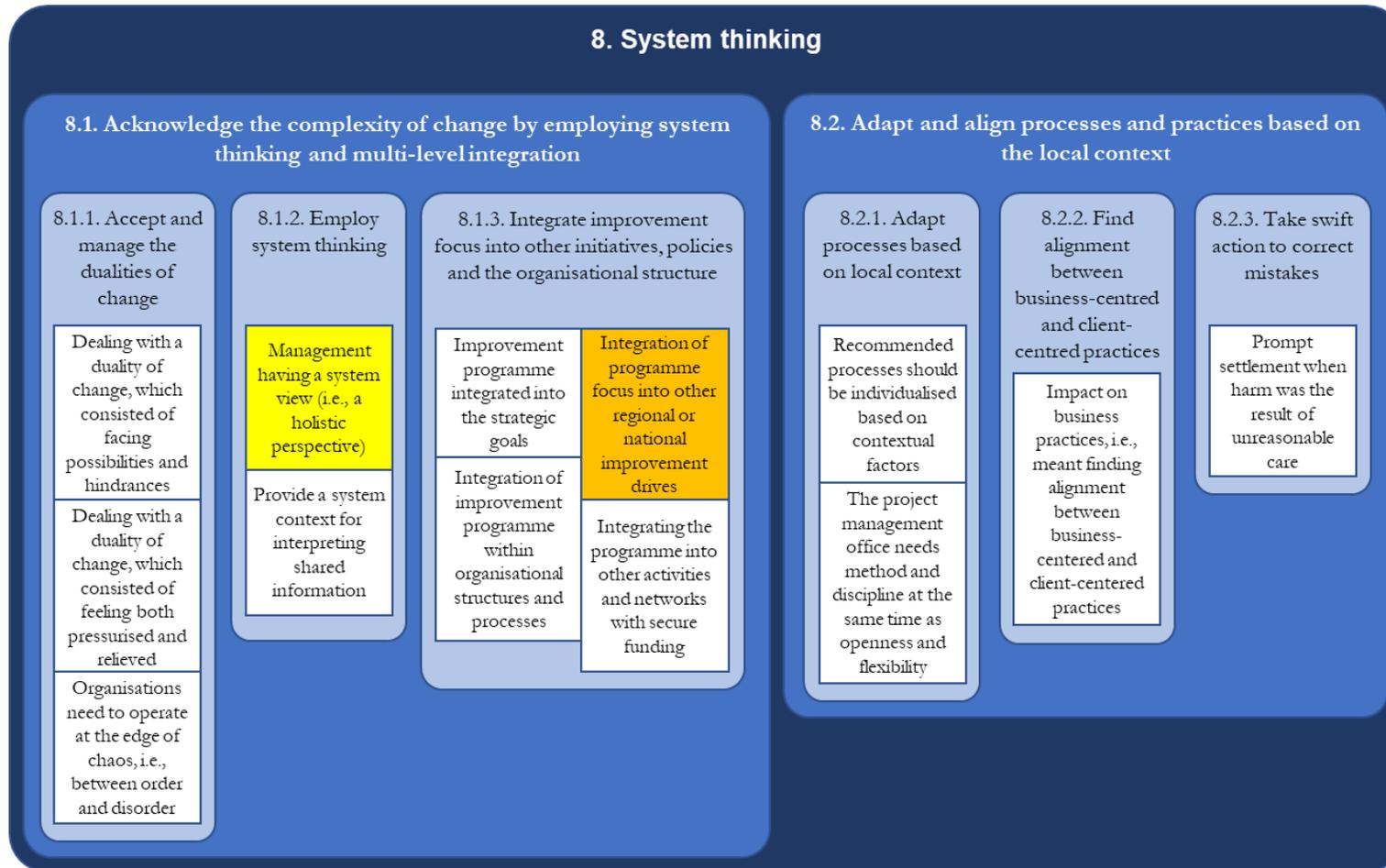
The final theme, *System thinking*, covered the two sub-themes *Acknowledge the complexity of change by employing system thinking and multi-level integration*, and *Adapt and align processes and practices based on the local context* (see Figure 16).

Acknowledge the complexity of change by employing system thinking and multi-level integration was a sub-theme that emphasised system thinking when implementing change, along with a collective view of the change context in order to interpret shared information. It also involved managing dualities, such as possibilities and hindrances, feelings of pressure and relief, or the organisational need to operate between order and disorder when working for a change to get implemented. A tentative connection can be made to McCabe (2020), who states that change is complex and multi-faceted, while a clearer connection is to Abrahamsson (2009), who illustrates the contradictions and paradoxes inherent in organisational change. The sub-theme also contained an element of the integration of the improvement focus on different structures of the organisation, as well as into other initiatives and policies, such as goals.

The other sub-theme was *Adapt and align processes and practices based on the local context*. In this sub-theme, one study emphasised the importance of management using a method and having discipline when working with implementing a change, at the same time as management being flexible and open when needed. This can be viewed with respect to Rapport et al. (2018), who underscore that the real-world context must be accounted for in order to achieve sustainable change. Another element of this sub-theme was the need to find alignment between business-centred and client-centred practices and the element of taking swift action to correct mistakes.

Figure 16

Affinity diagram for theme 8: System thinking



Factor that occurred once in the data
Factor that occurred twice in the data
Factor that occurred three or more times in the data

You don't always have to have the ending,
but you want to have a satisfactory conclusion.

Barry Levinson, filmmaker

5. Conclusions

The purpose of this study was to investigate what is required for an improvement, as a result of a major organisational change, to become sustainable over time in a real-world setting. The research question of the study was: *Which themes to create sustained improvement are described in current research regarding major organisational change?*

5.1. Themes to create sustainable improvement

Through the analytical lens of the affinity diagram, this study concludes that factors to secure sustained improvement are sorted into eight themes: *Collective visions and goals*, *Communication*, *Leadership*, *Personal growth*, *Positive organisational culture*, *Reduce variability*, *Resources*, and *System thinking*. These themes display the importance of working to sustain change in several parallel and disparate areas, and that these areas do not necessarily touch upon each other.

Though the articles in this review are not evenly distributed across the themes (see Figure 8, in chapter 4.2., and Appendix H), the findings do not support the importance of one theme over another, i.e., there is no hierarchy among them. For example, while there are a larger number of articles that can be related to the theme *Positive organisational culture*, compared to for instance the theme *Personal growth*, this does not necessarily mean that this theme is more dominant. This could be a result of studies within this domain having been more popular during the period in question. At the same time, a theme that is covered by fewer articles, could display a higher concentration of the same factors, such as in the case of *Personal growth* or *Resources*, which implies a greater significance.

For a deeper understanding of what the emerging themes in this study entail, in order to practically apply them in a real-world context, it is more beneficial to consider their respective sub-themes and the guidance they provide (see Table 5). Through these sub-themes, it is clear that a key step to achieve change sustainability is to plan ahead and have a clear change strategy, and to then realise this strategy through continuous efforts in different areas, such as communication, measurement, standardisation, and resources. In the course of the planning and realisation of the strategy, it is important to consider how to strengthen the organisation multi-dimensionally. These dimensions include both organisational structure (i.e., employees, teams, and leaders), and areas of operation (i.e., communication, organisational culture, and resources). Lastly, it is vital to acknowledge the context of the change, and thus to be flexible and adaptable, which is seen through system thinking, processes, and coaching leadership.

A fundamental aspect in understanding and interpreting the findings of this study is that while there are themes, sub-themes, and elements, the individual factors that form the data set are very scattered, i.e., most of them are unique. This is seen through the affinity diagrams for each theme, as they have far more factors that occur only once (white), compared to two or more

times (yellow and orange). Even in those cases where there were duplicate factors, these did not use the same wording to express them. By extension, this means that it is not obvious if there are general factors that always contribute to sustained change; perhaps the contextual aspects are more impactful than any given factors.

In summary, change sustainability is a complex field and there are many aspects to consider. Nevertheless, this study has revealed eight themes that should be considered, although this does not necessarily mean that each theme must be given equal attention. This can depend on the contextual needs of the improvement at hand.

Table 5
Themes and sub-themes

Themes	Sub-themes
1. Collective visions and goals	1.1. Adapt, prioritise, and focus the improvement throughout implementation
	1.2. Operationalise strategies from shared visions and goals
2. Communication	2.1. Develop transparent communication and inter-professional information sharing and feedback structures to be able to act on lessons learned
	2.2. Strengthen the message by using one-way communication repeatedly
3. Leadership	3.1. Acknowledge the importance of the attributes of middle managers
	3.2. Ensure that committed leaders use participative techniques and coaching at multiple organisational levels
4. Personal growth	4.1. Promote opportunities for personal growth through continuous staff education and training
5. Positive organisational culture	5.1. Ensure shared accountability and alignment of attitudes and values within teams to promote a culture of continuous improvement
	5.2. Solidify teamwork and collaboration through stakeholder participation and team stability
	5.3. Transform individual attitudes to align with organisational goals through positive reinforcement and positive peer pressure
6. Reduce variability	6.1. Demonstrate that the improvement is successful through continuous measurement and evaluation
	6.2. Reduce variability through standardisation of processes, roles and mandates
7. Resources	7.1. Secure necessary resources and support and retain them post-implementation
8. System thinking	8.1. Acknowledge the complexity of change by employing system thinking and multi-level integration
	8.2. Adapt and align processes and practices based on the local context

*The aim of argument, or of discussion,
should not be victory, but progress.*

Joseph Joubert, essayist

6. Discussion

6.1. Discussion of findings

One could argue that in this study, sustainability is thought of as a linear process because the results of this study are based on factors from retrospective studies, i.e., factors that have been shown after an implementation has been completed. A linear view might be a weakness when looking at complex organisations, such as hospitals or companies. This is due to the process of creating change is continuous by adaptation to context, and also because there are many factors, that may be hard to measure, that can contribute to a sustainable result. As the purpose of this study is *to investigate what is required for an improvement, as a result of a major organisational change, to become sustainable over time in a real-world setting*, there is a need to see that the factors of sustainability in the data are a result of a maintained improvement. In quality management there is circular thinking and just because one is measuring sustainability, it does not entail linear thinking because the result will lead to create new areas for improvement (Bergman & Klefsjö, 2012). Therefore, looking at retrospective studies can help better improve the improvement cycle of an organisation in regards to sustainment. In the process of selecting studies some were removed because they portrayed assumptions of opposite conditions as solutions for a negative result regarding sustainability. This was done with the motivation that in complex systems one cannot make this kind of linear cause-and-effect assumptions and that this kind of result was too weak.

