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Cleared for takeoff? A snap-shot of context for change in a high-risk industry

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Abstract

Civil aviation is a high-risk industry where actors are experiencing increasing focus on economic performance, greater international competition, and growing safety threats that require continual organizational adjustments. In this paper, we present the findings of a case study conducted within the Norwegian national air traffic management organization – Avinor, in preparation for a major reorganization initiative. In this study, we mapped the aggregated readiness and positioning for organizational change in the three main Air Traffic Control Centers (ATCC) in Norway using a mixed-method approach to Person-Environment Fit to help organizational leaders better understand each unit's positioning for change, and more specifically, individual preferences for change styles. The results suggest that participants at the different ATCCs had developed distinctly different change preferences at both the group and individual levels, and that each was distinctly different from the other units in their positioning and readiness for change.

Keywords

Organizational change, problem-solving preferences, Situational Outlook Questionnaire, VIEW, high-risk industries

Introduction

The 3rd of January, 2013, marked the 10-year anniversary of the kick-off of the failed organizational change process known as Take-Off 05 in the Norwegian national air traffic management organization – Avinor (Lofquist, 2008). The Take-Off 05 project collapsed suddenly in December 2005, after a turbulent change implementation process that led to the unexpected departure of the director of the air traffic management division, and was followed closely by the resignation of the CEO, and the replacement of the Chairman of the Board. The Take-Off 05 project was officially pronounced dead by the Norwegian government in the spring of 2006.

In this paper, we have mapped the readiness and positioning for a new round of organizational changes in the three main air traffic control centers (ATCCs) in Norway. These units were of particular interest as their actions during the previous organizational change process led to its premature collapse. Data were collected at both the individual and unit levels using two internationally accepted psychometric tools that have been developed over the past 50 years.

The civil aviation industry operates in a complex, dynamic-adaptive environment experiencing continuous change. Preparing for change in such an environment requires leaders that understand the dynamics and the history that have shaped the local climates of organizational units. Modern organizations, whether they be profit, non-profit, or governmental, must have employees that are ready, willing, and able to provide discretionary effort and initiative to work outside their routine job roles (Lofquist, Isaksen, & Dahl, 2017), and this is particularly true during organizational change. But studies have shown that individuals approach change in different ways and have distinct preferences for change styles (Selby, Treffinger, & Isaksen, 2014; Isaksen, Treffinger, & Selby, 2014). Here, the idea of change readiness, and how organizations position for change, is

vitaly important for the successful management of change implementation (By, 2007). However, others argue that measuring change readiness is a difficult task with few valid measures available (Shea, Jacobs, Esserman, Bruce, & Weiner, 2014). The intention of this study was to map the context for change, at both the unit and individual levels, to give leaders an insight into the organization's readiness for change, and enable them to adjust leadership approaches that would accommodate individual preferences for change at the different units. Despite By's (2005) call for more empirical research using valid frameworks to study organizational change management, few studies have emerged. This study follows the call for more empirical research by conducting an exploratory and descriptive research design using two psychometric tools to take a closer look into the relationship between the organizational work climate, and individual preferences for change.

Theoretical Framework and Conceptual Background

This case study relates to the broad areas of change management and organizational development. Change efforts fail more frequently than they succeed so positioning for change is important. Burke (2011) proposed a primary reason for the failure of organizational change by indicating:

“It is likely that the primary cause of organization change failure is the experience of having to deal with the consequences of initiatives and interventions that were unanticipated, surprising, and unpredictable. We plan change in a linear manner... but the implementation of change is nonlinear, and we are having to spend most of our time on dealing with unanticipated consequences, not what we thought the change was going to be or look like” (P. 154).

And this was also the experience from the failed Take-Off 05 project in 2006 (Lofquist, 2008). Burke (2011) also noted the importance of tackling the novel and complex challenges that function as barriers to the success of change through sensemaking and problem solving in order to sustain momentum. This active engagement between change agents and recipients of the proposed change can reframe the normal or accepted view of resistance to change (Dent & Goldberg, 1999; Ford, Ford, & D'Amelio, 2008). Lewin (1936), a founding force of the field of applied behavioral science, asserted that all behavior is a function of the interaction of people and their environment. This is one of the cornerstones of the domain of person-environment (P-E) fit which focuses on the compatibility between individuals and their work environment characteristics. While the majority of work done within the P-E fit area has focused on employment pre-entry (attraction) and post-entry (levels of satisfaction, stress, etc.) aspects of congruence, there have been calls for, and some progress on, integrating P-E fit and change management (e.g. Caldwell, 2011; Caldwell, Herold, & Fedor, 2004).

There is also a great deal of diversity, and some controversy, about how P-E fit should be conceptualized and measured (e.g. Edwards, 2008; Edwards, Cable, Williamson, Lambert, & Shipp, 2006). Some studies measure aspects of the person and the environment separately. Others assess the discrepancies between people and the environment either indirectly or directly. Some scholars use single measures of person and the environment. Others propose taking a multi-dimensional approach to assessment (Edwards & Billsberry, 2010).

Woodman (2014) and others (e.g. Straatmann, Kohnke, Hatrup, & Mueller, 2016) have argued that effective organizational change starts with valid diagnosis and should include extra-change factors. Herold, Fodor, and Caldwell (2007) highlighted the importance of moving beyond studying the change process or content, and focusing on contextual and individual

differences. Their research indicated that after controlling for aspects of the change itself, the interaction between context and individual differences explained significant variance in attitudes toward change.

This case study falls within the larger theoretical domain of person-environment (P-E) fit since we are focusing on examining aspects of individuals (people) and their work environment (place). In fact, this case provides an opportunity to link P-E fit with change management, apply two multi-dimensional measures, and explore the efficacy of these measures within a high-risk change effort. The aim was to examine the usefulness of these measures to see if they could identify implications for their productive application in future P-E fit research. Given the general lack of theoretical integration in much P-E fit research, and if these measures are found to be useful, it may be productive to link theories and measures of individual differences, with the streams of literature dealing with context, climate, culture, and work environment.

Place: Organizational climate and work environment

The degree to which employees are prepared for organizational change at work depends, in large part, on the work context, the type of change considered, and the history of the organization.

