On the Validity of M-SWOT for Innovation Climate Development

Thomas Hoff\textsuperscript{1}, Ellen Flakke\textsuperscript{2}, Anne-Karin Larsen\textsuperscript{3}, Jon Anders Lone\textsuperscript{1}, Cato A. Bjørkli\textsuperscript{1} and Roald A. Bjørklund\textsuperscript{1}

\textsuperscript{1}Department of Psychology, University of Oslo
\textsuperscript{2}Department of Leadership and Strategy, University of Southern Denmark
\textsuperscript{3}Mercuri Urval, Norway

Abstract

The idea behind M-SWOT is to assess the organization by way of mapping the participants’ responses to open and general questions onto specific, research based models in a particular domain; in this case innovation climate. The present article attempts to conceptually validate SWOT by way of providing a link to the Organizational Climate Measure (OCM), and to demonstrate discriminatory validity of SWOT towards other related, but unspecific models (the Job Characteristics Model (JCM)), based on SWOT interviews with 15 managers in two highly innovative Norwegian companies. The hypotheses are that there will be a positive correlation between the OCM dimensions and the SWOT statements; that the four quadrants of OCM will cover the SWOT statements in a particular order, and that more SWOT statements will be aligned with OCM than JCM. All hypotheses were confirmed. The results indicate that an M-SWOT approach to innovation climate development is viable with respect to the type of content that the SWOT interviews elicit.

\textsuperscript{1} Corresponding author: Thomas Hoff, Department of Psychology, University of Oslo, Pb 1094 Blindern, 0317 Oslo, Norway. E-mail: thomas.hoff@psykologi.uio.no
Tel.: +47-22845228,
Introduction

The Model Driven SWOT (M-SWOT) has been put forth as a generic tool for organizational development (Hoff, 2009). The idea behind M-SWOT is to assess the organization by way of mapping the participants’ responses to open and general questions (the SWOT framework; Chermack, 2007) onto specific, research based models (the ‘M’ of M-SWOT) in a particular domain, such as e.g. organizational change, safety climate, psychosocial work environment, or innovation climate. The specific procedure is to ask respondents four open ended questions about their conception of the topic at hand (e.g. team climate) in their organization: ‘What are the strengths [weaknesses] [opportunities] [threats] regarding the innovation climate [safety culture] [work environment] [diagnostic communication] [team work] in your organization?’. Meaningful statements are then extracted from the transcriptions of the interviews and classified according to established, research based models of the domain. This provides a diagnostic tool that informs the researcher or consultant about the relation between the actual descriptive reflections of the employees of the organization on the one hand, and the normative content of the research based model on the other.

The classical approach of researchers or consultants would be to use a survey intended to capture the dimensions of a model. The downside of this approach is that the items of the survey act as a cue to the dimensions that it measures (i.e recognition as opposed to recollection), and that it only measures pre-specified categories that might or might not be relevant to the context that is being studied. The fundamental difference between M-SWOT and the classical approach is that the former is based on un-assisted reflection (no content related cues are given to the subject – only broad, generic questions that is designed to keep the conversation between the interviewer and interviewee flowing), and that it does not presuppose any dimensions up front. In an organization development process, the M-SWOT might give the client an opportunity to reflect on why only a proportion of the statements in the organization fit established models. For example, why do the employees in a particular safety intensive organization reflect a lot about e.g. trust, but fails to talk about e.g. closed loop communication? And furthermore, why do the employees talk about issues that are outside of research based models? Are there particular issues to the particular domain that are important for the particular organization, but that are outside the scope of the general model? What are the implications of this for the organization at hand?
Whether the M-SWOT is really a ‘generic’ tool for organizational development, is an empirical question. For each domain, one needs to establish a correspondence between the SWOT interviews and the domain model at hand, i.e. whether the SWOT interviews are sensitive to established models within the domain. For instance, if a company with high safety records were interviewed by way of SWOT, and very few of the statements derived from the interviews were possible to map onto an established safety model (such as e.g. Flin et al, 2000), then the M-SWOT would probably not be an appropriate tool for safety climate development (at least if it could be established that the safety records were due to a good safety climate, and not due to some other, random factor).

To establish a positive correspondence between the SWOT interview and the domain model is necessary, but not sufficient, to theoretically validate the use of M-SWOT in a given domain. In addition, one should be able to demonstrate discriminatory validity, i.e. that other related but unspecific models are not equally related to the SWOT analysis as the specific model is. As an example, SWOT should be sensitive towards a safety specific model when respondents are asked about the safety climate of the organization in a SWOT structured interview. If one maps these data onto an unspecific model, such as e.g. service climate, then this unspecific model should not be equally related to the SWOT analysis as the specific model is.