Modifying the affinity diagram, highlighting the factors that were shown in more than one article, has affected the results in giving it a deeper understanding of which factors could imply a greater significance. When creating this affinity diagram the work was done iteratively and this process of clustering has been done in a transparent way presented in the text of this study and its appendices. This has made it easy to follow the process and to replicate it if needed.

A limitation in this study is that the contexts where the changes were implemented in the articles are not displayed in the different themes, sub-themes, and elements for sustainability. It is possible that there are aspects in the context that contributed to the sustainability of a change, and by not showing the context, we might have over-generalised the sustainability factors. Thus, factors that indicate sustainability in one context, might not do so in another one, which emphasises the contextual nature of change sustainability.

Other limitations within the data are that analysed articles are almost exclusively from western countries, which could contribute to themes with a western perspective or focus, thus not representing different outlooks from other parts of the world. Even the one exception to this western perspective, while set in Uganda (Bazos et al., 2015), only had one author out of six with an affiliation to a university in Uganda. The remaining five authors were all affiliated with universities in the United States, thus further confirming the western focus of the included articles.

Many of the included studies were set in a health care context which most likely has affected the outcome of this literature review. This creates a very context-specific impact because healthcare establishments have a particular organisational setting, e.g., language, symbols, culture, and specialist professions, that differ from other organisations. For instance, it is possible that the emphasis on “soft” organisational culture would not have been as great if the studied articles had been set in a “traditional” industrial or manufacturing setting, as these typically have a greater emphasis on measuring “hard” values (see for instance Abrahamsson, 2009).

One interesting observation is that the findings did not contain much of a client/customer focus. There were a few isolated factors on this topic, but we had expected that this would have been mentioned more often, having studied the cornerstone model (Bergman & Klefsjö, 2012). This near-absence is even more surprising in the light of the frequency displayed by the other elements of the cornerstone model in our findings. This is perhaps connected to the obvious healthcare focus in the study settings, and we speculate that the common salutogenic approach creates an automatic customer focus regarding patients. In a company selling products or services, for instance, the customer focus is primarily directed by the need for segmenting.

Another noteworthy observation concerns the purposes of the studied articles. Among them approximately half mentioned sustainability in their purpose and the other half did not. In the process of this study, we have read many healthcare articles where the authors have measured the success of interventions, and a common way to measure success seems to be sustainability. While some of the studies did not have the explicit purpose of studying sustainability factors, this was something that was found after the implementation of change, which was mentioned in their findings and/or conclusions. So even though the purpose in some of the studies was not aligned with our study’s purpose, their findings and/or conclusions contained valuable contributions regarding sustainability factors. Thus, our active decision to include articles based on the content of the studies, i.e., their findings and/or conclusions, rather than their stated purpose, enabled us to find more relevant data. Had we not done this, our findings would likely have been different.

6.2. Practical and theoretical contributions

This study contributes to the field of quality management with a suggested quality assessment protocol of articles that is less excluding. It does so by only weeding out those articles that have not presented their method fully, and that therefore are not showing what they based their findings on. This broad inclusion ensures that one does not exclude important data by being too narrow in the process of selecting studies. Additionally, this study contributes with a knowledge compilation of current research on how to create sustained major organisational change. Also, this study’s affinity diagram can be used as a foundation to evaluate the contextual needs of an organisation regarding the implementation of a sustainable change.

The target audience are practitioners and researchers of organisational change that aims to achieve lasting improvement. For further research we would suggest studying the contextual implication on sustainable change as this seems to have a great impact. For any future literature reviews on the topic of change sustainability, we believe it is imperative to consider not only studies that explicitly state that they aim to study sustainability, but to keep an open mind and have a broad and all-encompassing search strategy to ensure relevant data are not missed.

6.3. Methods discussion

The purpose of this study was to investigate what is required for an improvement, as a result of a major organisational change, to become sustainable over time in a real-world setting. Therefore, other methods could have been observations and/or interviews at one or more organisations that had experienced, or was experiencing, a major organisational change, in order to identify factors of sustainability they had encountered, i.e., a single or multiple case study. A survey-based study could also have been possible. However, by choosing a literature review, we were able to take part of a large pool of data. This data pool is a strength of this study, as well as its systematic approach and repeated quality review throughout the process, both regarding assessing the articles and assessing our own work.

Integral to any literature review is the search for data. Thus, it is relevant to consider if any changes to the searching could have been beneficial. Firstly, adjusting the time period for the search would probably not have had an impact on the result; extending the time frame would likely not have given a larger number of articles, just as shortening the time frame would likely not have reduced the number of articles to a great extent⁴.

Secondly, the choice of search terms has had an impact on the result. One search term that was excluded between the scoping search and the proper search was “over time”, as this search term did not have a significant impact on the search results. In the hope of finding studies that focused on changes with the goal of improvement, we edited one search term, from “change management” to simply “change”, and added another, “improvement”. It is possible that this resulted in some data being lost, but considering the large amount of data that each database search yielded⁵, we do not consider this as a weakness of the study. We also considered adding search terms, “Total quality management” or “TQM”, to limit the data further. This could have opened up for another way to systematically handle the articles, but could also have meant that relevant articles had been missed. We determined that the drawbacks outweighed the benefits, and these terms were ultimately rejected.

One of our search terms limited the results to contain “quality management”, which may have had an impact as the method of Lean has been popular to implement in healthcare for example, and there were many studies about sustaining Lean. Another possible explanation is that the healthcare field has a strong desire to work evidence based and to therefore measure the sustainability of a change. If there are additional studies carried out in other settings, other than healthcare, on the topic of sustaining major organisational change, we have not found any. In our scoping search⁶, we tried using different search terms, but could not see any difference in what contexts the search results provided. Had we not used “quality management” as a search term, our database searches would have yielded a larger number of potentially relevant articles. However, an increased quantity would likely not have been possible to review considering the limited time frame. This was also important because it focused on the scientific field of the study. But this could also mean that data on how to secure sustainability was lost.

Lastly, another search strategy that could have been employed is a bibliography search, which could be seen as a form of snowball sampling. We could also have tried to request the

⁴ For more information on the distribution of articles over time, see Figure 4 in chapter 4.1.1.

⁵ For more information on the outcomes of each database search, see Appendix C.

⁶ For more information on the scoping search, see Appendix B.

articles that could not be accessed as full text documents in the databases. Either of these might have given a somewhat different result. Due to the limited time frame of the study, this was not an option. Similarly, time was also a limiting factor in deciding not to include additional databases, such as ProQuest Social Sciences, conference papers, or grey literature, i.e., “information produced by government, academics, business and industry in electronic and print formats not controlled by commercial publishing” (Booth et al., 2016, p. 306). Other options could have been hand searching key scientific journals and searching for dissertations.

Five references were used to create the quality assessment for reviewed articles, in order to determine the scientific emphasis for this type of assessment, and to get varied inputs so nothing was missed. The choice to use “yes”/”no”-questions for our checklist was to make the assessment easy to carry out, and an effort to make it more objective by only excluding the truly low-quality studies. The questions of the quality assessment could have been asked in a more open way, making the assessment more content based, but this would have taken us beyond the time frame allotted for the study. Additionally, it would have been harder to remain objective, and it might have meant that more studies were excluded. The chosen way of assessment is therefore more inclusive, and the emphasis lies on questions regarding the method used and its relation to the purpose of the study, due to the importance of the method in the quality of a study, namely what Forsberg and Wengström (2016) calls measuring the precision of a study.

A minor dropout analysis was conducted regarding the articles that passed the first step of the review but were excluded because they were difficult to obtain. This will give an indicator of possible impact on this study’s findings. There were three reasons for excluding articles: the article was a payment item and had to be ordered (62 articles), the webpage holding the article was not safe (2 articles), or the links in the database were not working (1 article). The decision to exclude these 65 articles was made due to the limited time frame of the study, data security, or broken links in the database on Mid Sweden University library’s web page, and also because the authors were not allotted resources to buy them. The majority of these articles were published in different journals, but five journals were represented twice⁷, one journal was represented 10 times (*Pediatrics*), and one journal was represented 17 times (*Joint Commission Journal on Quality and Patient Safety*). Nearly all excluded articles were published in a medical journal, and when we examined the article titles, most of them appear to be studies in a healthcare environment. When we looked at the wording of the article titles, we were able to get an indication of what these articles might have contributed with, had they been included in the study. For some of them, 29 articles to be specific, it is difficult to analyse their potential impact as they do not contain enough information. However, 34 of the articles excluded in this step seem to fit into the emerging themes in this study. Additionally, two articles might have contributed to create new themes based on their titles, and it is possible that these themes could have been centred around starting the entire process of change earlier, and the using of review committees to sustain a change.⁸ However, this is certainly difficult to know solely based on the wording of the article titles.

⁷ These five journals were: *Australian Health Review*, *Journal of Bone and Joint Surgery – American volume*, *Journal of Oncology Practice*, *Journal of the American Medical Directors Association*, and *Journal of the American College of Radiology*.

⁸ These two articles were: Tiwari, V., Ehrenfeld, J. M., & Sandberg, W. S. (2018). Does a first-case on-time-start initiative achieve its goal by starting the entire process earlier or by tightening the distribution of start times? *British Journal of Anaesthesia*, 121(5), pp.1148–1155, and Russ, M. J., Greenwald, B. S., & Mattson, M. R. A. (2017). A model for incident review committees in behavioral health settings. *Journal of Psychiatric Practice*, 23(4), pp. 294–305