The deliberate study of organizational work environment, and its contribution to organizational performance, can be traced back to the late 1930's when Lewin, Lippit and White (1939) introduced the term "*social climates*" to the world of social science research. One of the key debates has focused on the difference between culture and climate (Denison, 1996). Schein (2010) describes organizational culture as the deep-seated and implicit underlying assumptions and values used as a foundation for individual and collective behavior in different contexts. As such, it is relatively stable and difficult to change. Organizational climate, on the other hand, is defined as the "*shared perceptions of, and the meaning attached to the policies, practices, and*

procedures employees experience and the behaviors they observe getting rewarded and that are supported and expected” (Schneider, Ehrhart, & Macey, 2013, p. 362). Climate is also affected by shared history, and will vary across organizational units. Ekvall (1996) described climate as the consistent perceived patterns of behavior that reflect the work atmosphere. Since climate is focused on behavior, it is more amenable to change.

For the purposes of this study, the focus was on organizational climate as it pertains to patterns of observed behavior, and specifically each unit’s positioning and readiness for change. Since organizational climate is generally assessed by requesting individuals to share their perceptions of behavior, it has its basis at the individual level of analysis. However, to create meaningful information at the group, team or organizational levels, the individual responses must be aggregated (Joyce & Slocum, 1984). Collective climates (those based on agreement) must meet several requirements for validity. They must evidence internal consistency, discrimination, and predictable relationships with appropriate criteria. A related issue within these compositional approaches to climate is the degree to which there is within-group variability (Schneider, Salvaggio, & Subirats, 2002), or climate strength.

Readiness for change is linked to creativity at the organizational level, where organizational creativity is defined as the generation of original and unconventional ideas or insights for products, services, procedures, and/or other outcomes that meet some relevant criteria of usefulness and value within a bounded, yet complex, social system. Bounded and complex social systems refer to entire organizations, divisions within these organizations, or project teams within divisions. As such, organizational creativity can be considered a pre-requisite to organizational change (Isaksen & Tidd, 2006). The climate for creativity and change is that which promotes the generation, consideration, and use of new products, services, and/or ways of

working. This includes structural reorganization and integration of new roles and tasks. Organizational climate is an intervening variable that affects individual and organizational performance due to its modifying effect on organizational and psychological processes. Organizational processes include group problem solving, decision making, communication, and coordination. Psychological processes include learning, individual problem solving, creating, motivating, and committing. These components exert a direct influence on the performance and outcomes in individuals, working groups, and the organization. This leads us to our first research question:

Research Question 1: Can we identify meaningful differences in climate dimensions amongst the three Avinor units that would affect change?

The conceptual model below (see Figure 1) illustrates the many factors within the broad construct of work environment that influence the climate for creativity and change at multiple levels of analysis for both people and place.



Figure 1: Work Environment for Change (Isaksen, 2017)

A large body of literature indicates that leadership behavior is one of the most influential factors within the work environment affecting climate (Carmeli & Schaubroeck, 2007; Sarros,

Cooper, & Santora, 2008; Schyns & Van Veldhoven, 2010). There is also strong support for the importance of leaders when managing change (Ahn, Adamson, & Dornbusch, 2004; Ekvall; 2007; Gill, 2003). During the Take-Off 05 project, and the years leading up to the current change, leaders at both the unit and top leadership levels have changed on numerous occasions, and the leadership styles of each were distinctly different. This leads to our second research question:

Research Question 2: Can we identify specific leadership behaviors across the three Avinor units that help or hinder change?

We were able to address this question by utilizing the narrative comments provided by the participants in response to three open-ended questions. These questions allow respondents to identify any of the aspects of the work environment that help or hinder innovation and change.

People: Preferred change style

In addition to historical event effects on climate, people experience the events in different ways and these events affects their personal attitudes and positioning toward change. There is a large body of individual difference literature, a subset of which focuses on linking these differences to the management of change (Choi & Ruona, 2011; Cunningham, Woodward, Shannon, MacIntosh, Lendrum, Rosenbloom, & Brown, 2002; Oreg, 2006) and organizational adaptability (Basadur, Gelade, & Basadur, 2014). There is a paucity of research that links individual differences, change and person-environment fit (Caldwell, 2011; Caldwell, Herold, & Fedor, 2004).

Individuals also have their own preferences for ways of solving problems (style), and these preferences differ across populations. Treffinger, Selby, and Isaksen (2008) defined problem solving styles as “...consistent individual differences in the ways people prefer to plan and carry

out generating and focusing activities, in order to gain clarity, produce ideas, and prepare for action” (p. 393). This definition is anchored within an individual or intrapersonal level of analysis as it encompasses a person’s consistent predilection from a psychological point of view, and includes both divergent (generating) and convergent (focusing) kinds of problem solving styles (Isaksen, Dorval, & Treffinger, 2011), or a sensemaking perspective of creativity (Drazin, Glynn, & Kazanjian, 1999; Maitlis & Christianson, 2014). This influences how individuals perceive and approach opportunities and challenges for change, creativity, and innovation influences their creative problem solving behavior.

The conceptual foundations of problem-solving style build upon learning style, psychological type, and cognitive style taken from contemporary theory and research on creativity, innovation, change management, and the psychology of the person (Selby, Treffinger, & Isaksen, 2014). The VIEW instrument is the result of the 30-year Cognitive Styles Project that aimed at improving the understanding of differences in learning and applying creative problem solving to change (Isaksen, 2004).

The investigators involved in the Cognitive Styles Project studied numerous models and measures of assessing individual differences and, consistent with other researchers, discovered a fragmented proliferation of theories and approaches (Kozhevnikov, 2007; Peterson, Rayner, & Armstrong, 2009). Three major constructs were identified, and included: learning style theory (Dunn & Dunn, 1978; Gregorc, 1985; Kolb, 1981), cognitive style theory (Guilford, 1986; Kirton 1976; Martinsen & Kaufmann, 1999), and psychological type and temperament theory (Jung, 1923; Myers & McCaulley, 1985; Vernon, 1973). These three constructs, and their related measures, emerged as the most salient in the developmental efforts for VIEW. The VIEW model and measure of problem solving style describes an individual’s preference specifically in relation

to dealing with complex, novel, and open-ended problems, and to managing change associated with these problem spaces. The model includes three bi-polar dimensions of problem solving style. Each dimension includes a continuum with clear descriptions of styles at each end (see Figure 2).