The aim of the present study is to investigate whether there could be established a positive link between SWOT interviews and a specific, research based model within the domain of innovation climate. In addition, it aims to investigate the discriminatory validity of SWOT interviews, by exploring the extent to which a related, but unspecific model is equally related as the specific model or not.

**Innovation climate measure**

Innovation is, according to West and Farr (1990) *‘the intentional introduction and application within a role, group, or organization of ideas, processes, products, or procedures new to the relevant unit of adoption, designed to significantly benefit the individual, the group, organization, or wider society’*. In this respect, innovation includes creativity, i.e. the production of novel and useful ideas, but extends also to the implementation of these creative ideas into the organization.

---

2 In this paper ‘SWOT’ refer to the process of asking respondent about Strenghts, Weaknesses, Opportunities and Threats. M-SWOT refer to the organization development tool that involves mapping SWOT statements onto established research-based models as a critical step.
In order to be innovative, i.e. to be able to implement novel ideas in order to gain a competitive advantage, the organization should be organized in a way that facilitates innovative practices, rather than inhibiting them. In particular, it has been argued that the organizational climate is a key factor explaining the innovation capacity of the firm (Amabile, Conti, Coon, Lazenby, & Herron, 1996; Kanter, 1983; Patterson et al., 2005). Organizational climate was defined by Forehand and von Haller Gilmer (1964) as “… the set of characteristics that describe an organization and that (a) distinguish the organization from other organizations, (b) are relatively enduring over time, and (c) influence the behavior of people in the organization.’. Innovation climate refers to those aspects of the organizational climate that either a) supports innovative practices (so called ‘stimulants’ or ‘supports’), or b) inhibits innovative practices (so called ‘obstacles’ or ‘impediments’).

The organizational climate measure (OCM) is a multidimensional measurement for organizational climate (Patterson et al., 2005). It is organized along two fundamental dimensions, flexibility versus control and internal versus external orientation; and thus four separate and, to some extent, competing models or quadrants. The four models are derived from Quinn & Rohrbaugh’s Competing Values Model, (1983). The Internal Process Model reflects a Tayloristic concern with formalization and internal control of the system in order that resources are efficiently used (Ibid). The Open Systems Model emphasizes the interaction and adaptation of the organization in its environment, with managers seeking resources and innovating in response to environmental (or market) demands (Shipper &White, 1983). The Rational Goal Model reflects a rational economic model of organizational functioning in which the emphasis is upon productivity and goal achievement (Hall, 1980; Clinebell, 1984). The Human Relations Model reflects the tradition derived from the socio-technical (Emery & Trist, 1965) and human relations schools (e.g., McGregor, 1960). This approach emphasizes the well-being, growth and commitment of the community of workers within an organization. For a full description of OCM, see Patterson et al., (2005)

How does these categories relate to innovation climate? Theoretically, one would expect the Open Systems Model to be related to innovation climate, as it emphasizes flexibility and change as means to stay in touch with a changing external environment. However, internal HR practises are also seen as crucial for developing an innovative climate. For example West, Hirst, Richter and Shipton (2004) lists the following qualities as central for innovation: Team task design (relates to autonomy in OCM); Learning and development climate (relates to emphasise on training in OCM); Encouragement of reflexivity in teams (relates partly to autonomy, and partly to participation in OCM), Communication (relates to
communication and integration in OCM), and Leadership supportive for innovation (relates to supervisory support in OCM).

The Rational Goal Model is to some extent related to innovation, primarily goal setting on team level (West, 2002), effort (how hard people try to achieve goals), efficiency (being reflexive on the difference between what one is actually doing in relation to the goal of the organization or work group), and performance feedback (also related to the alignment of work and goals). On the other hand, the dimensions quality (the emphasis given to quality procedures) and pressure to produce are impediments to innovation climate practices.

The Internal Process Model consists of the dimensions formalization (a concern with formal rules and procedures) and tradition (the extent to which established ways of doing things are valued), both impediments to innovative practice.

Hence, the four competing models in OCM is predicted to load on SWOT innovation data in the following order 1) Open Systems model, 2) Human Relations model, 3) Rational Goals model, and 4) Internal Process model.