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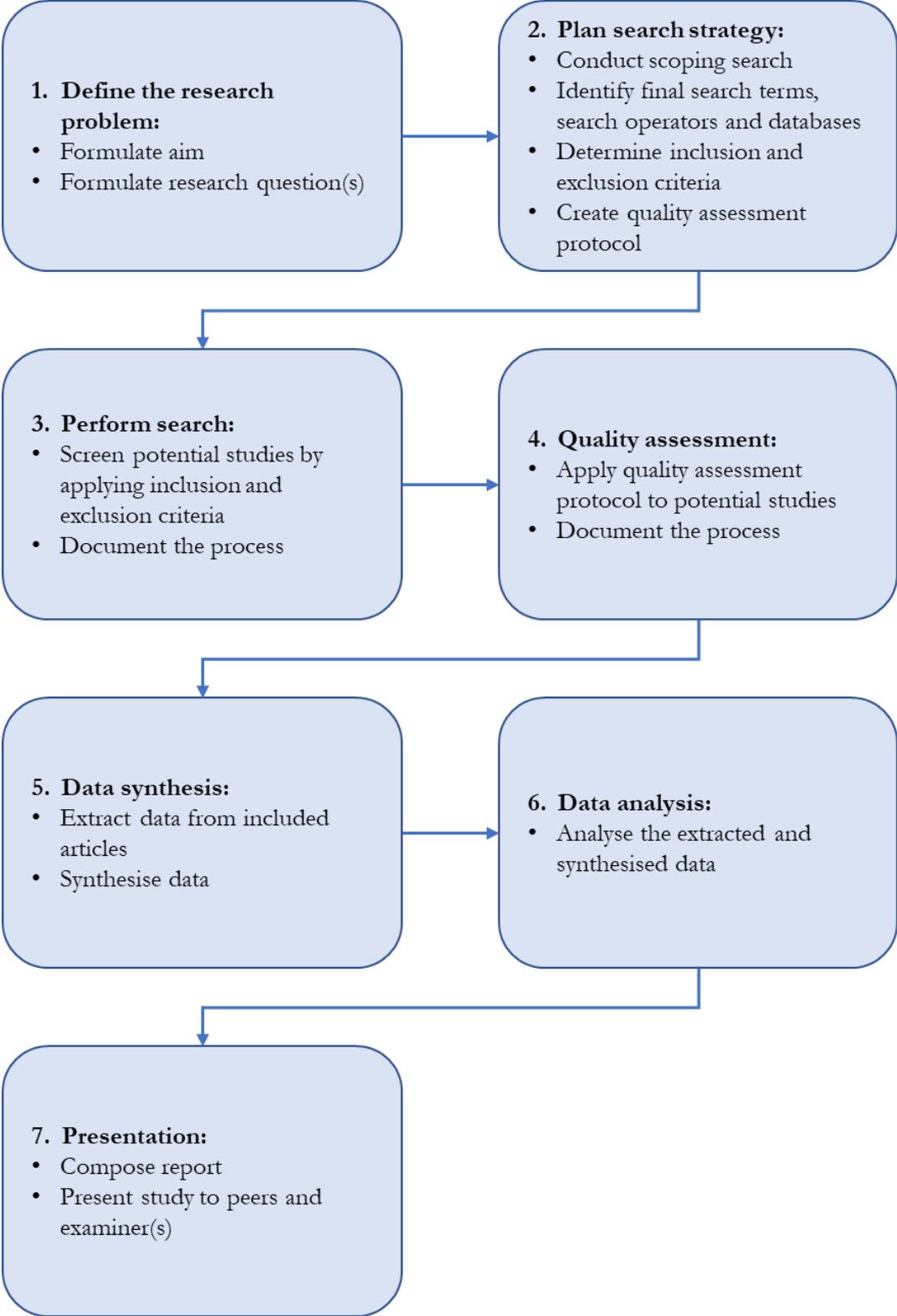
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Appendix A. Overview of research process

Figure 17
Flow chart for the research process



Appendix B. Scoping review search parameters

Table 6

Search parameters for the scoping review: databases, search terms, delimitations and sorting

Database	Search terms	Delimitations and sorting
Business Source Complete	organi*ation* AND "change management" AND sustain*	<ul style="list-style-type: none"> • Full text • Scholarly (peer-reviewed) Journals
Business Source Complete	organi*ation* AND "change management" AND endur*	<ul style="list-style-type: none"> • Full text • Scholarly (peer-reviewed) Journals • Subject: <ul style="list-style-type: none"> ○ sustainability ○ organizational change management ○ performance evaluation ○ organizational change → sustainable development
SCOPUS	TITLE-ABS-KEY (organi*ation* AND change AND lasting) AND (LIMIT-TO (SUBJAREA , "BUSI"))	<ul style="list-style-type: none"> • Sort on: relevance
SCOPUS	TITLE-ABS-KEY (organi*ation* AND "change management" AND (sustain* OR endur*)) AND (LIMIT-TO (SUBJAREA , "BUSI")) AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "cp") OR LIMIT-TO (DOCTYPE , "ch"))	<ul style="list-style-type: none"> • Sort on: Date (newest)
SCOPUS	TITLE-ABS-KEY (organi*ation* AND "change management" AND (sustain* OR endur*)) AND (LIMIT-TO (SUBJAREA , "BUSI")) AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "cp") OR LIMIT-TO (DOCTYPE , "ch"))	<ul style="list-style-type: none"> • Sort on: Cited by (highest)

Appendix C. Outcomes of each database search

Table 7

Outcomes of each database search, including search terms and database filters that were applied: each consecutive column lists the number of articles remaining after the previous step

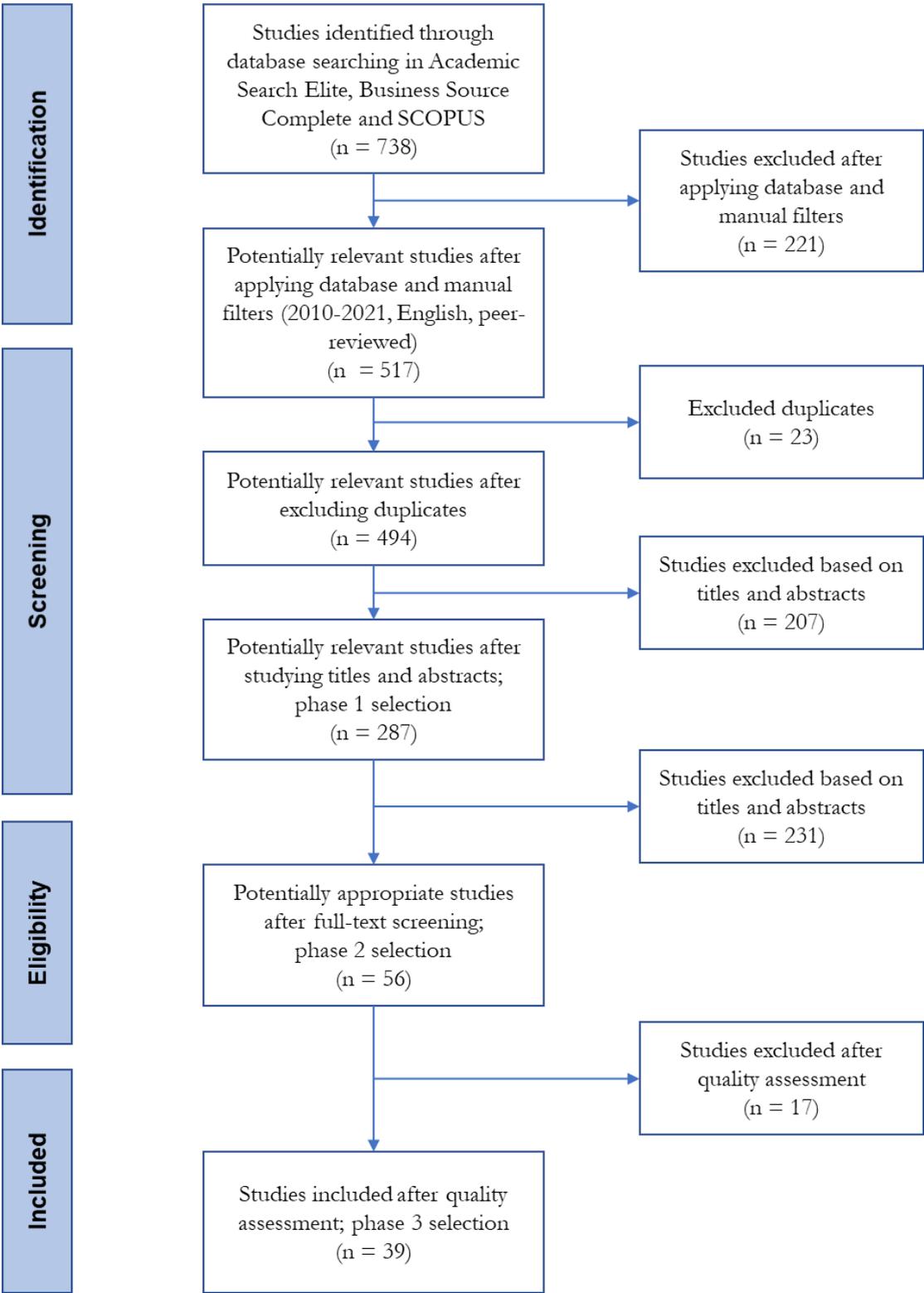
Database Date	Search terms with Boolean logic, truncation and wildcards	No. of results	Database filters applied (Manual filters applied)	Results after applying database filters (whereof duplicates)	Phase 1 selection Based on title and abstract	Phase 2 selection Based on full-text articles	Phase 3 selection Based on quality assessment protocol
Academic Search Elite March 17 th , 2021	change AND improv* AND (sustain* OR lasting OR endur* OR stick*) AND organi*ation AND "quality management"	28	<i>Limit to:</i> Scholarly (Peer Reviewed) Journals <i>Publication date:</i> 2010-01-01 – 2021-12-31 <i>Source types:</i> Academic Journals <i>Language:</i> English	18 (0)	11	3	2
Business Source Complete March 17 th , 2021	change AND improv* AND (sustain* OR lasting OR endur* OR stick*) AND organi*ation AND "quality management"	54	<i>Limit to:</i> Scholarly (Peer Reviewed) Journals <i>Publication date:</i> 2010-01-01 – 2021-12-31 <i>Source types:</i> Academic Journals <i>Language:</i> English	25 (6)	13	3	3
SCOPUS March 18 th , 2021	((change AND improv*) AND (sustain* OR lasting OR endur* OR stick*) AND organi*ation AND "quality management")	656	<i>Document type:</i> Article, Review <i>Published year:</i> 2010 – 2021 <i>Source type:</i> Journal <i>Language:</i> English (<i>Source title:</i> Manual exclusion of journals that are not peer reviewed) ⁹	474 ¹⁰ (17)	263	50	34
Total		738		517 (23)	287	56	39

⁹ SCOPUS does not include a database filter for peer reviewed journals. All journals from this search result were therefore checked against the database UlrichsWeb.com, and those journals that were not marked as “Refereed” or “Reviewed” were manually filtered from the search result.

¹⁰ Number of results after applying database filters also includes manual filters for SCOPUS. Before the manual filter was applied, the remaining number of articles from SCOPUS at this stage was 500.