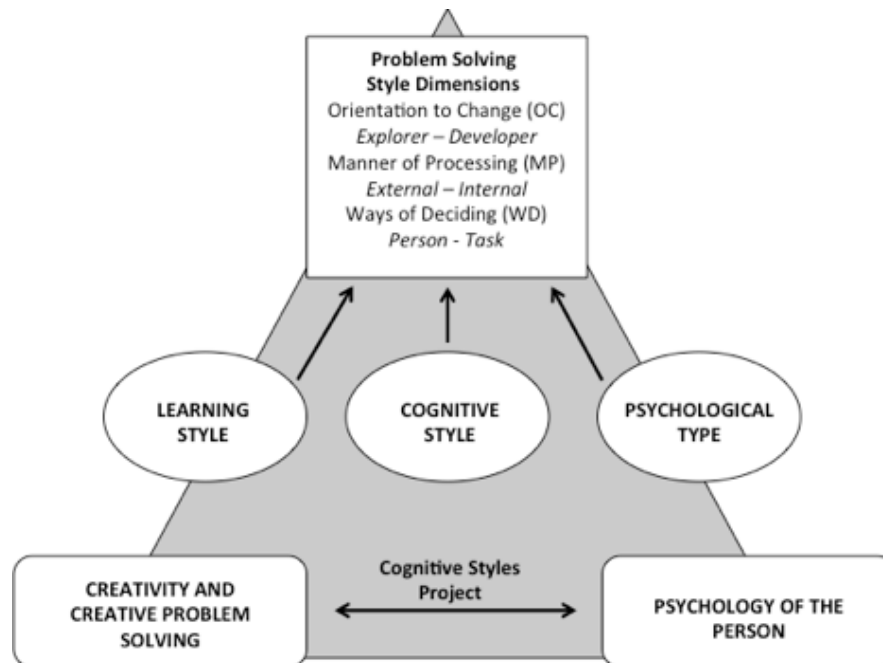


Figure 2: A Model of Problem-Solving Style

This leads to our third research question:

Research Question 3: Can we identify meaningful differences in preferred problem solving styles of individuals across the three Avinor units that relate to managing change?

Method

This section addresses the context of the study, explains the measures, and outlines the methodological and analytical issues.

Organizational context

Avinor is the Norwegian national air transport services provider in Norway, and was chosen for this study as it was preparing for a major restructuring of the organization, including a new business model for the three main Air Traffic Control Centers (ATCC) located in three separate regions in Norway. The leadership were concerned with how the organization was positioned to handle a new major organizational change initiative considering that it had experienced a major organizational change collapse in 2005, and this experience was still fresh in the minds of the air traffic controllers who were most affected by the Take-Off 05 project. Of particular interest to the leadership was to evaluate how the three ATCCs were positioned for change, and particularly, to what extent individuals were ready for change, and individual preferred change styles, so that change preparations could be customized to better prepare for the entire change process.

Avinor is responsible for both air traffic control within the Norwegian national airspace, and the management of 53 airports and accompanying services. The three ATCCs studied are located in Røyken (Oslo) located in southeastern Norway, Stavanger located in southwestern Norway, and Bodø located in the far north. Each of these units experienced the collapsed Take-Off 05 project in distinctly different ways due to major differences in the way the project was implemented, and this created different consequences for each unit. Røyken (Oslo) played a major role in the collapse of the Take-Off 05 project after the top leadership unexpectedly announced that they would close down the Røyken facility in 2004. This led to an immediate unplanned *work-to-rule* action that essentially closed down the entire Norwegian civil aviation airspace to both national and international civil aviation traffic for two days (Lofquist, 2008). Work-to-rule means essentially that employees only follow the rules specifically written in their

job description. For air traffic controllers, their job description says that they should not control aircraft if they feel unsafe. So all of the air traffic controllers on duty at the time of the closure announcement proceeded to clear all aircraft from the Norwegian national airspace as expeditiously as possible, and then refused to continue working for 2 days due to feeling unsafe to control aircraft after the distressing news of the closure decision. This action was later interpreted as the first shot in a “*war*” between the air traffic controllers and the leadership that ended in the sudden, and unexpected collapse of the Take-Off 05 project in 2005 (Lofquist, 2008).

Bodø, located in far north, was not closed, but instead absorbed the airspace responsibilities, and the forced relocation of 17 air traffic controllers, from the ATCC in Trondheim, Norway that was closed down early in 2004. And finally, the Stavanger ATCC in southern Norway remained relatively untouched during the Take-Off 05 project but were uneasy with their future role during the entire project (Lofquist, 2008).

Sample

The sample, that combined the SOQ and VIEW instruments, was distributed electronically to all of the air traffic controllers on duty at the three ATCCs in mid-June, 2013. Participation in the study was voluntary, but the air traffic controller union was particularly interested in the results of the two surveys. Unfortunately, due to internal delays, the distribution of the surveys fell into the middle of the common vacation period in Norway, and reduced the number of potential respondents significantly. Out of 80 possible respondents from the three ATCCs, 48 submitted responses to both tools (60%). The data was originally intended for distribution to both the union and the leadership, but after the cancellation of the change process, the data was only used for research purposes.

Measures

Place – The Situational Outlook Questionnaire (SOQ)

The Situational Outlook Questionnaire (SOQ) was designed to measure observed patterns of change behavior. Although the origin of the SOQ was the facet-specific area of organizational creativity, innovation and change, it has been applied to examine numerous other related constructs such as citizenship behaviors (Turnipseed & Turnipseed, 2013), well-being (Rasulzada & Dackert, 2009), collaboration (Bushart, 2015), and job satisfaction (Lofquist, Isaksen, & Dahl, 2018). The SOQ is a multi-dimensional/mixed-method measure that assesses nine dimensions of the climate for creativity, innovation and change, and three open-ended questions to allow narrative responses so that respondents can include other elements within the work environment that are functioning as helps or hinders, as well as suggestions for improvement. The SOQ consists of 53 closed-ended questions that quantitatively assess nine dimensions of climate. These are included in Table 1, below. Scores can range from zero to 300 for each of the dimensions.

