Article 2

ORGANIZATIONAL CHANGE MANAGEMENT THEORIES AND SAFETY -A CRITICAL REVIEW

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ABSTRACT

In many change management theories, the change recipient's trust and willingness to change on one hand, are viewed as key factors for a successful change process. Resistance to change, on the other hand, is viewed as something the management must conquer to be able to complete the change process. In order to make the change recipients trusting and willing to change, change theories provide useful tools such as making discrepancy in the work situation of those who are to face changes, and using persuasive communication. However, from a safety perspective the importance of trained scepticism, and having the end users questioning the change process, rather than convincing them, seem to be more important. To view the end users as experts, and to bring them in the process from an early stage, with their opinions on how to make changes as safe as possible, seems more important than overcoming their resistance to change. This paper bridges theories of organizational change and the theory of high reliability organizations (HRO) as a safety theory and discusses how a change process can be feasible with safety as a main priority. Finally, a new model of organizational change which includes processes that ensure safety is presented.

Key words: safety, organizational change, high reliability organizations, high-risk industry

INTRODUCTION

Given today's business environment as both dynamic and uncertain, benchmarking for the experts when managing the unexpected is important. Organizational change is a process that will clearly handle unexpected situations. However, within the traditional organisational change management literature, a focus on unexpected incidents during change processes is not common. In addition, few studies have presented a critique to the existing change theories such as Armenakis and Harris (2009), Cummings and Worley (2015), and Kotter (1996).

In recent scientific work, such as Sætren and Laumann (2015), the question was raised if traditional change management theories should be used for changes where safety is the focus. These include examples of unwanted incidents due to unexpected episodes in combination with changes that demand a deeper investigation of how high performance could be ensured despite interruptions and changes. For instance, unwanted incidents like the Gullfaks C incident (PSA, 2010) happened in part due to a complex organisational and technological change situation. In addition, the major accident of the Macondo blowout (DHSG, 2011) included aspects of organizational changes that contributed to complexity rendering it a hazardous situation according to the report. Another example where organizational change was considered relevant as an accident cause was the Longford Esso Gas Plant explosion (Hopkins, 2000). For this reason, this paper will investigate if traditional organizational

change theories include processes that ensure safety. Our research question was: *Are prescriptive change management theories/models adequate for organizational changes where safety is an issue? If not, could the HRO theory be used to ensure safety in a change process?*

In the following, some organizational change management theories and resistance to change literature will be presented before the presentation of the safety theory of high reliability organizations (HRO). Thereafter the change theories will be discussed in accordance with HRO before presenting a model based on the safety theory of HRO.

Organizational change management theories

Cummings and Worley (2015) presented a model to obtain effective change management including 5 activity steps: 1) motivating change, 2) creating a vision, 3) developing political support, 4) managing the transition, and 5) sustaining momentum. The first activity step, motivating change, includes creating readiness for change and helping the change recipients address resistance to change. The second step, creating a vision, is a leadership task where the leaders are to create the 'why' and 'what' of the upcoming change. During the third step, developing political support, the leaders need to gain employees' support to implement the change and avoid individuals and groups from blocking it. As a fourth step, the management needs to create an activity plan for the change activities. In addition it is the management's task to plan how to keep the employees committed and to build a management structure to guide the organization through the planned change. The fifth activity, sustaining momentum, includes providing resources for change, building a support system for change agents, developing new competencies and skills, reinforcing new behaviours, and staying the course to complete the change process.

Armenakis and Harris (2009) presented a model for managing organizational readiness for change. This model consists of five key components and seven strategies designed to create readiness for change. The five components are: 1) discrepancy, 2) efficacy, 3) appropriateness, 4) principal support, and 5) personal valence. The first component, *discrepancy,* involves a perception of discrepancy between the current situation and a desired future situation amongst the employees. *Efficacy* refers to the trust in one's capabilities to accomplish the change process. The third component is *appropriateness* which relates to the perception that the planned change is the best solution for obtaining a future desired situation. The fourth key component, *principal support,* refers to the support provided by the employees during the change process. The fifth is *personal valence*. In this component Armenakis and Harris (2009) stated that the question 'What's in it for me?' must have, at least in part, a positive answer for the change recipients to be willing to commit to the change process. In addition, there are seven strategies for transmitting and reinforcing the above five core message components in a process of creating readiness for change. These strategies are management of information, persuasive communication, formalisation activities, diffusion practices, human resource practices, rites and ceremonies, and active participation (Armenakis & Harris, 2009).