Appendix D. Flow chart according to PRISMA

Figure 18
 Flow chart according to PRISMA (based on Booth et al., 2016, and Forsberg & Wengström, 2016)



Appendix E. Quality assessment protocol

Table 8

Quality assessment protocol for the study, based on Booth et al. (2016), Forsberg and Wengström (2016), Friberg (2017a), Hannes (2011) and Jesson et al. (2012)

Domain	Assessment question	Evaluation
Introduction and theoretical foundation	1. Does the study have a clearly formulated aim and/or research question(s)?	Yes / No
	2. Is there a clear description of the rationale of the study (i.e., why the study was undertaken, which gap does it intend to fill)?	Yes / No
	3. Is the scope of the study clearly described (i.e., its delimitations)?	Yes / No
	4. Is there a link to theory?	Yes / No
	5. Are the theoretical perspectives relevant for the aim of the study and or research question(s)?	Yes / No
Methodological considerations	6. Is there a methodological description?	Yes / No
	7. Is the chosen method relevant in order to answer the aim of the study and/or its research question(s)?	Yes / No
	8. Is there a description for how the participants, case(s) or study objects were selected?	Yes / No
	9. Is the method for data collection clearly described?	Yes / No
	10. Is the method for data analysis clearly described?	Yes / No
	11. Are ethical considerations clearly described, when needed?	Yes / No / Not relevant ¹⁾
Findings and analysis	12. Are the findings clearly described?	Yes / No
	13. Is the process for data analysis clearly described?	Yes / No
Conclusion and discussion	14. Are the conclusions a true representation of the findings?	Yes / No
	15. Do the conclusions relate back to the aim and/or research question(s)?	Yes / No
	16. Are the conclusions transferable to other contexts?	Yes / No
	17. Do the authors discuss the methodological limitations of their study?	Yes / No
	18. Is it clear that the authors have tried to avoid obvious risks of conflicts of interest, as needed?	Yes / No / Not relevant ¹⁾

Note: 1) Questions no. 11 and 18 were optional and could be evaluated as “not relevant”, as it was determined that ethical considerations and conflicts of interest were not relevant for all studies.

Appendix F. Overview of studied articles

Table 9

Overview of articles included in the study (inspired by Friberg, 2017c)

Authors Title Journal Year	Purpose	Methodology	Findings of relevance to this study (factors for sustainability in bold text)	Quality assessment
Allaudeen, N., Vashi, A., Breckenridge, J. S., Haji-Sheikhi, F., Wagner, S., Posley, K. A., & Asch, S. M. Using Lean Management to Reduce Emergency Department Length of Stay for Medicine Admissions Quality Management in Health Care 2017	To evaluate a Lean-based initiative to reduce emergency department (ED) length of stay (LOS) for medicine admissions.	Pre-post-intervention study, which measured the change in ED LOS for all patients admitted to a medical centre in California, United States, from March 2012 to February 2016. Similar medical facilities were used as a control group. A linear mixed-effects model was utilized to examine this difference in ED LOS time between the pre- and post-intervention periods at study versus control sites, with a random intercept corresponding to each site.	ED LOS decreased at the intervention site compared to no change at the control sites. This success was likely due to: involving all stakeholders who touch on ED LOS; reducing variability through standard work; reinforcing standard work through brief huddles between frontline staff; and treating occurrences of not meeting standard work as learning opportunities .	High quality
Babic, B., Volpe, A. A., Merola, S., Mauer, E., Cozacov, Y., Ko, C. Y., Michelassi, F., & Saldinger, P. Sustained culture and surgical outcome improvement The American Journal of Surgery 2018	To assess whether the initiation of a department wide campaign on a culture of safety, alongside institution of safety initiatives, had an effect on influencing the surgical organizational culture and American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) outcomes.	Patient care perception at a hospital in New York, United States, was assessed using a questionnaire. A change in culture was initiated, followed by initiatives targeting communication and patient safety. ACS-NSQIP data was analysed to assess outcomes during the period of improved culture.	Both patient safety outcomes and culture score statistically improved after the intervention. This was achieved through a focus on communication which produced a pre-operative checklist and a postoperative debrief. This resulted in standardised hand-off communication . Additionally, front line staff were made champions of the process , which resulted in a cultural shift.	High quality
Bazos, D. A., LaFave, L. R. A., Suresh, G., Shannon, K. C., Nuwaha, F., & Splaine, M. E. The gas cylinder, the motorcycle and the village health team member: a proof-of-concept study for the use of the Microsystems Quality Improvement Approach to strengthen the routine immunization system in Uganda Implementation Science 2015	To develop capacity among local community-based routine immunization (RI) frontline workers for problem-solving resulting in innovative solutions to strengthen RI systems immediately and in the future.	Longitudinal study from January 2011 to June 2012 on five health units (HUs) in the Masaka District, Uganda, which were exposed to a quality improvement (QI) intervention. Qualitative and quantitative data were collected. Data were analysed using a mixed-methods approach, where data were analysed separately and then examined together.	Improvements were sustained for at least five months after the intervention period. Factors that contributed to sustainability were: using and sharing data in a transparent way , which helped promote engagement; and external support to develop, train, and maintain QI teams.	High quality

Authors Title Journal Year	Purpose	Methodology	Findings of relevance to this study (factors for sustainability in bold text)	Quality assessment
<p>Breckenridge, J. P., Gray, N., Toma, M., Ashmore, S., Glassborow, R., Stark, C., & Renfrew, M. J.</p> <p>Motivating Change: a grounded theory of how to achieve large-scale, sustained change, co-created with improvement organisations across the UK</p> <p>BMJ Open Quality</p> <p>2019</p>	<p>To share learning from experienced improvement organisations to provide a conceptual level explanation of the conditions necessary to facilitate and sustain improvement at scale.</p>	<p>42 staff members from three leading change organisations in the United Kingdom took part in three consultation meetings involving group discussions. Data from these discussions were analysed using a participatory grounded theory approach, which, after feedback from participants, yielded a co-created theory.</p>	<p>The resulting theory of <i>Motivating Change</i>, revolves around creating the right psychosocial-structural conditions to sustain change. These conditions are grouped into 3 domains, with several sub-domains: (1) individual or internalised motivation (psychological conditions), which includes (1.1) show that change is needed, and (1.2) show that change is working; (2) a flow of trust (social conditions), which includes (2.1) effective leadership, i.e., the leader a pioneer for change, (2.2) positive peer pressure, and (2.3) harnessing constructive resistance; and (3) structural conditions, which includes (3.1) visual cues in the physical environment, (3.2) financial resources to sustain the efforts, (3.3) incentives for the staff, (3.4) dedicated time, and (3.5) agreed-upon change methodology.</p>	<p>High quality</p>
<p>Clavel, N., Pomey, M.-P., & Ghadiri, D. P.</p> <p>Partnering with patients in quality improvement: towards renewed practices for healthcare organization managers?</p> <p>BMC Health Services Research</p> <p>2019</p>	<p>To study key managerial practices to implement patient partnership (PP) in quality improvement (QI) and has two main objectives: 1) describe the implementation of a PP program in two different clinical areas; 2) identify managerial practices at different management levels used to implement PP in QI.</p>	<p>Multi-level case studies with a qualitative and longitudinal design, from 2015 to 2017, within two healthcare organisations (HCOs) in Quebec, Canada. Cases were selected based on a most-different case selection procedure. 38 interviews were carried out with managers and analysed in three successive phases combining deductive and inductive analysis.</p>	<p>In case 1, the implemented PP model was sustained, while in case 2 it was not.</p> <p>Factors that promoted sustainability were: continuity among mid-level managers overseeing PP; PP was integrated into the strategic goals of the HCOs; the PP assessment process was centralised and formalised; and commitment from top-level managers.</p>	<p>High quality</p>
<p>Dückers, M. L. A., Wagner, C., Vos, L., & Groenewegen, P. P.</p> <p>Understanding organisational development, sustainability, and diffusion of innovations within hospitals participating in a multilevel quality collaborative</p> <p>Implementation Science</p> <p>2011</p>	<p>To describe how multilevel quality collaborative (MQC) hospitals sustained and disseminated quality methods and the improvements made.</p>	<p>Programme coordinators from eight MCQ hospitals in the Netherlands were surveyed through a quantitative questionnaire and semi-structured interviews. Both were carried out in the second half of 2006. Interviews were documented through reports that were subsequently coded.</p>	<p>Factors that contributed to sustainability were: the structural measurement of performance indicators, made accessible through management information systems; incorporating the goal of institution-wide diffusion in the hospital's strategic policy; the need for organisational support and approaches to reutilise knowledge and experiences; and that the hospital had an intention to maintain the internal programme structure established through the MQC.</p>	<p>High quality</p>

Authors Title Journal Year	Purpose	Methodology	Findings of relevance to this study (factors for sustainability in bold text)	Quality assessment
Featherall, J., Chaitoff, A., Simonetti, A., Bena, J., Kubiak, D., Rothberg, M., Roumina, K., Hurle, N., Henricks, W., & Yerian, L. Creating a Culture of Continuous Improvement in Outpatient Laboratories: Effects on Wait Times, Employee Engagement, and Efficiency American Journal of Medical Quality 2019	To present a continuous improvement initiative conducted across 6 outpatient phlebotomy laboratory locations at the main campus of a large health system. The focal point of this study is the mechanism by which the thoughts and attitudes of phlebotomy team members (laboratory leaders, managers, and frontline staff) changed as they improved their performance and built a culture of improvement during the initiative.	Study conducted at six outpatient phlebotomy laboratories at a tertiary care centre in 2015. Patient wait times and employee satisfaction and engagement were tracked through bar-coded cards and surveys, respectively. Data was analysed using two types of statistical software.	Patient wait times decreased and employee satisfaction increased, of which the former was sustained for at least three years post-implementation. This was achieved through an approach focused on a culture of improvement, which improved the attitudes and beliefs of the employees , e.g., increased trust within the department, the idea that mistakes lead to positive change, efforts toward safe care, and department working together.	High quality
Fleischer, A. R., Semenic, S. E., Ritchie, J. A., Richer, M.-C., & Denis, J.-L. Nursing unit leaders' influence on the long-term sustainability of evidence-based practice improvements Journal of Nursing Management 2016a	To describe how the actions of unit leaders influenced the long-term sustainability of a best practice guidelines (BPG) program on inpatient units.	An embedded, multiple comparative case study of a nursing BPG programme, as part of a qualitative descriptive case study, was carried out at a tertiary/quaternary health centre in Canada. Two sets of polar types of subcases were selected, representing "higher" and "lower" degrees of sustainability. Semi-structured, framework-guided interviews were carried out with 14 organisational informants and 25 subcase unit informants. Interviews were transcribed and analysed using qualitative content analysis guided coding.	Of the two units that were ranked as "moderate" to "high" sustainability, two main factors for sustainability were described: Leaders using overarching strategies, and leaders using specific activities. The former factor included: maintaining priorities regarding the BPG programme, and emphasising BPG as standards to reinforce expectations . The latter factor included: extending the initial implementation, educating and training staff , using verbal and visual reminders , communicating and discussing between team members, evaluating performance and improving quality, and integrating changes into other initiatives (both new and existing).	High quality
Fleischer, A. R., Semenic, S. E., Ritchie, J. A., Richer, M.-C., & Denis, J.-L. A unit-level perspective on the long-term sustainability of a nursing best practice guidelines program: An embedded multiple case study International Journal of Nursing Studies 2016b	To understand how a nursing program was sustained over a long-term period in an acute healthcare center.	An embedded, multiple comparative case study of a nursing BPG programme, as part of a qualitative descriptive case study, was carried out at four units at a tertiary/quaternary health centre in Canada. Two sets of polar types of subcases were selected, representing "higher" and "lower" degrees of sustainability. Semi-structured, framework-guided, and audio-recorded interviews were conducted with 39 purposefully selected key informants. Additionally, sites were visited formally and BPG-related documents were reviewed. Qualitative content analysis guided initial coding and interpretation of	The subcases displayed variation in sustainability, two with "higher" and two with "lower" levels of sustainability. Factors that most influenced BPG sustainability were grouped into four framework categories: Innovation factors, e.g., perceptions of advantages of guidelines ; Context factors, e.g., collaboration within unit team, culture of shared accountability , and nursing team staffing stability ; Leadership factors, e.g., linked levels of leadership , and attributes of formal unit leaders and leadership team; and Process	High quality