Table 1 - Situational Outlook Questionnaire Dimensions and Benchmarks*

SOQ Climate Dimension	Definition	10 Innovative Organizations	15 Average Organizations	5 Stagnated Organizations
Challenge/Involvement	The degree to which people are involved in daily operations, long-term goals, and visions. High Challenge/Involvement implies better levels of engagement, commitment, and motivation.	213	190	163
Freedom	The degree of independence shown by the people in the organization. High levels of Freedom imply more perceived autonomy and ability for individual discretion.	210	174	153
Trust/Openness	The emotional safety in relationships. In high Trust/Openness situations people feel more comfortable sharing ideas and being frank and honest with each other.	178	160	128

Idea-Time	The amount of time people can, and do, use for elaborating new ideas. When Idea-Time is high people can explore and develop new ideas that may not have been included in the original task.	148	111	97
Playfulness/Humor	The spontaneity and ease displayed within the workplace. Good-natured joking and laughter and a relaxed atmosphere (lower stress) are indicators of higher levels of Playfulness and Humor.	230	169	140
Conflict	The presence of personal and emotional tensions (a negative dimension – in contrast to the debate dimension). When Conflict is high people engage in interpersonal warfare, slander and gossip, and even plot against each other.	78	88	140
Idea-Support	The way new ideas are treated. In a high Idea-Support situation people receive ideas and suggestions in an attentive and professional manner. People listen generously to each other.	183	164	108
Debate	The occurrence and open disagreement between viewpoints, ideas, experiences, and knowledge. In the Debating situation many different voices and points of view are exchanged and encouraged.	158	128	105
Risk-Taking	The tolerance of uncertainty and ambiguity. In a high Risk-Taking climate people can make decisions even when they do not have certainty and all the information desired. People can and do “go out on a limb” to put new ideas forward.	195	112	53

*Source for benchmarks: Ekvall (1996); Isaksen & Ekvall (2015)

In addition, three open-ended narrative questions are included at the end of the questionnaire allowing respondents to identify other important aspects within their work environment:

1. What aspect of your working environment is most helpful in supporting your creativity, innovation and change?
2. What aspect of your working environment most hinders your creativity, innovation and change?

3. What are the most important actions you would take to improve the climate for creativity, innovation and change in your working environment?

Previous studies have shown that responses to these open-ended questions provide added insight and can help better explain the quantitative results. In addition, responses often open new windows of understanding of organizational dynamics not included in the direct quantitative assessment of the nine climate dimensions which is how the SOQ includes information on the more general and inclusive work environment (Isaksen, 2009; 2013).

The SOQ has been shown to have adequate levels of internal reliability and stability over time (Isaksen & Ekvall, 2007; Isaksen, Lauer, & Ekvall, 1999), and has demonstrated a coherent internal factor structure reflecting the nine dimensions it is designed to measure (Isaksen, 2007; Porter, 2010; Sample, 2010). The SOQ has evidence regarding its relationship to other variables and measures. For example, the dimensions of the SOQ correlate significantly, and in expected directions, with the Survey of Creative and Innovative Performance (Puccio, Treffinger, & Talbot, 1995), an earlier version of KEYS - the Work Environment Inventory (Ryhammer, 1996), and to predict higher perceived levels of support for organizational creativity and innovation (Rasulzada & Dackert, 2009).

People – VIEW: An assessment of problem solving style

VIEW measures individual preferences and preferred style for creativity, innovation and change, and can be aggregated at the unit or organizational levels. VIEW is not an acronym, but the name of the model, and measure of three dimensions and six styles for change (Selby, Treffinger, & Isaksen, 2007). The **Orientation to Change** dimension of VIEW encompasses individual preferences for responding to, and managing, novelty, structure and authority, and search strategy when dealing with change or solving problems of a creative kind, and is anchored by

Explorer and **Developer** styles. Those who prefer an Explorer style seek to break new ground and venture into uncharted territory. They enjoy considering many original and unique challenges, ideas, and possibilities. Explorers are likely to feel constrained by structure and external sources of authority and prefer to search broadly for alternatives and information. The Developer style prefers to organize, synthesize, refine, and more fully settle existing or known territory. Developers feel more comfortable considering fewer familiar and accepted challenges, ideas and alternatives. They are encouraged and enabled by dealing with structure and sources of authority, and prefer to search more narrowly for ideas and information, particularly if they are useful and more traditional. The assessment scale within VIEW for Orientation to Change consists of 18 items and scores can range from 18, showing a strong Explorer preference, to 126 showing the strongest Developer preference. Each item is scored on a seven point scale.

The Orientation to Change dimension consists of three sub-scales or elements that contain five items each with ranging from 5 (indicating more of an Exploratory preference), and 35 (indicating a Developer preference). The first of these, called **Novelty**, considers how people prefer to deal with originality or novelty when facing problems and change. Explorers tend to prefer fundamentally new options that emphasize uniqueness. They prefer to be open to spontaneity as they forge new pathways. Developers tend to prefer improvement of existing options, emphasizing usefulness. They tend to prefer gradual change that extends existing pathways.

The second element is called **Structure** and **Authority**, and focuses on how people prefer to recognize and respond to structure and authority when solving problems or dealing with change. Explorers prefer autonomously developing their own structure, allowing them to define their own individual approach. They tend to assume approval and prefer to have their source of

authority at a distance. They prefer loose, permeable boundaries. Developers tend to be enabled by external structure that provides them clear direction for their efforts. They prefer to have their source of authority close by to allow for approval as they work. They tend to prefer clearly defined boundaries.

The third sub-scale or element is called **Search Strategy**, and addresses preferences for dealing with openness and closure when solving problems and managing change. Explorers tend to search broadly, exploring without limits. They tend to be open to a wide variety of resources. In a sense, they either ignore or look outside “*the box*.” Developers prefer a more focused search for alternatives, working creatively within limitations. They tend to target their search for relevant resources. In a sense, they prefer to improve or enlarge “the box.”

The **Manner of Processing** dimension focuses on preferences for how, and when, individuals use their inner energy and resources (and those of others or from the environment) while processing information when managing change or solving problems, and is anchored by **External** and **Internal** styles. Those who prefer External processing are energized by interaction when facing creative challenges and opportunities. They seek input openly from a variety of others, and their thinking will likely be modified as more input is obtained. Externals freely share their thoughts and perspectives early with others in order to seek their opinions and reactions so that their own thinking can be influenced. Those with Internal preferences are energized by reflection and look more to their inner thoughts when engaged in creative kinds of problem solving. Internals prefer to share their thoughts after they have had sufficient contemplation and consider their thinking finished. The assessment scale within VIEW for Manner of Processing consists of eight items and scores can range from 8, showing a strong

External preference, to 56 showing the strongest Internal preference. Each item is scored on a seven point scale.