Kotter (1996) presented eight steps to produce a successful change of any magnitude in organizations: 1) establishing a sense of urgency, 2) creating a guiding coalition, 3) developing a vision and strategy, 4) communicating the change vision, 5) empowering broad-based action, 6) generating short-term wins, 7) consolidating gains and producing more change, and 8) anchoring new approaches in the culture. The first 4 steps are meant to unfreeze the organization. Steps 5 through 7 comprise the real change and the move, and step 8 freezes the organization again to make sure the change stays in the organization.

The HSE in the UK provided an information sheet regarding organizational change and major accident hazards (HSE, 2003). This information sheet was mainly based on changes including those in roles and responsibilities, organizational structure, staffing levels, staff disposition or any other change that directly or indirectly affected the control of hazards. The main focus was on an operational level and was mainly meant to cover offshore and onshore oil and gas, and chemical installations. The hand-out provided a three-step framework: 1) get organized for change, 2) assess risks, and 3) implement and monitor the change.

The first step, getting organized, comprised 5 factors. 1) Have a strong policy for managing organizational change. Principles, commitments and accountabilities regarding health, safety and the environment must be clear from the beginning of all changes, large and small. 2) Make senior-level managers accountable and demonstrate a clear commitment to safety by their actions. 3) Have a clear change-management procedure because all changes should be planned in a thorough, systematic, and realistic way. The following should be clear: Identify the processes and activities that are to be carried out, set out the protocols to be followed, who is accountable and who is responsible for these activities, who else is involved and how, what potential risks factors are to be considered, who reviews the change process, both when and how. In addition, all stages should be recorded adequately to assure transparency and traceable decision processes. 4) Communicate and include everyone because all staff will have unique knowledge about what their work is really like and how to perform it. This knowledge can be crucial.

Because of this, organizational change should involve all those concerned from an early stage. This involvement of staff includes active participation in decisions. 5) Review and challenge the process both by internal and external experts.

The second step, risk assessment, involved five factors: 1) identify the people involved including those in the existing and proposed organizations that will be affected. It is important that this information is accurate and that all the roles are registered; 2) identify all changes because complexity could be a hazard and in larger organizations simultaneous changes could hinder smooth processes; 3) assess the risks within the change process; 4) consider human factors, competence and workload for instance by checking if tasks or responsibilities have been overlooked, what training is required and if accumulated workload for individuals are within reasonable levels; and 5) test scenarios that are realistic and structured to prepare for incidents and emergencies.

The third and last step, implementing, monitoring and considering safety during the transition itself, consisted of five factors: 1) provide adequate resources to make the change safely, for instance not underestimating the need for training and not reducing staff until the required actions are completed. This is in addition to ensuring enough staff can plan and monitor the change, and provide experienced support during the transition; 2) monitor risks during change; 3) keep the plan under review and track actions; 4) monitor performance after change and be ready to change or reverse decisions if significant risks are discovered; and 5) review the change policy to amend the organization's change procedures.

The theories presented above have revealed different aspects of organizational change theories. Next, a model of resistance to change and the theory of high reliability organisations will be presented.

Resistance to change

Oreg (2006) stated that resistance to change consists of two main factors: personality and context. Personality relates to the person's dispositional resistance to change and people's internal inclinations that affect whether one adopts or resists the change. Oreg (2003) found dispositional resistance to change was a stable personality trait. The second factor, context, consisted of six variables: 1) power and prestige, 2) job security, 3) intrinsic rewards, 4) trust in management, 5) information, and 6) social influence. These contextual variables were related to employees' resistance to change and concerned both the outcome of the change and the way the change was implemented. The first three, power and prestige, job security, and intrinsic reward were related to the individual outcome of the change and were predicted to affect how the person relates to the change. The last three, trust in management, information, and social influence concerned how the change is implemented and will influence how employees perceive the change process.