Related, unspecific model

A related classification system for human behaviour in organizations is the Job Characteristic Model (JCM) (Hackman and Oldham, 1977). However, the classification system is not specific for innovation or innovation climate. In JCM Skill variety involves the degree to which a job requires a variety of different activities in carrying out work, which involve the use of a number of different skills and talents of the person. Task identity involves the degree to which the job requires completion of a “whole” and identifiable piece of work; that is, doing a job from beginning to end with a visible outcome. Task significance involves the degree to which the job has a substantial impact on the lives or work of other people, whether in the immediate organization or in the external environment. Autonomy involves the degree to which the job provides substantial freedom, independence, and discretion to the individual in scheduling the work and in determining the procedures to be used in carrying it out. Feedback involves the degree to which carrying out the work activities required by the job results in the individual obtaining direct and clear information about the effectiveness of his or her performance.

The JCM is predicted to be related to innovation, but not to the extent of OCM, because it is not directly geared towards innovation and innovation climate.

Hypotheses
There are two separate questions the current article aims to pursue. The first (hypothesis 1 and 2) relates to the degree M-SWOT is sensitive to the innovation climate domain, which would imply a conceptual validation of the M-SWOT in the domain of innovation climate. The second question relates to the degree M-SWOT is discriminant, i.e. that it captures aspects that does not necessarily fit into any random model.

As for the former question, we expect a positive link between SWOT interviews and a specific, research based model (OCM):

Hypotesis 1: There is a positive correlation between the OCM dimensions and the SWOT statements.

In addition, we would expect that the largest number of those statements that fit within the OCM, will be belong to the Open Systems quadrant of OCM (the quadrant most related to innovation), that the second largest number will be within the Human Relations quadrant, that the third largest number will be within the Rational goal quadrant, and that the smallest number will be within the Internal Process quadrant. This expectation is based on the respective degree of stimulants versus impediments implied by the model.

Hypotesis 2: We predict that the SWOT innovation data will map onto the four competing models in OCM (in terms of the number of statements that fit each model) in the following order, 1) Open Systems model, 2) Human Relations model, 3) Rational Goals model, and 4) Internal Process model.

As for the latter question (the degree to which the M-SWOT method is discriminant, i.e. that it captures aspects related to the specific domain model, but not any other random, vaguely related model), we expect that even though JCM is probably related to innovation climate, it is not directly targeted towards innovation and innovation climate. Hence, we expect more SWOT statements to fit OCM than JCM.

Hypotesis 3: More SWOT statements fit OCM than JCM.

**Methods**

*Organizations and Participants*
Two private Norwegian organizations were invited to participate in the present study. Organization A encompasses 1200 employees in 22 countries, whereas Organization B is a somewhat larger company with 7000 employees and comprises a network of 300 offices in 100 countries. Both organizations gave their consents for participating and ensured free access to informants. A sample representing each organization was strategically selected by representatives from the organizations’ HR departments. The structured samples comprised informants who could contribute with personal experience and reflections on present and future organizational behaviour. All informants received a written invitation by e-mail making an inquiry about participation. The sample from Organization A (n = 7) comprised leaders positioned in top management, whereas the sample from Organization B (n = 8) consisted of managers from a specific mid-level section. All informants from Organization A were men, whereas six men and two women comprised the sample from Organization B.

Innovation capacity of company A and B

The two companies were asked to participate because of their reputation for being highly innovative within their field. Company A develops and produces high tech equipment for the health sector, whereas company B delivers services within classification and consulting.

Objective data from the Norwegian part of the Community Innovation Survey 2006 (a series of surveys executed by national statistical offices throughout the European Union as well as some non-EU countries, see http://www.ssb.no/vis/innov_en/about.html) verifies the assumption that these two companies can be viewed as innovative.

Measures

Qualitative interviews of semi-structured character involved open questions based on the SWOT-format to obtain information concerning the informants’ reflection on innovation capability. The interview guide comprised four main questions emphasizing the SWOT components, primarily encouraging reflection on the organization’s present strengths and weaknesses related to innovation, and secondly encouraging reflection on the organization’s opportunities and threats concerning future change. Hence, there were four main questions: ‘What are the strengths [weaknesses] [opportunities] [threats] regarding the innovation climate in your organization?’

Additional information was obtained by encouraging the informants to respond to supplementary questions, such as: “You have mentioned some strengths, are there other
strengths related to…?”, “Did I get you right when you say that…?”, “Could you illustrate this by giving an example?”, and “Could you specify what you mean by…?”.

**Data Treatment and Analyses**

**Transcription**

The tape-recorded files were transferred to a PC for transcription using *Digital Voice Editor 2*. The aim of transcribing is to get hold of the accurate sense of the information provided, present the informant in a respectful way, and ensure readability. A dilemma within the social sciences concerns how to make the interview conversation whole (Kvale, 1997) and emphasizes ‘the essence of context’ over ‘exact phases’ (Flick, 2002). As a result, the transcriptions were based on the informants’ phrases, and as far as possible made loyal to the informants (as implied by Flick, 2002). Where direct transcriptions did not make sense, editions were made to obtain coherent language.