The **Ways of Deciding** dimension of VIEW refers to dispositions of individuals in balancing concerns for tasks and interpersonal needs when focusing, making decisions, or taking action and is anchored by **Person** and **Task** styles. Those with a Person-oriented preference consider the level of harmony or impact on relationships – the human impact – of their decisions and actions as a key priority. They tend to be holistic when considering alternatives – they do not tend to separate people from their ideas. As a result, they prefer to give feedback that is softer or more caring. Their preferred standards for making decisions include: likely level of agreement, feelings, and more subjective criteria. The Task-oriented decider tends to give the highest priority to obtaining a high-quality outcome or result. They tend to separate people from their ideas when considering options and, as a result, they are inclined to be cooler or more critical when providing feedback. Task-oriented deciders prefer to apply reason, logic, analysis, and objective criteria as their favored standards. The assessment scale within VIEW for Ways of Deciding consists of eight items and scores can range from 8, showing a strong Person preference, to 56 showing the strongest Task preference. Each item is scored on a seven point scale. VIEW dimensions and Norms are depicted in Table 2.

Table 2 – VIEW Dimensions and Norms*

VIEW Dimension	Definition	Mean Range	Standard Deviation
Orientation to Change (OC)	Preference for perceiving and managing information when dealing with change; anchored by two styles: Explorer (18) or Developer (126)	74.5 18-126	15.7
<i>Novelty OC Subscale</i>	Preference for dealing with originality when managing change – Explorers emphasize fundamental new options, Developers prefer improvement of existing options.	19.1 5-35	5.6

<i>Structure/Authority OC Subscale</i>	Preference for dealing with structure and authority when dealing with change. Explorers prefer more autonomy and less structure; Developers prefer clear direction and defined boundaries.	20.1 5-35	5.4
<i>Search Strategy OC Subscale</i>	Preference for openness and closure when dealing with change. Explorers prefer searching broadly without limits; Developers prefer to search more deeply and more focused.	21.9 5-35	5.5
Manner of Processing (MP)	Preference for use of inner energy and resources, and that of others when managing change or solving problems. Anchored by two styles: External (8) or Internal (56)	29.4 8-56	9.1
Ways of Deciding (WD)	Preference for task concerns or personal and interpersonal needs when focusing thinking and moving toward decisions and actions. Anchored by two styles People (8) or Task (56)	35.2 8-56	8.3

*Source for Norms: Treffinger, D. J., Selby, E. C., & Isaksen, S. G. (2014). N=44,802.

The SOQ and VIEW results, taken together, may give leaders a better understanding of the existing context for change at each unit assessed, and allows leaders to build upon this knowledge to better address and implement change processes.

Results

Quantitative results

SOQ Results - The Situational Outlook Questionnaire (SOQ) was used to map the overall norms within the organization at both the aggregated and unit levels. Before conducting the one-way ANOVA, a nine (number of SOQ dimensions) by three (number of Avinor units) MANOVA was applied in order to reduce the likelihood of a Type I error when examining the differences in the means. For this sample, there was a significant interaction, Wilks' $\Lambda = .012$, $F(9, 33) = 305.7$, $p < .0001$. The Partial Eta Squared for this result was .99. We then conducted one-way ANOVA for the nine dimensions against the means for each of the three units. Only

two SOQ dimensions yielded significant differences. The first was found for the Idea-Support dimension. Stavanger had significantly higher levels of Idea-Support ($F(2) = 4.98, p < .012$). The Partial Eta Squared for this result was .195. The second finding was in Risk Taking where we found large gaps between the units where the global mean was 119, and where Bodø (141), Stavanger (112) and Røyken (88), respectively. Further, we found support for aggregating the climate results by unit with average r_{wg} 's for Bodø, Røyken, and Stavanger of 81.2, 90.3, and 88.8, respectively. The results are presented in Table 3 below.

Table 3 - Situational Outlook Questionnaire Results for Avinor

Dimension	Aggregate (N=44)			Bodø (N=19)			Røyken			
	Mean Alpha	SD rwg	Range	Mean rwg	SD	Range	Mean rwg	SD	Range	Mean rwg
Challenge Involvement	208 .85	44 .92	71-300	207 .91	50	71-300	196 .94	38	157-271	218 .93
Freedom	162 .63	45 .88	50-250	164 .88	42	100-250	175 .84	53	100-250	151 .88
Trust Open	173 .85	66 .83	0-300	174 .58	81	0-300	168 .89	52	60-240	177 .81
Idea Time	112 .88	53 .88	0-283	115 .88	63	0-283	85 .94	43	33-183	126 .94
Play Humor	209 .86	53 .90	100-300	227 .89	57	100-300	188 .94	37	117-233	199 .91
Conflict	74 .91	72 .88	0-283	78 .65	83	0-267	80 .90	50	33-200	66 .83
Idea Support	142 .90	63 .89	0-300	132 .77	73	0-300	108 .91	55	20-200	179 .95
Debate	199 .85	52 .80	100-300	196 .93	48	100-300	193 .89	52	100-283	207 .89
Risk Taking	119 .54	46 .88	40-280	141 .82	50	40-280	88 .88	30	40-120	112 .85

VIEW Results - VIEW is a tool that assesses how people prefer to address problems in three different areas: orientation towards change, manner of processing, and ways of deciding. Since the MANOVA results were insignificant for the VIEW results across the different business units,

we did not pursue ANOVA to identify which VIEW dimensions upon which there were statistically significant differences. Instead, we took a more informal approach of examining for meaningful differences in the distributions across the units. In order to accomplish this, we used the general norms and Standard Error of Measure (SEm) for the VIEW dimensions. Since different people responded to VIEW than to SOQ, we treated the respondents to VIEW as an independent sample. As a short summary, on *Orientation to Change* we found that Avinor, as a group, are generally more Developer-oriented than the general population. The only interesting difference was for Bodo – showing a slightly different preference for more Exploratory approaches to novelty. For *Manner of Processing* – the results for Avinor were similar to the norms showing a spread between External and Internal preferences. The only interesting difference in the distributions was identified for Røyken which had a slightly more External orientation. And for *Ways of Deciding* – the Avinor results indicated a slightly more Task-Oriented preference than the norms. The exception was for Stavanger, for which the distribution was more People-oriented than the other two units. Based on the results of nearly 45,000 respondents described earlier, the Avinor aggregated results are compared and presented in Table 4, below.