Theory of safety – High reliability organizations (HRO)

Weick and Sutcliffe's (2007) theory of high reliability organizations (HRO) is based on organizations that are more capable than others for maintaining function and structure when facing changes and challenges. These organizations are typically ones that perform well in settings where the potential for error and subsequent disaster is large, like nuclear aircraft carriers, air traffic control systems, nuclear power generation plants, and so forth. As a safety aspect, the perception and cognition of the personnel are seen as key factors to obtain high reliability. The cognitive techniques used ensure faster learning, more alert sensing, and better relationships with customers. However, these organizations are not stable safe entities, but they have a focus on avoiding complacency and hubris on a continuous basis. In other words, they work with this every day. They organize for high reliability.

According to Weick and Sutcliffe (2007), the five collective cognitive techniques comprising the key elements included: 1) tracking small failures, 2) resisting oversimplifications, 3) remaining sensitive to operations, 4) maintaining capabilities for resilience, and 5) taking advantage of shifting locations of expertise. Using these five processes is called having a mindful infrastructure in the organization.

By *tracking small failures*, personnel in HRO's treat any small error or unwanted incident as a symptom that something is incorrect with the system. The personnel then face it, analyse it, and respond to it. This is because if separate small errors happen to coincide it can lead to major accidents, and acting on small errors helps prevent this from happening. One common way to do this is to report on unwanted incidents to get an overview of the situation in the organization and to be able to track what happens. Further, they continue to articulate errors that are not wanted and assess strategies to avoid them.

Another principle important for achieving high reliability is to *resist oversimplifications* of interpretations. This includes creating images that better correspond to the complex context in which the personnel operate. The personnel tend to have more alternatives and spot unexpected events earlier because of their active work in creating a more nuanced picture. To achieve this, HRO's welcome diverse experience, scepticism, and negotiating

tactics that reconcile differences of opinion. Recognising an event as something previously experienced is a source of concern rather than comfort. People interpret new data and assimilate it into already created schemas. However, to be able to spot signs that this episode might not be the same and finding errors corresponding with it, diversity and sceptical thinking are necessary. For this reason, even in the middle of an operation there must be room to step back and assess the situation.

The third principle is *sensitivity to operations*. This is linked to 'latent failures' (Reason, 1990) which means that imperfections in features, such as supervision, reporting, and safety training lead to loopholes in the defence barriers of the system. For this reason, Weick and Sutcliffe (2007) emphasised that by integrating the front-line workers in the mindful culture and developing situational awareness in the working environment, errors might be prevented from evolving to the level of accidents. Attentiveness to the front-line workers, where the real work is done, helps prevent unwanted incidents. Focus lies more on the situational features and less on the strategic features. This means that situational awareness helps adjustments to prevent errors from accumulating (Endsley, Hansman, & Farley, 1999). For this reason HRO's are aware of the fact that sensitivity to operations is closely linked to sensitivity in relationships. Personnel must trust that their scepticism is valued so they do not refuse to speak up for fear of reprisals. Reprisals in contrast to rewarding such behaviour could undermine the system because important information might be left out to effectively handle situations. A big picture of operations cannot be produced if information regarding the symptoms is withheld. A trustful, open, and good work environment are therefore key to safe operations.

The fourth principle is *maintaining capabilities for resilience*. The key here is that personnel do not view the organization as error-free but manage errors by learning from failures. In addition they provide their perceptions of the context so that errors are prevented from disabling the organization. In other words, they commit to resilience. Resilience is defined as 'the intrinsic ability of an organization (system) to maintain or regain a dynamically stable state, which allows it to continue operations after a major mishap and/or in the presence of a continuous stress' (Hollnagel, 2006, p 16). To do this, resilience demands a deep knowledge of the system, the technology, the people one works with, and oneself. Further, having a rich imagination of possible scenarios, including the worst case, is important for training and gaining cognitive skills (Weick, 2005). Training, in combination with personnel with deep and varied experiences and skills, are therefore viewed as a strength (Weick & Sutcliffe, 2007).