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Grigg, N. P., Goodyer, J. E., & Frater, T. G. Sustaining lean in SMEs: key findings from a 10-year study involving New Zealand manufacturers Total Quality Management & Business Excellence 2020	To examine the effectiveness and sustainability of the New Zealand Government's Lean programmes.	data, followed by several rounds of analysis using a combination of deductive and inductive techniques. A case study of nine small and medium-sized manufacturing organisations in New Zealand, which were studied in a two-stage research process. The first stage consisted of a post-implementation visit in 2009, at least two years after implementation, and the second stage was a follow-up visit in 2015. In stage 1 data was collected through interviews with two key informants from each organisation, as well as observational tours of the facilities. In stage 2, telephone interviews were conducted with one respondent from each organisation.	factors, which refers to regular and responsive use of sustainability activities, e.g., educating and training, using reminders, communicating and discussing, evaluating performance and improving quality, and integrating changes into other initiatives. By 2015, only one of the nine companies had succeeded in sustaining their Lean implementation. Factors that promoted sustainability aligned with the Lean Iceberg model. These factors were all focused on “below-the-waterline” aspects of Lean: i.e., leadership, which involves embracing Lean and taking measures to drive change , and the leader having studied/been taught Lean principles to a practitioner level; strategy and alignment, which involves having a higher-level strategy from which to derive action plans ; and behaviour and engagement, which involves creating and nurturing a continuous improvement culture in the organisation.	High quality
Hartmann, C. W., Solomon, J., Palmer, J. A., & Lukas, C. V. Contextual Facilitators of and Barriers to Nursing Home Pressure Ulcer Prevention Advances in Skin & Wound Care 2016	To address gaps in the knowledge of how to achieve successful, sustained prevention of pressure ulcers (PrUs) in nursing homes, by comparing nursing leadership and indirect care staff members' impressions about the context of PrU prevention in facilities with improving and declining PrU rates.	The article covers the qualitative portion of a mixed-methods study. Semi-structured interviews were carried out with 23 community living centre staff at six Veterans Health Administration nursing homes in the United States. Qualitative interview data were analysed using an analytic framework containing (a) a priori analytic constructs based on the study's conceptual framework and (b) sections for emerging constructs.	The results showed that three of the sites improved their PrU performance, while three had declining PrU performance. The difference between improving and declining sites were six key concepts, which also identified facilitators of and barriers to successful PrU prevention. They were: structures through which the change effort is initiated; organisational prioritisation, alignment, and support ; existence of improvement culture; clarity of roles and responsibilities; communication strategies ; and staffing and clinical practices, i.e., good prevention teamwork.	High quality
Higuchi, K. S., Davies, B., & Ploeg, J. Sustaining guideline implementation: A multisite perspective on activities, challenges and supports Journal of Clinical Nursing	To examine activities conducted, challenges encountered, and supports used when sustaining implementation of nursing practice guidelines in multiple healthcare organisations over three years.	Qualitative descriptive study, conducted 2009-2012 as part of a multi-methods, participatory action study, of eight Canadian clinical organisations that were successful in the application to the Registered Nurses' Association of Ontario Best Practice Spotlight Organisation competition. Purposive sampling was used to recruit 2-8 participants per organisation for	Participating sites reported five factors within three categories as supports for sustaining guidelines. These were: Process, e.g., lessons learned from previous and concurrent change initiatives, and commitment within the organisation ; Staff, e.g., involvement of staff , senior leaders and steering committee; and	High quality

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2017		focus group interviews and subsequent interactive meetings. Interview transcripts were subjected to content analysis and coded using an iterative process through both deductive and inductive approaches.	Organisation, e.g., organisational values and culture , and external support .	
Hovlid, E., Bukve, O., Haug, K., Aslaksen, A. B., & Von Plessen, C. A new pathway for elective surgery to reduce cancellation rates BMC Health Services Research 2012a	To describe how multifaceted interventions across different departments at a Norwegian district general hospital led to a sustained reduction of cancelled operations, and to explore contextual factors and their importance for sustaining these improvements.	Qualitative and quantitative data were collected from a district general hospital in Norway between April 2010 and February 2012. A Student's <i>t</i> -test was used to analyse the differences in cancellation rates (CRs) pre- and post-intervention, and a u-chart to analyse if the improvements were sustained or not. Semi-structured interviews were conducted with 20 strategically sampled employees. Interviews were coded iteratively.	The mean CR was reduced during, and the u-chart demonstrated a sustained change. Analysis of the interviews revealed that the following factors were important for sustainability: ¹¹ [1] involvement of frontline professionals in redesigning processes across traditional department borders [2] combining professional entrepreneurship with support from staff with knowledge about improvement techniques [3] centralising patient preparation and discharge at one location [4] using computer applications to improve planning and coordination of surgery programmes [5] the role of middle managers in securing implementations [6] adapting interventions based on feedback from frontline clinicians	Medium quality
Hovlid, E., Bukve, O., Haug, K., Aslaksen, A. B., & Von Plessen, C. Sustainability of healthcare improvement: what can we learn from learning theory? BMC Health Services Research 2012b	To identify factors contributing to sustainability of improvements, by using learning theory to explore a case that had displayed sustained improvement.	Qualitative case study, of a district general hospital in Norway, grounded in the theoretical framework of learning theory. Semi-structured interviews were conducted with 20 strategically sampled employees. Interviews were coded and analysed in three steps.	Clinicians developed a new understanding of their clinical system and its interdependencies, which led to sustainable improvement. Factors that contributed to this were: ¹² [1+2] Create a multidisciplinary arena for sharing information, provide a system context for interpreting shared information and provide	High quality

¹¹ The numbers in square brackets connect the results from this study (Hovlid et al., 2012a) with Hovlid et al. (2012b), as they use the same data and have been interpreted as being the same result.

¹² The numbers in square brackets connect the results from this study (Hovlid et al., 2012b) with Hovlid et al. (2012a), as they use the same data and have been interpreted as being the same result.

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			<p>guidance to clinicians about improvement knowledge.</p> <p>[3] Design and implement new organizational routines based on the new understanding of the clinical system.</p> <p>[1] Facilitate continuous information sharing and reflection (new mental model).</p> <p>[6] Modify and adapt interventions based on the new understanding of the clinical system</p>	
Hung, D. Y., Gray, C. P., Truong, Q. A., & Harrison, M. I. Sustainment of Lean Redesigns for Primary Care Teams Quality Management in Health Care 2019	To examine the sustainment of Lean workflow redesigns for primary care teams several years after being implemented in a large, ambulatory care delivery system.	The study was conducted in an ambulatory care system planning to deploy Lean. Up to three years post-implementation, qualitative interviews were conducted with 57 leaders and frontline providers, along with 1164 surveys to staff in 17 primary care clinics in the system. Interviews were transcribed and coded, using both predetermined and emerging codes. The surveys were analysed using independent sample <i>t</i> tests.	<p>Both the qualitative and quantitative data showed that Lean workflows were sustained, even though adherence was strongest at the pilot site.</p> <p>Factors that promoted sustainability were: a participative implementation approach helped routine changes, frontline beliefs about Lean as an organisational strategy, priority to ensure that both leaders and staff adhere to Lean redesigns, having enough time for improvement to prevent staff burnout, high employee engagement, participation in decisions to improve quality, and teamwork.</p>	High quality
Ingelsson, P., Bäckström, I., & Snyder, K. Strengthening quality culture in private sector and health care: What can we learn from applying soft measures? Leadership in Health Services 2018	To present a comprehensive approach to studying organizational culture using “soft measures” to facilitate sustainable quality development in organizations. The purpose is also to present, discuss and compare the results from a survey designed to measure a company’s value base.	Action research was carried out over the course of three years in partnership with three Swedish manufacturing companies. Different methods (surveys, interviews, leadership scale, focus groups, observations and dialogue) were used to collect soft data which was both qualitative and quantitative.	Survey data from one company revealed the following factors for a sustainable quality culture: leadership commitment, participation of everybody, employees’ perception of health, management having a system view (i.e., holistic perspective), management using Appreciative Inquiry as a strength-based approach to improve work, and employees’ pride in the team and the workplace.	High quality
Jones, M. R., Hooper, T. J., Cuomo, C., Crouch, G., Hickam, T., Lestishock, L., Mennito, S., & White, P. H. Evaluation of a Health Care Transition Improvement Process in Seven Large Health Care Systems	To evaluate the feasibility and effectiveness of implementing the Six Core Elements in various large health systems engaged in a learning network (LN) using process data and	A pre-post study of a structured health care transition (HCT) process implementation over 12-18 months within seven health systems involved in the LN. Representatives from the health systems completed a current assessment (CA) of HCT activities, both at the start of the project and at 12-18 months post-implementation, after which a clustering analysis was	<p>Significant progress was made in implementing a structured HCT process in all sites.</p> <p>Identified factors for sustainability were: Sharing a standardised framework to promote practice change, achieving buy-in from key stakeholders, identifying common barriers to full</p>	High quality