Table 4 - VIEW Results for Avinor

Dimension	Alpha This Sample N=48	Aggregate N = 48 Mean Range SD	Bodø N = 19 Mean Range SD	Røyken N = 12 Mean Range SD	Stavanger N = 17 Mean Range SD
Orientation To Change	.86	86.75 52 – 111 13.1	85.63 67 – 107 12.0	87.75 52 – 111 15.2	87.29 61 – 110 13.3
<i>Novelty</i>	.83	23.65 5 – 34 5.3	22.58 5 – 34 7.2	24.08 18 – 29 3.2	24.53 17 – 32 3.9
<i>Structure</i>	.73	21.65	22.16	21.75	21.00

<i>Authority</i>		7 – 31 4.9	15 – 28 3.6	7 – 29 5.8	9 – 31 5.6
<i>Search Strategy</i>	.61	25.10 17 – 34 3.9	24.68 19 – 31 3.3	25.67 18 – 34 4.7	25.18 17 – 31 4.2
Manner of Processing	.91	29.15 8 – 46 9.2	29.42 8 – 45 9.6	27.00 12 – 40 9.5	30.35 15 – 46 8.7
Ways of Deciding	.77	38.52 27 – 54 6.9	39.47 28 – 53 10.1	39.67 30 – 54 9.5	36.65 27 – 46 5.5

Qualitative results

The qualitative responses from the SOQ were first translated from Norwegian into English using a collaborative and iterative translation technique (Douglas & Craig, 2007) between two multilingual, mother-tongued researchers, and then the sample was divided into three categories: helps, hinders and improvements in relationship to creativity and change. Responses were then open coded using Nvivo 11. Coding results were then compared and merged into common themes. The top themes were then compared and contrasted in each category. Tables 5, 6 and 7 below present comments about Leadership which dominated the qualitative comments.

Factors that help - Leadership has been a continuous issue for air traffic controllers in Norway since the transition from the government administrated Luftfartverket in 2003, to the government-owned, private company, Avinor. Leadership at the line and middle manager levels has changed often during the past years. Local leaders have received positive results but conflicts with the top leadership are still a problem as reflected in Table 5.

Table 5 – Factors that Help (Leadership)

FINDING	PLACE	QUOTES
Leadership	Bodø	- The local leadership tries to raise group belonging and loyalty by inviting employees to participate in different social activities.
	Røyken	- Local leadership.

	Stavanger	<ul style="list-style-type: none"> - Nothing, we are tired of "leaders" that have no idea about what we do and worsen safety that w they rationalize and economize by hiring several bureaucrats and BI-economists when we actur operators out in the units. - Our closest leader is good. Good communication and cooperation at all levels.
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Factors that hinder - Leadership is important for safe performance in high-risk industries, and uncertainty about knowledge and support leads to lack of trust. Table 6 reflects a great deal of skepticism and doubt about the value of the current leadership.

6 – Factors that Hinder (Leadership)		
FINDING	PLACE	QUOTES
Leadership	Bodø	<ul style="list-style-type: none"> - Lack of knowledge/understanding, and lack of decision making by the central leadership. -All of the leadership - There is always conflict between the operative personnel and the leadership concerning the risk level versus costs. In addition, I often believe the units is often overridden by the “geniouses” in the HQ. As always, new management: history repeats itself. - unclear guidance from the central leadership
	Røyken	<ul style="list-style-type: none"> - Continual reorganization and a general lack of continuity in leadership positions in Avinor’s central leadership creates an inability to act and a wavering strategy. - Leader direction without anchoring those who will be affected most by the changes. - Little to no trust of those who decide and implement changes. - Too little communication and contact with leaders creates a hinder regarding changes.
	Stavanger	<ul style="list-style-type: none"> - Lack of continuity and stability in the middle manager level of the company. - Lousy "leaders" that hire more economist and bureaucrats in the most expensive offices in Oslo instead of hiring those that can actually contribute value to the organization. - The “leadership” choses the path of least resistance. Because of this there is a feeling in the environment that no matter what type of pre-studies are conducted in preparation for decisions or changes being made, the leadership will always find bombastic arguments without concrete or specific measurable figures that can justify a decision that they have, in effect, already decided is the only acceptable way.

Actions to Improve - However, it is also clear that the value of good leader is understood, and organizational members believe leadership support is important to improve the current situation as evidenced in Table 7.

Table 7 – Actions to Improve (Leadership)

FINDING	PLACE	QUOTES
Leadership	Bodø	<ul style="list-style-type: none"> - To have open discussions and that leaders play with open cards. One does not completely know what they are out after. - We need a broader competence level in the central leadership. - Get rid of the middle managers in the unit. - I do not believe the great direction that the leadership is planning without it creating confusion for “us on the floor.” We have to clean up the mess they initiate. - It is dangerous with so many fresh people in central positions right now. They are making a great effort but they do not have the experience to do the right things yet
	Røyken	<ul style="list-style-type: none"> - Greater continuity within the central organization and that one takes the time to implement planned changes over time. - More planned meetings or adhoc/informal discussions between the leadership and employees on a one-to-one level, and where the leadership takes the time to talk to each individual. - I experience quite a great distance between the units out in the outer regions and the central leadership in the HQ.
	Stavanger	<ul style="list-style-type: none"> - That our leaders are more visible and communicate more and better with the employees. - That the leaders show a general interest in the employees as persons/people, not just as numbers that will contribute to making money. - Fire at least half of top leaders and replace with leaders that actually understand what the organization actually does – Air Traffic

Discussion

Positioning for change in complex environments, particularly in companies with a history of change resistance, is critical for change success where research has claimed that 70 percent of change processes result in failure (Beer & Nohria, 2000; Kotter, 2008). So, how does an organization that has experienced change collapse approach change? In this paper, we have used a combination of assessments to look at the readiness and positioning for change, and change style preferences, of three air traffic control centers in preparation for a new round of strategic organizational changes.