The fifth principle is *taking advantage of shifting locations of expertise*. To make use of the expertise in the organization they tend to empower those closest to the occurrence. To avoid the vulnerability that a tight hierarchy can lead to, they instead push decision making down and around. Decision making is placed on the front line and the focus is on listening to those with the best expertise, regardless of their rank. However, it is important to notice that experience is not equivalent with expertise. It is not necessarily the person with the longest experience that has the best expertise. Because businesses today deal with greater complexity, HRO's use diversity in expertise and skills as a strategy. This is not just because it helps them to notice more in an increasingly complex environment, but also because it is beneficial for the greater complexity at hand. Another aspect is to use the changing location of expertise to avoid deference (Sætren & Laumann, 2015). If one person's expertise leads to others un-nuanced trust, it could lead to hazardous accidents. For instance if the personnel trust the leader's ability to spot everything, the leader's expertise could hinder someone else from being alert and noticing something the leader missed. If then in addition the personnel are not being used and their opinions not appreciated, they probably will not be trained to look for errors either, and will therefore probably not spot them (Weick & Sutcliffe, 2007).

SUMMARY

The organizational change literature has to a large degree adopted a leader-centric focus on change processes (see for instance Armenakis & Harris, 2009; Cummings & Worley, 2015; Kotter, 1996; Oreg, 2003). The focus is mainly on transformational leadership and inspiring visions in addition to an employee-centric focus representing how employees makes their considerations regarding embracing or rejecting the change. It could, however, be questioned whether this is sufficient in high-risk industries where safety should be the main focus. In a high-risk industry, recent research showed that it could potentially be a safety hazard persuading the employees in believing it is a safe change instead of inviting them into the change process with their expertise (Sætren & Laumann, 2015). In the following, a discussion will be presented to show how safety could be ensured in organizational change by using the principles of HRO. Finally, a model will be presented for changes in organizations where safety is a focus.

DISCUSSION

When implementing organizational change, there are mainly two types of perspectives concerning how to make the change recipients change. As a change recipient, one is often either resistant to the change (Oreg, 2003, 2006; Thomas & Hardy, 2011) or willing to change (Herscovitch & Meyer, 2002; Wanberg & Banas, 2000). This terminology is relatively loaded where being resistant to change is related to a negative outcome while willingness is the key to success (Miller, Johnson, & Grau, 1994). Resistance to change is often mentioned as the reason why planned change processes do not go according to plan (Dent & Goldberg, 1999; Ford & Ford, 2009) and something the organizations must conquer (Furst & Cable, 2008; Harvard Business School, 2005). Strategies such as persuading change recipients and creating discrepancy in the work situation for employees are recommended in these theories.

HSE's (2003) guidelines for changes in organizations represent another view where safety is the focus and empowerment of the employees is central. This theory presents definite step by step actions that need to be taken to ensure safety during change. However, this guide lacks a theoretical presentation of why these elements should be conducted. The guidance says what to do, but is insufficient in explaining why. As a safety theory, HRO might provide an insight into why such actions are necessary. In this regard our research question is: Are prescriptive change theories/models adequate for organizational changes where safety is an issue? If not, could the HRO theory be used to ensure safety in change processes? In the following we will present why the theory of HRO could function as a reliable foundation for future changes in organizations.

Principle 1: Tracking small failures.