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Journal of Pediatric Nursing 2019	qualitative health care professional feedback.	performed. Additionally, descriptive and qualitative data were collected from health system leaders in the LN. This data was analysed through content analysis.	implementation , having dedicated time or staff support for implementation, and that recommended processes should be individualised based on contextual factors .	
Klinga, C., Hasson, H., Andreen Sachs, M., & Hansson, J. Understanding the dynamics of sustainable change: A 20-year case study of integrated health and social care BMC Health Services Research 2018	To gain insight into the dynamics of sustainable changes in integrated health and social care through an analysis of local actions that were triggered by a national policy.	Retrospective and qualitative case study based on data from the Swedish model organisation's steering-committee minutes from 1995 to 2015. A thematic analysis was used with a semantic approach. This generated a narrative case description.	The insights gained regarding the dynamics of sustainable change revealed five main factors for sustainability: integration was characterised by ongoing adaptations , ambition for ongoing learning among all stakeholders was highly present, an emphasis on collaboration , the service users were key partners in the collaboration and in forming the services, and the steering committee's work was dynamic – new members were invited to participate as needed.	High quality
Lacey, S. R., Goodyear-Bruch, C., Olney, A., Hanson, D., Altman, M. S., Varn-Davis, N. S., Brinker, D., Lavandero, R., & Cox, K. S. Driving Organizational Change From the Bedside: The AACN Clinical Scene Investigator Academy Critical Care Nurse 2017	To describe the curriculum of the American Association of Critical-Care Nurses (AACN) staff nurse leadership program, Clinical Scene Investigator (CSI) Academy, that provides staff nurses with the leadership skills required to create unit-based change projects that positively impact patient/family outcomes.	Six American regions were selected as cohorts. Each region sent CSI teams from seven hospitals to participate in their regional 16-month-long CSI Academy which consisted of 7 or 8 all-day workshops. The CSI Academy evaluation was both formative (qualitative feedback session at the end of the final workshop) and summative (quantitative and qualitative survey at the end of the programme). Quantitative analysis was completed using descriptive statistics, and qualitative descriptive analysis provided emerging themes.	The one-year post-programme evaluation revealed that almost 60 % of the respondents rated their project as at least “a lot” sustained. CSI Academy participants cited the following main factors for sustainability: continuous education and re-education of new and seasoned peers, posting best-practice models , and celebrating favourable project outcomes .	High quality
Laing, B. Y., Dixit, R. K., Berry, S. H., Steers, W. N., & Brook, R. H. A Quasi-experimental Evaluation of Performance Improvement Teams in the Safety-Net: A Labor-Management Partnership Model for Engaging Frontline Staff Journal of Public Health Management and Practice 2016	To investigate if staff in units, at Los Angeles County's largest outpatient centre, which is located in South Los Angeles, who received unit-based teams (UBT) training reported greater increases in adaptive reserve—ability to make and sustain change—than staff in units who did not receive UBT training.	Quasi-experimental design where ten units within an outpatient facility in South Los Angeles, United States, were selected to participate in the UBT intervention based on perceived need for improvement. Five additional units were selected as control groups. The primary outcome measured was adaptive reserve, measured by a questionnaire at baseline and at six months. Semi-structured interviews were also conducted with 38 staff members at five intervention units and three control units. Questionnaire analysis consisted of t tests and multiple regression, while interviews were analysed through iterative coding.	At six months, adaptive reserve scores for the intervention sites had increased and almost all sites had succeeded in sustaining an implemented improvement. This success was attributed to receiving training in the UBT model, and the specific factors the UBT provided were: it worked on improving processes in their units, it created a better environment for teamwork , and it created opportunities for personal growth and learning.	High quality

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Lambert, B. L., Centomani, N. M., Smith, K. M., Helmchen, L. A., Bhaumik, D. K., Jalundhwala, Y. J., & McDonald, T. B. The “Seven Pillars” Response to Patient Safety Incidents: Effects on Medical Liability Processes and Outcomes Health Services Research 2016	To determine whether a communication and optimal resolution (CANDOR) intervention based on the Seven Pillars approach to adverse events was associated with measurable improvements on a targeted set of safety, communication process, and liability outcomes.	Single health system, interrupted time series design within one hospital and health sciences system in Illinois, United States. Outcomes were analysed for five years before and seven years after the intervention, from 2002 to 2014. Data was collected from databases within the system and trends for different variables were analysed over time using descriptive statistics.	Positive post-intervention changes were observed and sustained across most of the variables. Factors that enabled this were: an emphasis on a culture of transparency, honest communication following patient harm, learning and improvement , and prompt settlement when harm was the result of unreasonable care.	High quality
Lavoie-Tremblay, M., Aubry, M., Richer, M.-C., & Cyr, G. A Health Care Project Management Office’s Strategies for Continual Change and Continuous Improvement The Health Care Manager 2018	To extend understanding of the continuous improvement mechanisms used by project management offices (PMOs) and to describe PMO’s strategies for continual change and continuous improvement in the context of major transformation in health care.	Descriptive case study, as part of a larger research programme studying transformation in the health care sector. The case study took place in a teaching hospital in one Canadian province in 2015, and the PMO was the unit of analysis. Data sources consisted of seven individual interviews with staff connected to the PMO and internal documents. The qualitative data were subjected to a content analysis.	In order to ensure sustainability, the participants suggested the following: carefully select the members of the PMO that is to be created; have a PMO and give it a clear mandate and role that everyone understands; the PMO needs method and discipline at the same time as openness and flexibility; prioritise the PMO projects ; optimise all forms of collaboration ; plan and make sure that you have everything you will need ; do not overlook the importance of cultures (organizational practices); and retain the existing support model.	High quality
Lennox, L., Maher, L., & Reed, J. Navigating the sustainability landscape: a systematic review of sustainability approaches in healthcare Implementation Science 2018	To identify what approaches are available to assess and influence sustainability in healthcare and to describe the different perspectives, applications and constructs within these approaches to guide their future use.	A systematic review carried out on Embase, HMIC Health Management Information Consortium, and Ovid MEDLINE in January 2017, with a follow-up search in September 2017. A quality assessment and data extraction form was developed for identified articles. Template analysis was conducted using predefined codes, which were iteratively developed, to guide the analysis process.	40 individual items for sustainability in health care were found. Comparison across approaches demonstrated that no two approaches contained the same combination of the constructs nor did any single approach capture all 40 constructs. The constructs have been organised under six emergent themes, of which four are presented below as they contain the six factors that were included in over 75% of the studied approaches. ¹³ The initiative design and delivery: Demonstrating effectiveness, Monitoring progress over time, and Training and capacity building.	High quality

¹³ This selection was done as these were the results that Lennox et al. (2018, p. 10) highlighted in their findings.

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			<p>The people involved: Stakeholder participation.</p> <p>Resources: General resources.</p> <p>The organisational setting: Integration with existing programs and policies.</p>	
<p>Masood, S., Woolner, V., Yoon, J. H., & Chartier, L. B.</p> <p>Checklist for Head Injury Management Evaluation Study (CHIMES): a quality improvement initiative to reduce imaging utilisation for head injuries in the emergency department</p> <p>BMJ Open Quality</p> <p>2020</p>	<p>To achieve a relative reduction of 10% in CT scan utilisation for patients presenting to our EDs with a head injury over a period of 6 months through the Checklist for Head Injury Management Evaluation Study (CHIMES).</p>	<p>A 27-month retrospective cohort study at an academic tertiary care centre in Toronto, Canada, was followed by an intervention over 50 weeks. Descriptive statistics and statistical process control charts were used to report data during the intervention. For categorical data, χ^2 analysis was used to test for statistical significance, while Mann-Whitney U test was used for continuous data. Stakeholder engagement and provider surveys were used to develop a driver diagram and Plan-Do-Study-Act (PDSA) cycles that were carried out in four cycles over the course of the intervention.</p>	<p>The mean weekly CT scan rate decreased and the reduction rate was maintained after six months.</p> <p>What contributed to sustainability was using a combination of patient-oriented and provider-oriented interventions. The former consisted of a patient handout, and the latter of education and dissemination of Choosing Wisely Canada recommendation, CHIMES checklist implementation, and regular feedback to providers.</p>	<p>High quality</p>
<p>Mazzocato, P., Holden, R. J., Brommels, M., Aronsson, H., Bäckman, U., Elg, M., & Thor, J.</p> <p>How does lean work in emergency care? A case study of a lean-inspired intervention at the Astrid Lindgren Children's hospital, Stockholm, Sweden</p> <p>BMC Health Services Research</p> <p>2012</p>	<p>To unpack how and why a lean-inspired improvement effort at a paediatric accident and emergency (A&E) department may work, by examining clinical operations and performance before and during the intervention.</p>	<p>Mixed methods explanatory single case study design at a paediatric A&E department in Stockholm, Sweden. Hospital performance data were analysed using analysis of variance and statistical process control techniques to assess changes one year before and two years after the intervention. Qualitative data was collected through non-participant observations, 13 semi-structured interviews, and internal documents. Empirical findings were analysed using four theoretical lean principles.</p>	<p>The activities in the care process were the same pre- and post-intervention, while the organisation, management and improvement of the care process were changed.</p> <p>The reasons for how and why the intervention worked included: standardising work, which reduced ambiguity and variation in how work was carried out; connecting co-dependent staff, which created clearer, synchronous connections between caregivers; creating seamless uninterrupted flow through the process through flow managers, who were assigned overall responsibility for work and patient flow; and empowering staff to investigate problems, and develop, test, and implement countermeasures.</p>	<p>High quality</p>
<p>McInnes, R. J., Aitken-Arbuckle, A., Lake, S., Hollins Martin, C., & MacArthur, J.</p> <p>Implementing continuity of midwife carer – just a friendly face? A realist evaluation</p>	<p>To explore how continuity of midwife carer (CMC) works, for whom, in what context and to what extent, and so inform sustainable on-going</p>	<p>Participatory research, quality improvement and iterative data collection methods were used to collect data from one Scottish health board from November 2016 to November 2019. Using Realist Evaluation, theories were tested and refined throughout the data</p>	<p>The findings revealed that CMC midwives were sustained and enabled by the relationships they developed within the team. These were particularly important at the outset when they were developing new ways of working. For midwives more used to working</p>	<p>High quality</p>