Climate Dimensions – Our first research question focused on examining the climate dimensions of the SOQ. Would we observe meaningful differences amongst the climate dimensions across the three units? The aggregated climate results provided a mixed picture for Avinor. Scores

were close to the innovative organizational norms for Challenge and Involvement, Trust and Openness, Playfulness and Humor, Conflict, and Debate. Scores were closer to the average organizational norms for Idea-Time and Risk-Taking; and closer to the stagnated organizational norms for Freedom and Idea-Support.

We did observe some interesting differences across the three Avinor units which was expected due to the different outcomes that each unit experienced during the Take-Off 05 project. For example, we found that for challenge and involvement, Avinor, at the aggregate level, is rather innovative compared to the industry benchmarks, but that internally there is a large difference between Røyken and Stavanger. An explanation for this could be that Bodø, in the far north of Norway, is co-located with a major military fighter base, and is routinely challenged with NATO military exercises. Stavanger, on the other hand, was the unit that experienced the least disruption during the Take-Off 05 project, but also geographically separate from the HQ. In addition, Stavanger, located next to the major oil activities in the North Sea, focussed on completely different air traffic patterns, particularly helicopter operations from offshore oil rigs (Lofquist, 2008).

There were significant differences amongst the three units on Idea-Support, with Stavanger scoring the highest. As mentioned earlier, Stavanger was the unit least affected by the Take-Off 05 project, and experienced the least disruption to operations. It was also the unit where the local management structure remain relatively stable. Bodø, on the other hand, was the unit that had to absorb 19 air traffic controllers from the closing unit of Trondheim, and this merger was not completely a happy one. Within three years, only three of the original Trondheim air traffic controllers were still in place (Lofquist, 2008).

In addition, significant differences were found on Risk-Taking (the tolerance for uncertainty and ambiguity). Unlike other industries, civil aviation is probably an area where Risk-Taking is not a desirable quality. However, Bodø scores significantly higher on Risk-Taking than the other two units. As already mentioned, Bodø is co-located with a major military fighter base and is actively engaged in NATO planning and operations. Bodø is also the unit located furthest away from the main HQ in Oslo. Røyken, on the other hand, located near the Oslo HQ, is actively engaged in numerous European aviation change initiatives that are highly political. This meant that there were more air traffic controllers directly linked to the future changes of the European airspace structure and operations, and required a great deal of external interaction with European civil aviation authorities.

We also found that across the board, Avinor scored very low on conflict, but this varied greatly in the individual units. For example, Røyken scored much higher than Stavanger. Røyken was the unit that was most openly resistant to the Take-Off 05 project, and directly contributed to the Take-Off 05 collapse, while Stavanger experienced the least conflict during the change process. This was also reflected in the leadership comments from the qualitative responses in the SOQ that were distinctly different at the two sites. Røyken (Oslo) scored differently from the other two units in several areas. One explanation is that Røyken is located just outside of Oslo, near the Avinor headquarters, and has a greater interface with European agencies on a daily basis due to the proximity to the European airspace border and has a highly visible strategic position.

Leadership Behaviors – Our second research question focused on whether or not we could identify specific leadership behaviors for each of the Avinor units that had implications for managing change. One of the most interesting findings from the qualitative responses in the

SOQ was the universal focus on leadership. But as observed in Tables 5-7, the tone and content regarding leadership at each unit was distinctly different due mostly to the vastly different change experiences and stability of the local leadership. Stavanger had a positive experience to the local leader, but extremely critical of the middle and top leadership. This was also reflected in the other units. In particular, all of the units were critical of the top and middle management claiming poor communications and continual changes creating uncertainty.

Problem-Solving Style Differences - Our third research question focused on examining individual differences in problem solving style. Based on the results of VIEW, each unit demonstrated its own particular preferences for change, probably due to local climate conditions, leadership rotation, and prior experiences with change processes.

For **Orientation towards Change** - The results of nearly 45,000 respondents produced an observed mean of 74.75 based on a theoretical mean of 72. Avinor scored 86, demonstrating that Air Traffic Controllers, as a group, tend to share a developmental preference, and this was relatively consistent across units. This is not unexpected considering the nature of the environment and the potential for disaster. This implies that they prefer change that is structured and that produces improvement that is more incremental. The results on three sub-scales or elements provided deeper insight on: novelty; structure and authority; and search strategy.

Novelty - With a theoretical mean of 20, and an observed mean of 19.2, people within Avinor at 23.65 tend to prefer developmental novelty or originality. They want incremental improvement and gradual change, and where usefulness and relevance are important. Here we do see differences between the units where Bødo (22.6) tends to have a more exploratory orientation, and appears to be more open to disruptive novelty than Stavanger (24.5) or Røyken

(24.1). These differences have already been addressed, and each is related to the level of disruptive change experienced and the geographical positioning related to the HQ, and types of operations: military exercises in the north, offshore helicopter operations in the west, and international structural changes in the east.

Structure and authority - With a theoretical mean of 20 and an observed mean of 20.1, people within Avinor (21.65) again appear to show a slight developer preference. This implies they prefer to have detailed descriptions, guidance, and boundaries about the changes they face. Further, they prefer to have their supervisors and leaders close at hand to ensure the changes they consider are appropriate.

Search strategy - With a theoretical mean of 20 and a normed mean of 21.9, people within Avinor (25.1) tend to lean strongly toward the developer preference. When they search for alternatives, they prefer depth over breadth – attempting to enlarge the box of knowledge and focus on relevant change. They want change processes that are detailed and clear. The process needs to be thorough, and they need to see the relevance to the mission.

Manner of Processing - With a theoretical mean of 32 and an observed mean of 29.52, people within Avinor (29.15) are mixed in this area. This dimension explains how people like to process data, either through external exchange or internal processing. In fact, the spread within Avinor reflects a great deal of diversity and ranges from extreme external to strong internal preferences. There were some interesting differences across units where Røyken (27.0) exhibits more of a tendency toward external processing, while people in Stavanger (30.4) preferred more internal processing indicating thoughtful and reflective preferences. Røyken was the unit that experienced the most specific uncertainty, i.e. they were proposed to be shut down. This created a combative environment where discussion regarding the future were a major theme. Stavanger,

on the other hand, knew nothing of future plans that might affect them and this created a wait and see atmosphere.