Traditional change theories promote making change recipients ready for change, for instance, by persuading them (Armenakis & Harris, 2009) and helping the change recipients address resistance to change (Cummings & Worley, 2015). This stands in contrast to, for instance, tracking small failures. By having a mindful structure of tracking small failures, management and employees question the processes that arise instead of being confident that they are right. HRO have not experienced all of the ways that their system can fail, however they work knowing that overconfidence might hinder good structures (Weick & Sutcliffe, 2007). They organize to encourage and reward behaviour such as reporting of errors (Rochlin, 1993). For instance, instead of preventing resistance to change by persuading the change recipients, the theory of HRO promotes questioning the process. Questioning would be appreciated and welcomed to broaden the information pool when decisions are being made. By enacting alertness, broadening attention, and forestalling simplifications, HRO do more or less the opposite of organizational change theories in many ways (Weick & Sutcliffe, 2007). Discrepancy is an example of such a factor that foster the opposite. Discrepancy is a factor mentioned by change theories to accomplish readiness for change (Armenakis & Harris, 2009; Cummings & Worley, 2015). If discrepancy does not already exist in the change recipients it is recommended by making the present situation uncomfortable as a strategy for reducing resistance to change and making the employees want to go with the change suggested by the management (Cummings & Worley, 2015). However, by creating uncomfortable situations to make employees willing to change could result in well-functioning structures being thrown overboard. Resilient actions enable recovery from setbacks and a strategy like this seems unlikely to accomplish this. According to HRO, organizations will benefit from instituting practices that encourage employees to report detected errors (Weick, Sutcliffe, & Obstfeld, 1999) because it will lead to more effective organizational learning (Rochlin, 1993). If the management is manipulating the context to make employees experience discrepancy to hinder resistance to change, it could be questioned if trust exists for employees to report errors that could prevent change processes from going wrong.

Principle 2: Resist oversimplifications.

Kotter (1996) stated that trying to change the organization without establishing a high enough sense of urgency in fellow managers and employees might hinder a good change process. Organizations typically overestimate how much they can force big changes and underestimate how hard it is to drive people out of their comfort zone. He further stated that driving people out of their comfort zone often produces even more resistance to change. However, by viewing resistance as a unilateral factor, important scepticism could get lost (Ford & Ford, 2009). To oversimplify the employee's critical regards in the process of change, their expertise in the everyday work situation might get overlooked (Weick & Sutcliffe, 2007). Traditionally organizations do not have a focus on what they ignore and simplify whereas HRO's tend to be restricted in this regard (Roth, 1997). Persuading employees and conquering resistance to change embraces simplifications that might not be beneficial. However, it is important to know that people do simplify in order to handle complex tasks, yet in order to resist important simplifications one can be more deliberate in the choice of what to simplify. Simplifications from the management in such complex situations such as a change process, are potentially hazardous because simplifications limit the number of consequences they should be envisioning (Weick et al., 1999). Where many

organizations make assumptions and socialise the members to ignore the same thing, HRO's organize to socialise the members to notice more (Xiao, Milgram, & Doyle, 1997) promoting organizational learning. Because HRO's promote a broad range of expertise, rather than conformity, a broad range of opinions might also be a part of the culture. With this heterogeneity, it is important to have high standards regarding interpersonal skills to promote a healthy climate for bringing out one's scepticism and reporting errors. This includes guidelines on how to behave respectfully like critiquing with the case and not the person in addition to not tolerating, for instance, bullheadedness, hubris and self-importance (Schulman, 1993).

Kotter (1996) further stated that too much success in the past makes it harder to change, and becomes a problem regarding getting ready, because it could foster too much complacency. The theory of HRO also accentuates the danger of too much complacency (Weick & Sutcliffe, 2007). Success produces confidence and for this reason is unfortunate for a safe change (Weick et al., 1999). However, the solution of establishing a sense of urgency might not be the optimal solution according to HRO. Instead the solution could be to establish a continuous questioning culture from which the organization draws benefits during a phase of change as well as during regular operations (Weick & Sutcliffe, 2007).

Principle 3: Remain sensitive to operations.

Traditional change theories emphasise that management needs to be involved in the change and to prevent groups and individuals from blocking it (Cummings & Worley, 2015). However, according to HRO, the organization would benefit from including all personnel and involve the front-line workers in mindful thinking. If the management has a change policy of persuading the personnel, it could indicate that they are not including front-line personnel. As an example, front-line personnel such as maintenance people are often those who come in contact with the largest number of failures at early stages of error development (Weick et al., 1999). To have access to their expertise during a change process might be important in order to be sensitive to operations. Further, by persuading change recipients to want to change (Armenakis & Harris, 2009), it could imply the management is asserting a view of the employees as not being the experts at what they do. The personnel might not perceive that their opinion of expertise is necessary to communicate and important information could get lost. In addition this might be seen in fostering trust and what behaviours are rewarded. It could seem that the traditional organizational change theories promote conformity from the workers rather than emphasising the actual operations. If conformity is the rewarded behaviour, this is most likely what the management will get (Siegrist, 1996). The diversity and sensitivity to operations through scepticism that the theory of HRO promotes to facilitate safety might be lost using a strategy promoting conformity.