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BMC Health Services Research 2020	implementation and up-scaling within the context of <i>The Best Start</i> .	collection and analysis process. Data was coded according to the study's Context + Mechanism = Outcome configurations using "if ...then" statements.	in the hospital context the team provided a sense of belonging. Additionally, positive relationships were sustaining for CMC midwives supporting their learning and ensuring they felt able to ask for help if required.	
Morrow, E., Robert, G., & Maben, J. Exploring the nature and impact of leadership on the local implementation of The Productive Ward Releasing Time to Care TM Journal of Health Organization and Management 2014	To explore the nature and impact of leadership in relation to the local implementation of quality improvement interventions in health care organisations.	A Framework Approach was used to analyse descriptive data from multiple sources. Data was drawn using 79 in-depth interviews from two studies of The Productive Ward, a Lean implementation programme in English hospitals; one mixed methods study from 2009, and one case study from 2010. Data analysis aimed to be context sensitive, iterative and flexible and was carried out in several stages.	The fourth theme of the study was <i>Leader's actions to spread learning and sustain improvements</i> . ¹⁴ The main factor for sustainability was connecting vertical and horizontal boundary spanning leadership activities. This includes: leaders connecting with different staff, professional and cultural groups ; leaders taking steps to use existing structures to spread knowledge and learning; and leaders sustaining connections to intra-organisational networks .	High quality
Newham, J., Schierhout, G., Bailie, R., & Ward, P. R. "There's only one enabler; come up, help us": staff perspectives of barriers and enablers to continuous quality improvement in Aboriginal primary health-care settings in South Australia Australian Journal of Primary Health 2016	To investigate the barriers and enablers to implementation of a continuous quality improvement (CQI) program by health-care professionals in Aboriginal primary health-care services in South Australia.	A qualitative embedded, multiple case study approach, drawing upon principles of participatory action research, of eleven primary health care services (PHC) in South Australia. Data was collected through 18 semi-structured interviews with purposively sampled PHC staff members over a 12-18-month period. Interview transcripts were coded and analysed through an inductive process in iterative cycles to generate thematically grouped categories.	The study identified that successful and sustained implementation of CQI requires both organisational systems and individual behaviour change. Specific factors were: access to support, in the form of a dedicated and embedded CQI coordinator , as well as integrating the programme into other activities and networks with secure funding; organisational readiness, which means having a shared understanding of the purpose of CQI and a common vision shared by staff across hierarchical levels; and staff attitudes, knowledge and awareness of CQI, which involves having formal mandate to implement CQI activities and high levels of collective change efficacy .	High quality
Parand, A., Benn, J., Burnett, S., Pinto, A., & Vincent, C. Strategies for sustaining a quality improvement collaborative and its patient safety gains International Journal for Quality in Health Care	To identify strategies to facilitate the sustainability of a quality and safety improvement collaborative: the Safer Patients Initiative (SPI) and its successes.	A qualitative interview study with a repeated sample at two time points, in 2008 and 2009, respectively. Semi-structured interviews were carried out with a purposive sampling of programme directors across 20 NHS hospitals participating in the SPI programme across the United Kingdom. Qualitative analysis was	Three overarching factors for the sustainability of SPI emerged from the data: (1) using programme improvement methodology and measurement of its outcomes; (2) organizational strategies to ensure sustainability; and (3) alignment of goals with external requirements.	High quality

¹⁴ The other three themes were deemed as not relevant for the purpose of this study, and are therefore not presented here.

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2012		performed using both initial content analysis and the Glaser and Strauss constant comparative technique.	Within these factors there were eight themes: (1.1.) Using 'small-scale tests of change' methodology ; (1.2.) Demonstration of sustained measurement ; (2.1.) Integration of programme within organisational structures and processes; (2.2.) Building organisational capability ; (2.3.) Maintaining a high profile , which includes reporting on targets, and data feedback; (2.4.) Securing and creative use of resources ; (3.1.) Integration of programme focus into other regional or national improvement drives; and (3.2.) External expert monitoring .	
Phelan, S., Lin, F., Mitchell, M., & Chaboyer, W. Implementing early mobilisation in the intensive care unit: An integrative review International Journal of Nursing Studies 2018	To identify the key factors that underpin successful implementation and sustainability of early mobilisation in adult intensive care units.	Integrative review using a systematic search strategy guided by the SPICE framework (Setting, Perspective, Intervention, Comparison, Evaluation). Databases were searched from August to September 2016. Critical appraisal of the improvement projects in the included articles was completed using the Quality Improvement Minimum Quality Criteria Set. A modified Cochrane Effective Practice and Organisation of Care taxonomy was used to synthesise the implementation strategies. Thirteen articles were included in the inductive analysis which served to develop themes using an iterative approach.	The included articles all featured projects that were successfully implemented and sustained. Identified factors for sustainability were: strong leadership support for early mobilisation; adopting a quality improvement process , which considered strategies to overcome barriers to implementation; and using a multidisciplinary team approach , which promoted staff support and team engagement.	High quality
Poksinska, B., & Swartling, D. From successful to sustainable Lean production – the case of a Lean Prize Award Winner Total Quality Management & Business Excellence 2018	To make a distinction between the success and sustainability of improvement programmes, and to identify mechanisms that specifically contribute to the sustainability.	Longitudinal, in-depth case study of production unit in a medical company in Sweden. Data was collected over nine years, and included 24 semi-structured interviews, 34 observations, document studies and shadowing four managers. In data analysis, improvement programme implementation was seen as a dynamic process and attention was paid to the flow of events and change of behaviours.	Complexity theory revealed the importance of differentiating between first-order and second-order sustainability. The former is defined as improvement persistence, and the latter as the improvement programme itself persists and continues to develop over time. The following second-order sustainability mechanisms were identified: (1) organisations need to operate at the edge of chaos , i.e., between order and disorder; (2) in order to stay at the edge of chaos, there must be a constant flow of novelty and change ; (3) managers need to rethink the nature of hierarchy, thus, managers need to take on a supporting and coaching role ; (4) the organisational structure should	High quality

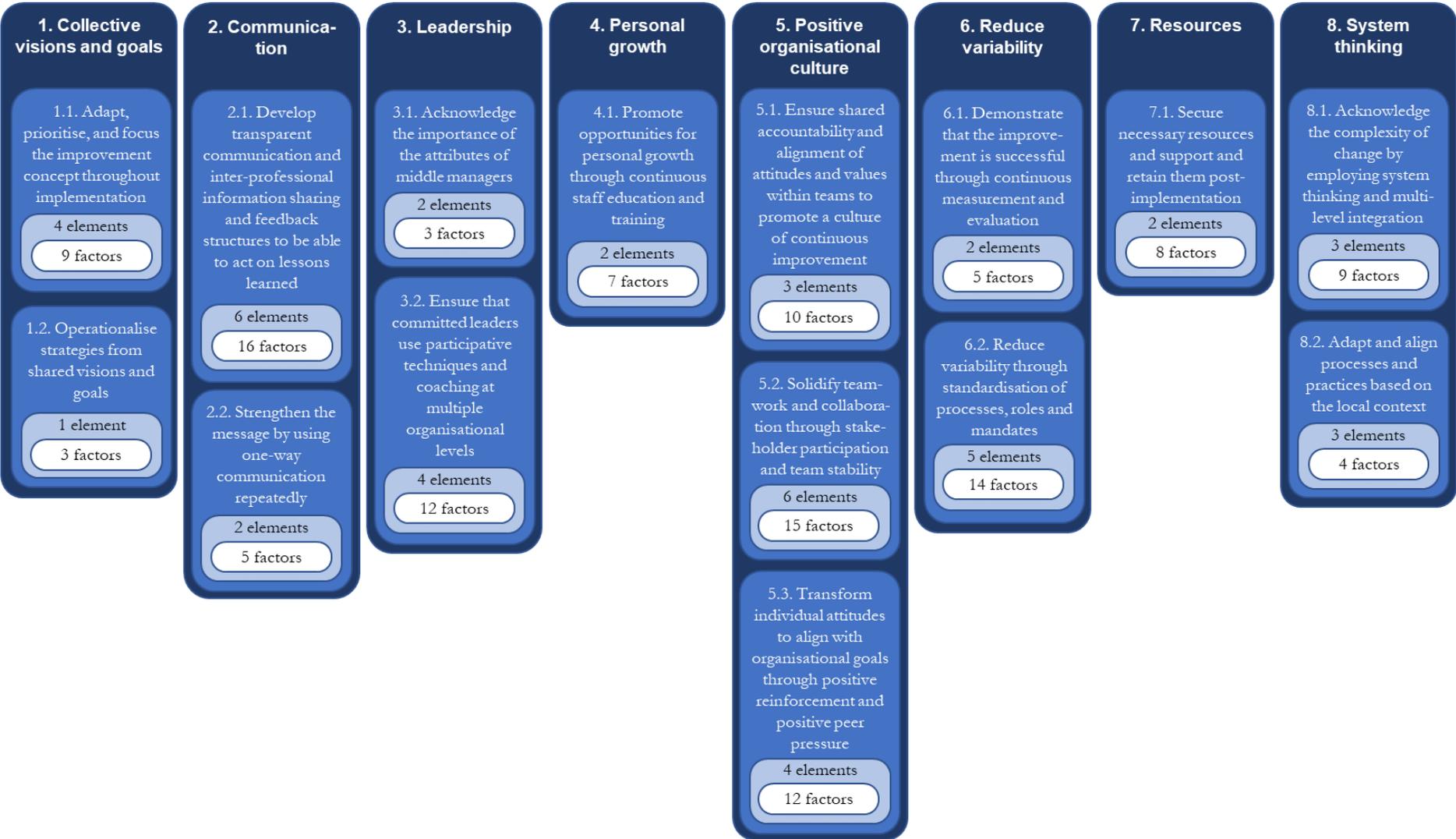
Authors Title Journal Year	Purpose	Methodology	Findings of relevance to this study (factors for sustainability in bold text)	Quality assessment
Pratt, N. L., Kalisch Ellett, L. M., Sluggett, J. K., Gadzhanova, S. V., Ramsay, E. N., Kerr, M., LeBlanc, V. T., Barratt, J. D., & Roughead, E. E. Use of proton pump inhibitors among older Australians: national quality improvement programmes have led to sustained practice change International Journal for Quality in Health Care 2017	To evaluate the impact of national, multifaceted, quality improvement programmes on overall proton pump inhibitors (PPIs) use and use of low strength PPIs by older Australians.	A retrospective observational study, using administrative health claims data from the Australian Government Department of Veterans' Affairs (DVA). Data was collected for all veterans and dependents who received PPIs between January 2003 and December 2013. Trends in monthly rate of use of any PPI was measured, and interrupted time series modelling was used to assess the effect of each intervention on the rate of PPI use.	develop toward self-organisation at a team level ; and (5) to achieve self-organisation, there must be a change in employee thinking and behaviour . Time series analysis showed all interventions had a significant effect on overall PPI use. The following factor indicated sustainability: Repeating the same key messages to multiple stakeholders in different interventions, at different time points, with each intervention building on the previous intervention.	High quality
Reynders, P., Kumar, M., & Found, P. 'Lean on me': an integrative literature review on the middle management role in lean Total Quality Management & Business Excellence 2020	To gain a holistic view of the middle management role in lean and its influence on organisational transformation.	Integrative literature review using the databases <i>Emerald Insight</i> , <i>Elsevier Scopus</i> , <i>Taylor & Francis</i> , and <i>Web of Science</i> . An initial 22 journal articles were identified. These were added to by backward snowballing and a focused search via <i>Google Scholar</i> . The existing literature was then organised and synthesised to explore the depth of the topic.	Middle managers are protagonists in lean evolution and are indispensable for sustainable success. They do so through the following interdependent practices: policy deployment , which reconciles senior management's visions by operationalising strategy; practising leader standard work , which promotes lean at the operational level and encourages cultural change over time; promoting continuous improvement regularly; committing themselves to self-development , i.e., developing their learning capabilities; coaching , i.e., developing front-line managers' skill sets; and doing regular gemba walks , in order to engage and interact with subordinates and understand the daily challenges on the front line.	High quality
Robert, G., Sarre, S., Maben, J., Griffiths, P., & Chable, R. Exploring the sustainability of quality improvement interventions in healthcare organisations: a multiple methods study of the 10-year impact of the 'Productive Ward:	To explore how timing of adoption, local implementation strategies and processes of assimilation into day-to-day practice relate to one another and shape any sustained impact and wider legacies of a large-scale quality improvement (QI) intervention.	Multiple methods study in six case studies comprising purposively sampled acute hospitals in England. Data collection occurred from March 2017 to February 2018 and consisted of 88 semi-structured interviews, structured observations, and ten ward manager questionnaires. A Framework method was used to retrospectively analyse interview data to find themes. This was followed by a cross-case analysis.	The QI intervention was found to have had sustained material and processual changes. Factors that enabled this were: thinking beyond the immediate team ; ensure adequate resources , such as a dedicated staff member to coordinate activities and ongoing training; focusing on quality, not quantity ; having more focus in implementation of programme modules ; playing the long game and demonstrate long-term impact ;	High quality