Ways of Deciding - Ways of deciding preferences are focused more on the person or the task. With a theoretical mean of 32 and an observed mean of 35.2, people within Avinor (38.52) appear to be more focused on the task-oriented ways of deciding. This is again to be expected for the type of tasks required of air traffic controllers. The task-oriented preference requires logical and rational decision-making processes based on objective criteria, and maintenance of standards. One exception is people within Stavanger who tended to show a stronger preference toward the person-oriented deciding – where harmony is and maintaining good interpersonal relationships are important. This also indicates a preference for agreement in solutions.

Stavanger had significantly higher scores on the climate dimension of Idea-Support and lower scores on Conflict. The observation that individuals within Stavanger scored more people-oriented on the Ways of Deciding dimension of VIEW may suggest meaningful interaction between people and place. Again, in Stavanger, the future was relatively safe but uncertain, and the local leadership remained relatively stable. Also, unlike the other units that experienced internal disruptions (Trondheim ATCs in Bodø, and open conflict with HQ in Røyken), Stavanger remained relatively unchanged.

Implications for Research and Practice

Though this study was based on a small sample, the amount of data produced was quite rich, and gave thought-provoking insight into an area of increasing interest – readiness and positioning for change. The mixed-method approach proved helpful in detailing impressions from the quantitative results for both the SOQ and VIEW instruments. Clearly the results are not generalizable to other organizations, though they did provide interesting insight into the

organization we studied. Understanding that people are different, even in tightly integrated units, is a key takeaway. And though the results of the SOQ and VIEW only gave a snapshot of the organization at one point in time, it revealed many potential challenges and potential pitfalls for change implementation, and raised questions for future research and practice.

As Yin (1994) outlined, case studies are designed to inquire about contemporary phenomenon within a real-life context, particularly when the boundaries between these phenomenon and the context are ill-defined. As such, this case suggests a number of key implications and issues for managing change in high-risk organizations. Behavior is a function of people and their environment – The two assessments applied in this case provided meaningful insights regarding the readiness, willingness, and ability to deal with organizational change. The fact that the SOQ focused on the work environment and the VIEW focused on people’s problem-solving style ensured that both people and their environment (place) were examined. But this also raises several key questions regarding tools:

- What might other measures of work environment and individual differences add to the understanding of readiness for change?
- How do individual histories within organizations create completely different local contexts for change?
- Does location and relationship to the power structures within organizations contribute to different unit-level differences, and how can these be accommodated?

Understanding and appreciating individual differences – There were clear and compelling differences across the units in this case. This implies that taking a one-size-fits-all, and top down approach to managing change, will have major challenges in acceptance and implementation.

This raises several questions for leaders:

- How might leaders take the time and energy to discover meaningful differences among constituencies who are targets for change?
- Is fairness about treating everyone the same?
- If not, what key differences in the local environment contributes to differences in preferred change style? In this case our units are located in three distinctly different regions of Norway with distinctly different histories, both on the national level, and through different experiences in prior changes within the organization.

Mixed methods provide depth and breadth – When it comes to managing change, it is useful to have measures that can be compared to norms quantitatively, and to be able to dig deeper by using qualitative approaches.

- How might these two research paradigms be better integrated in managing change?
- What do leaders need to know about the differences in people and place to customize change initiatives?
- What are the key game-changers when introducing strategic level change, and are they different within different units? In this case, we found that air traffic controllers are essentially developers where control and moderation in change is not only important, but critical for implementation success. However, we also found that the level of difference between units was meaningful.

Leadership's role in managing change – This case underscores the importance of the leadership's role in managing change. The results indicate key challenges for leaders when distinctly different change context results require different leadership approaches:

- How flexible does a leader of change really need to be?

- What leadership behaviors are more likely to provide an environment more ready for change?
- What leadership behaviors are more likely to create conditions in which a diversity of problem solving styles can be leveraged?

Digging deeper – Applying these insights to enable problem solving aimed at dealing with unanticipated issues and concerns. As Burke (2010) has pointed out, change efforts often fail due to the emergence of unanticipated consequences. He suggested problem solving be focused on addressing these issues.

- Can problem-solving preferences help guide the kinds of methods and tools to be applied for any particular type of problem?
- What is the relationship between problem-solving style and sensemaking?
- Do individual histories at the unit level need more investigation?

Limitations and future research – Both VIEW and SOQ provided meaningful implications for understanding some of the key dynamics of change within this Avinor case. Given the small sample size and other considerations, no examination was undertaken to understand the interaction and relationships between the two measures. Further research should examine these relationships to better understand the potential implications of people who have diverse problem-solving styles and their desired climate, as well as how these differences may affect the change process. As such, these assessments may have potential value in continuing to approach the P-E fit area of inquiry.

Case studies can often help identify productive pathways for future research and inquiry. Future studies should include a larger sample size that includes different organizational types for comparison purposes. It would also be useful to administer the tools over time to see how units develop, and whether the climate is stable or variable overtime.

Conclusion

Through the results of the SOQ and VIEW instruments, we have demonstrated the potential value of understanding how individual units within an organization can be positioned differently at both the people and place levels for change, even when considering units that look similar on the surface. Unfortunately, we were unable to demonstrate specifically through use of the information as the change initiative was later terminated.

Van Vianen (2018) called for incorporating new theoretical and methodological approaches from other research domains into future P-E fit research. The two assessments utilized within this case, and their underlying theories, may offer new ways of understanding fit. They could be applied to help change leaders become more follower-focused as well (Caufield & Senger, 2017).

For our first research question, we found that the three ATCC climates were quite different, and this was not surprising considering the different experiences during the Take-Off 05 project. For our second research question, we identified that “one-size-fits-all *leadership*” for this type of organization would have encountered resistance at many levels as it did in 2005. And for our third research question we found distinct differences in problem solving preferences but these could only partially be explained by location and events, and where predisposed preferences were less understood. This emphasizes the importance of understanding the concept of “*people and place*” when considering change processes. Each of the units studied had developed differently, over time, due to differences in historical developments and changes in leadership. This requires a leadership approach that understands that people are different, and that they can customize and modify their actions to engage individuals differently based on change preferences. This also allows leaders to create what Rafferty, Jimmieson and Armenakis (2013)

have termed “*change readiness*” based on a multilevel framework (p. 110). In the end, the change initiative in Avinor was aborted as the leadership realized that the units were not Cleared for Takeoff.

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