Principle 4: Maintain capabilities for resilience.

When change theories emphasise elements such as overcoming resistance to change, making employees willing to change, persuasion, and staying the course to complete the change process (Armenakis & Harris, 2009; Cummings & Worley, 2015; Kotter, 1996; Oreg, 2006), it is challenging to find how they relate to maintaining safe operations and capabilities for resilience (Hollnagel, 2006; Weick & Sutcliffe, 2007). For instance, when describing the three phases of change (Lewin, 1999), Armenakis and Harris (2002) described the ideal first phase whereby the organizational members become its supporters. In the second phase, when the change is implemented one must be aware that employees still can reject the change. In the third phase, the changes are to become internalised and the norm in the organization. According to Armenakis and Harris (2009) it is the leader's task to communicate a consistent change message in order to overcome negative responses to organizational change. However, at no place during the three phases is there a questioning of whether the change is right or if the process or the change itself should be evaluated due to scepticism from the employees.

The theory of Armenakis and Harris (2009) is a framework for making employees ready to change, and the readiness consists of motivation to accept and institutionalise the change. Resilience, on the other hand, emphasises factors such as trust, inclusion, engendering a questioning atmosphere, and if necessary reversing the decisions made. These are structures that should have been established in the organization's culture and policy prior to the process of change to ensure high standard operations even during a change phase. The definition of resilience includes being able to maintain or regain operations after a mishap or during continuous stress (Hollnagel, 2006; HSE, 2003). For this reason resilience is closely related to a change process in an organization.

Principle 5: Taking advantage of shifting locations of expertise.

The leaders as the experts who persuade the employees is an attitude that prevails in the traditional organizational change theories which stands in contrast with this fifth principle. This is due to the benefit HRO's experience from pushing decision making down and throughout the organization to help overcome the complexity within the context they work (Weick & Sutcliffe, 2007). The importance of in-depth knowledge of co-workers'

competence, which was a main point in the fourth principle, is visible here too. The leader might well be aware of his/her own shortcomings but if the crew is not aware of it, deference and too much trust might turn out to be devastating (Sætren & Laumann, 2015). However, on the other hand, too little deference to expertise in lower ranked personnel might also contribute to accidents (Weick & Sutcliffe, 2007) and this seems to be a potential problem that can arise from the attitude the change theories demonstrate. In the complex context in which a change process often occurs, knowing what expertise exists and taking advantage of this, regardless of which rank it is to be found, is of importance to ensure a safe process of change in organizations.

The theory of HRO is not first and foremost a change theory, but because of the focus on preparing for the unexpected, new situations, and maintaining safe operations in hazardous and constantly changing contexts, it is applicable for changes in organizations. For this reason our change model is based on the principles of HRO to ensure safety throughout the process of changes in organizations.

Organizational change management model for high-risk industries.