Authors Title Journal Year	Purpose	Methodology	Findings of relevance to this study (factors for sustainability in bold text)	Quality assessment
Releasing 'Time to Care' programme in English acute hospitals BMJ Quality and Safety 2020			adaptability in the QI programme; involving patients and carers as partners, i.e., involving all stakeholders as co-producers .	
Shaw, E.K., Howard, J., West, D.R., Crabtree, B.F., Nease, D.E., Jr., Tutt, B., & Nutting, P.A. The Role of the Champion in Primary Care Change Efforts: From the State Networks of Colorado Ambulatory Practices and Partners (SNOCAP) Journal of the American Board of Family Medicine 2012	To describe the role of change champions within a quality improvement (QI) trial called Enhancing Practice, Improving Care (EPIC).	Qualitative analysis of a QI trial at a sample of eight purposefully selected primary care practices in Colorado, United States. Data included field notes of team meetings, semi-structured interviews, and transcripts of facilitator meetings, from and was collected at baseline and 9 and 18 months. Analysis used a combination of immersion/crystallisation and matrix techniques, which facilitated cross-case comparisons.	Analysis revealed a second type of champion, distinct from the change (or project) champion: the organisational change champion. Both roles were valuable and seemed to be associated to the extent to which changes were sustained after the intervention, though in different ways: the project champion played a key role in implementing project-based innovations, while the organisational change champion provided leadership, authority, and a vision for the “big picture” of ongoing organisational change.	High quality
Sirikka, M., Larsson-Lund, M., & Zingmark, K. Occupational therapists' experiences of improvement work: a journey towards sustainable evidence-based practice Scandinavian Journal of Occupational Therapy 2014	To explore occupational therapists' experiences of participating in long-term improvement work based on the Occupational Therapy Intervention Process Model (OTIPM).	A long-term, qualitative descriptive study at an OT unit at an acute hospital in Sweden. Data were collected through six focus-group interviews with fourteen occupational therapists on two occasions, in 2006 and 2011. The interviews were analysed using qualitative content analysis, where codes were transformed into themes iteratively.	The main theme revealed was labelled as “a journey towards sustainable, evidence-based OT practice”. This main theme was divided into themes and sub-themes, as follows: (1.) transforming thoughts and actions, which consisted of (1.1.) reviewing one's OT focus , i.e., professional identity, and (1.2.) re-evaluating and revising daily assessments and routines ; (2.) dealing with a duality of change, which consisted of (2.1.) feeling both pressurised and relieved , and (2.2.) facing possibilities and hindrances ; and (3.) developing a mutually shared professional culture, i.e. acquiring professional confidence and clarity at both an individual and group level.	High quality
Stumbo, S.P., Ford, J.H., II, & Green, C.A. Factors influencing the long-term sustainment of quality improvements made in addiction treatment facilities: a qualitative study Addiction Science & Clinical Practice 2017	To assess from participating agencies which, if any, organizational practices or outcomes were sustained 6–7 years following the completion of the NIATx200 (formerly the Network for the Improvement of Addiction Treatment) intervention.	Semi-structured interviews were conducted with 33 individuals who participated in the 2007-2009 NIATx200 quality improvement (QI) intervention. Thematic analysis was used to organise the data and group patterns of responses. Available quantitative outcome data and intervention engagement were assessed to corroborate qualitative results.	Interview results were categorised into two overall categories: agencies which reported sustaining improvements and those which reported low/no sustainment. Those who reported sustained improvements described the following factors: impact on business practices , i.e., meant finding alignment between business-centred and client-centred practices; staff engagement , i.e.,	High quality

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			early staff buy-in added legitimacy which helped with sustainment; embedding data integration , i.e., making the connection with quality improvement; and committing organizational human resources , i.e., building on the initial investment.	
Verhoeff, K., Saybel, R., Fawcett, V., Tsang, B., Mathura, P., & Widder, S. A quality-improvement approach to effective trauma team activation Canadian Journal of Surgery 2019	To outline the approach taken, focused on stakeholder engagement, followed by “Plan–Do–Study–Act” (PDSA) rapid change cycles, in a quality-improvement project targeting a sustained goal of at least 90% trauma team activation (TTA) compliance.	Baseline data was collected and stakeholders were brought together to collectively review and understand the reasons behind poor TTA compliance at a Canadian level 1 trauma centre. This was followed by root-cause analysis. Baseline data were collected from April to August 2015 and additional data were collected from October 2016 to February 2017.	The goal of 90 % compliance with TTA protocols was met and sustained for at least seven months. Factors that aided this were: participative techniques; reflective processes; feedback; developing a team mentality for trauma; improving communication ; providing data feedback; clarifying roles and responsibilities; and positive reinforcement when efforts were made to activate the trauma team.	High quality
Welch, S., & Dalto, J. Improving Door-to-Physician Times in 2 Community Hospital Emergency Departments American Journal of Medical Quality 2011	To improve the efficiency of patient intake in a complex system like the emergency department (ED).	All ED encounters at two community hospitals in Utah, United States, were included in the data collected for three months before the study period and during the 7-month study period. A prospective analysis of the data recorded using a home-grown tracking system and electronic status board was performed. Data were analysed using statistical process charts and Microsoft Excel software.	Data on door-to-physician time showed a consistent improvement over the study period. Factors that contributed to this were: using prompts and reminders placed throughout the department to promote the goal of the improvement, which included a tracking system with cuing functions; training and awareness , which helped introduce the concepts to all staff members; and a feedback loop , which collected and distributed individual data to physicians in coded form.	High quality

Appendix G. Affinity diagram overview

Figure 19
Affinity diagram: overview of the 8 themes and 15 sub-themes



Appendix H. Relations between the articles and the themes

Table 10

Matrix displaying relations between the studied articles and the emerging themes

Authors (year)	Theme 1: Collective visions and goals	Theme 2: Communi- cation	Theme 3: Leader- ship	Theme 4: Personal growth	Theme 5: Positive organisa- tional culture	Theme 6: Reduce variability	Theme 7: Resources	Theme 8: System thinking
Allaudeen et al. (2017)		X			X	X		
Babic et al. (2018)					X	X		
Bazos et al. (2015)		X					X	
Breckenridge et al. (2019)	X	X	X		X	X	X	
Clavel et al. (2019)			X			X		X
Dückers et al. (2011)	X					X	X	
Featherall et al. (2019)					X			
Fleiszer et al. (2016a)	X	X		X		X		X
Fleiszer et al. (2016b)		X	X	X	X	X		X
Grigg et al. (2020)	X		X		X			
Hartmann et al. (2016)	X	X			X	X		
Higuchi et al. (2017)		X			X	X		
Hovlid et al. (2012a, 2012b) ¹⁵	X	X	X	X				X
Hung et al. (2019)					X		X	
Ingelsson et al. (2018)			X		X			X
Jones et al. (2019)					X	X	X	X
Klinga et al. (2018)	X	X			X			
Lacey et al. (2017)		X		X	X			
Laing et al. (2016)				X	X	X		
Lambert et al. (2016)		X						X

¹⁵ In this table both articles by Hovlid et al. (2012a, 2012b) are counted as one, as described in chapter 4.1.4.

Authors (year)	Theme 1: Collective visions and goals	Theme 2: Communi- cation	Theme 3: Leader- ship	Theme 4: Personal growth	Theme 5: Positive organisa- tional culture	Theme 6: Reduce variability	Theme 7: Resources	Theme 8: System thinking
Lavoie-Tremblay et al. (2018)	X				X	X	X	X
Lennox et al. (2018)				X	X	X	X	X
Masood et al. (2020)		X		X		X		
Mazzocato et al. (2012)					X	X		
McInnes et al. (2020)		X						
Morrow et al. (2014)			X					
Newham et al. (2016)	X				X	X	X	X
Parand et al. (2012)	X	X		X		X	X	X
Phelan et al. (2018)		X	X			X		
Poksinska & Swartling (2018)			X		X			X
Pratt et al. (2017)		X						
Reynders et al. (2020)	X		X	X	X			
Robert et al. (2020)	X				X	X	X	X
Shaw et al. (2012)					X			
Sirkka et al. (2014)		X			X			X
Stumbo et al. (2017)					X	X	X	X
Verhoeff et al. (2019)		X			X	X		
Welch & Dalto (2011)		X		X				
Number of unique articles per theme	12	19	10	10	25	21	11	15