The model consists of three main steps each including practical tasks: **1) getting ready** (policy, create a questioning culture), **2) mapping** (conduct human factors analyses, scenario testing, ensure resources), and **3) implementing the change** (continuously questioning and evaluating the process).
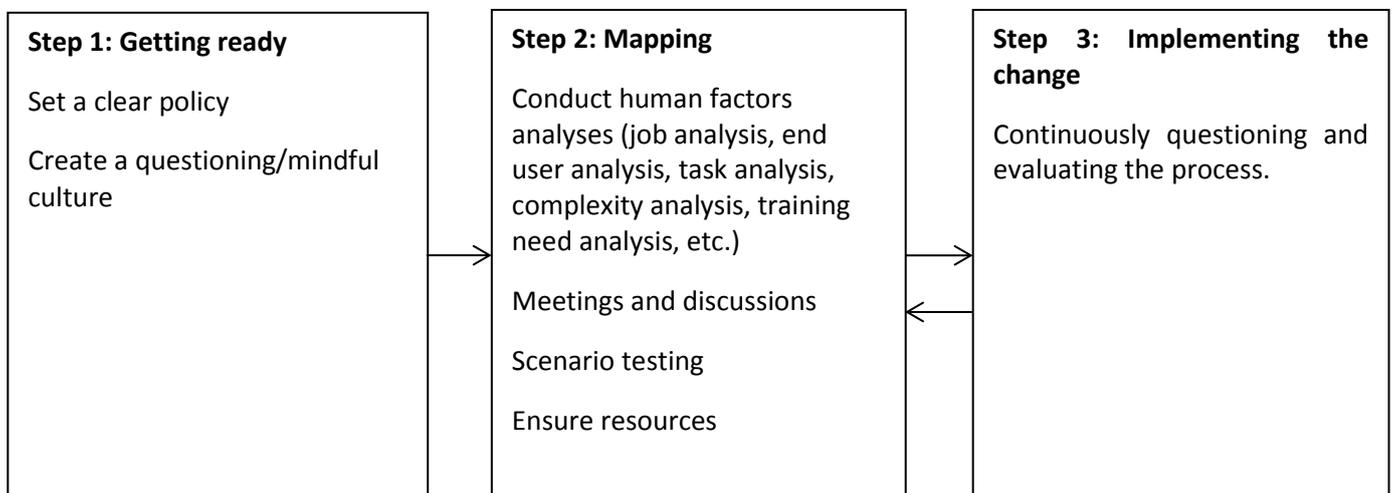
Step 1: Getting ready	Step 2: Mapping	Step 3: Implementing the change
Set a clear policy Create a questioning/mindful culture	Conduct human factors analyses (job analysis, end user analysis, task analysis, complexity analysis, training need analysis, etc.) Meetings and discussions Scenario testing Ensure resources	Continuously questioning and evaluating the process.

Figure 1: The steps of safe organizational changes.

Step 1: Getting ready

In order to deal with critical situations the organization depends on the structures that have been developed before the chaos arrived.

1. Create a clear policy which should include principles, commitments and responsibilities regarding management of changes in the organization. When a clear policy is settled, it is easier to develop strategies and to know how to act during unforeseen actions throughout the change process. Ideally this policy should be implemented for all changes, regardless of the size, because safety hazards could be an issue even for smaller changes. The reason for this clear policy is to prevent confusion as well as promote predictability and have a guideline when unforeseen events occur. As Weick and Sutcliffe (2007) stated, to manage the unexpected, one needs to understand how expectations work, and by having a clear policy these expectations could be built within organizational roles, routines and strategies and thus be guidelines for how to react in various situations.

2. Create an atmosphere where open questioning is promoted. It is important that the culture is mindful regarding safety. For this reason the organization will benefit from rewarding behaviour that promotes mindful acts. Part of this includes being aware of the processes that go on and to question what happens for the benefit of safety in accordance with the fourth principle of the theory of HRO: commitment to resilience. The atmosphere within the work group must be trustful and open to scepticism and discussions. To maintain an open atmosphere the management must behave this way too and reward those who act mindfully. This also involves strategies for reporting unwanted incidents

to ensure that personnel question their everyday work and resist oversimplifications according to the second principle of the theory of HRO. In addition, it is important for all levels of the personnel to take part in this questioning and diversity and scepticism must be rewarded in accordance with the third principle of the theory of HRO: sensitivity to operations.

Step 2: Mapping

To conduct a change process it is important that the current situation is clear. To map the situation and predict future situations will take time and resources, yet is perhaps the most crucial part of the change process because much depends on correct analyses.

3. Conduct human factors analyses: a broad user analysis and job analyses for all affected personnel is advised as a start. The paramount analyses are most important to conduct in the beginning and more detailed analyses occur later in the process. Identifying who is going to be affected by the change and how are important in accordance with the second principle of the theory of HRO: resist oversimplifications. Further it will be a strength in the change process knowing the co-workers, the technology, the organization, and oneself. By mapping the existing expertise, one acts according to the fourth principle of the theory of HRO, maintaining capabilities for resilience, by knowing who the expert is.
A task analysis, for instance, is of great importance to discover the main risks from the old to the new in a change process. To conduct a complexity analysis, however, means to identify all complexity within the change process affecting it. This could include changes that are happening simultaneously, the situation of subcontractors, and so forth. As the HSE (2003) stated, to outsource safety-critical work demands a high focus on remaining safe. This can be done by retaining resources to closely supervise the expertise and quality of the outsourced work and employees, remaining an intelligent customer by having an in depth knowledge of the system within the organization to judge the quality, and have contingency plans in case the contractor might not be able to maintain delivery of the work. Further, simultaneous changes within the organization could lead to overly complex situations which could be regarded as safety critical (Sætren & Laumann, 2015). For this reason, it is important to have control over all the changes and take them into consideration when human factors analyses are conducted and information is compared. To compare the information received during these analyses are a safety critical task in any change within organizations. Organizations much also check whether tasks or responsibilities have been overlooked or if tasks need to be completed simultaneously. Further knowing for certain the total workload of each individual and if there are other risks accumulated from the changes are important. Another important aspect to know is what training is needed and for whom. A training needs analysis is therefore recommended to ensure optimal expertise during and after the change.

4. Meetings and discussions to be sensitive to operations. These meetings should be conducted several times during the process and consist of a range of people with different expertise depending on what information is needed in the particular phase. It is important to resist simplifications in areas where it could be a hazard even though it is known that all people simplify. To avoid hazardous simplifications, according to the second principle, one can strive to be more deliberate in which simplifications are to be prohibited by thoroughly articulating which errors are not wanted. Because people tend to search for confirmation according to the expectations one holds, it is important to come together to discuss the contexts. This helps broaden one's perspective to avoid blind spots and prevent unexpected incidents (Weick & Sutcliffe, 2007). Having constructive meetings and discussions require sensitivity to relationships and to treat each other respectfully according to the third principle: sensitivity to operations. Being able to discuss and track small failures during the process, either regarding roles or tasks that do not overlap or regard technological safety aspects or others, will help in preventing a range of small errors coinciding and causing an accident in accordance with the first principle: tracking small failures. When selecting representatives from departments to attend meetings, the person(s) should be representative, and not necessarily the best. Representative representation is important to reveal where problems might arise.

5. Analyse future scenarios. Assessment of scenarios implies realistic, structured evaluations on how the new arrangements will act out. Anticipation is an important factor in HRO, and for this reason, the more creativity and more variation and more expertise one brings into different scenarios, the more scenarios one can think of. The more scenarios one is prepared for, the better one is prepared for unexpected things to happen in accordance with the first three principles of HRO. However, thorough

planning has its shortcomings as well. For instance, proper planning could result in mindlessness rather than mindfulness because they create a false feeling of everything being taken care of. Bearing this in mind is therefore important.

6. Ensure resources. Employees need to have the necessary resources to complete the change process. Having extra resources, including staff, in the change process is important to remember. It will require, for instance, questioning the process or extra meetings for discussions regarding the change process.

Step 3: Implementing the change.

7. Constantly checking and questioning the process and in the worst case being ready to change the decision or even reverse it.

CONCLUSION

By following these steps we argue that organizations will have a thorough focus on safety during changes. This is because by conducting the actions recommended questions such as, is this a good change, is it necessary, will it be feasible, does it contribute to a better and safer situation for the organization, and will it be safe to conduct, will be answered. We argue that it is not necessarily resistance to change that is the main reason why change processes go awry. It could also be because organizations are not organized for change. By implementing a mindful cognitive structure it could benefit the organization by increasing productivity and maintaining safe operations during change processes. However, we do not want to limit this step by step guideline to high-risk organizations only. Conducting thorough analyses and having a mindful culture could assist other businesses in successful changes too.

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