**Content analysis and defining statements**

Content analysis was applied for reducing the textual material by counting and classifying the occurrence of specific statements (Weber, 1990). A digital program for categorizing and coding textual data, *NVivo version 7*, was used to enable quantification of the qualitative data.

The statements were categorized according to Holsti’s (1969) argument, namely that statements should be defined after transcription – as familiarity with the textual data reduces the chance of encountering statements that do not match the categories. A statement was defined as the smallest meaningful unit that reflects the informant’s experience and understanding of the topic of interest, namely innovation climate. A statement can involve a part of a sentence, a whole sentence or several sentences, according to this definition.

**Categorization of statements**

All statements were categorized within one of the four SWOT categories given the interview’s foundation on the SWOT-format. All statements coded as Strength or Weakness included the informants’ internal reflections on here-and-now conditions related to innovation in the respective organization. Contrastingly, all statements categorized as Opportunity or Threat reflected the informants’ responses regarding the future state of the respective organization in relation to change, and responses directed towards the external environment in which the respective organization operates. The SWOT statements were then coded on one of
the dimensions in OCM and JCM. Statements that did not fit into the two models’ dimensions were categorized as ‘Not accounted for’.

Results

Fit between SWOT and OCM

Of the 660 SWOT statements, 569 (86%) were aligned with an OCM dimension ($M = 37.93, SD = 9.02$). The relationship between the number of OCM and SWOT statements were significantly correlated ($r = .95, p = .000$). Figure 1 shows a scatter plot of the relation between OCM and SWOT for the 15 respondents.

![Figure 1. Scatter plot of OCM and SWOT](image)

Order of OCM models

225 statements (39.5%) fit the Open Systems Model ($M = 14.93, SD = 4.68$), 215 statements (37.8%) fit the Human Relations Model ($M = 14.4, SD = 6.12$), 109 statements (19.2%) fit the Rational Goal Model ($M = 7.27, SD = 4.79$), whereas 20 statements (3.5%) fit the Internal Process Model ($M = 1.33, SD = 2.19$). Table 1 presents the distribution of SWOT statements in OCM quadrants and dimensions.
Table 1

Distribution of SWOT statements in OCM quadrants and dimensions

<table>
<thead>
<tr>
<th>OCM quadrants</th>
<th>Not included</th>
<th>Human relations</th>
<th>Internal process</th>
<th>Open systems</th>
<th>Rational goal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCM dimensions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>91</td>
</tr>
<tr>
<td>Not included</td>
<td>91</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autonomy</td>
<td>-</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Integration</td>
<td>-</td>
<td>55</td>
<td></td>
<td></td>
<td></td>
<td>55</td>
</tr>
<tr>
<td>Participation</td>
<td>-</td>
<td>67</td>
<td></td>
<td></td>
<td></td>
<td>67</td>
</tr>
<tr>
<td>Supervisory</td>
<td>-</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emphasis on</td>
<td>-</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee welfare</td>
<td>-</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>Formalization</td>
<td>-</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Tradition</td>
<td>-</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Flexibility</td>
<td>-</td>
<td></td>
<td>109</td>
<td></td>
<td></td>
<td>109</td>
</tr>
<tr>
<td>Outward focus</td>
<td>-</td>
<td></td>
<td></td>
<td>94</td>
<td></td>
<td>94</td>
</tr>
<tr>
<td>Reflexivity</td>
<td>-</td>
<td></td>
<td></td>
<td>22</td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>Clarity of goals</td>
<td>-</td>
<td></td>
<td></td>
<td>27</td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>Efficiency</td>
<td>-</td>
<td></td>
<td></td>
<td>29</td>
<td></td>
<td>29</td>
</tr>
<tr>
<td>Effort</td>
<td>-</td>
<td></td>
<td></td>
<td>9</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Performance feedback</td>
<td>-</td>
<td></td>
<td></td>
<td>12</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Pressure to produce</td>
<td>-</td>
<td></td>
<td></td>
<td>27</td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>Quality</td>
<td>-</td>
<td></td>
<td></td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>91</td>
<td>215</td>
<td>20</td>
<td>225</td>
<td>109</td>
<td>660</td>
</tr>
</tbody>
</table>

A repeated measures ANOVA revealed a significant main effect of the four OCM models ($F = 28.151; df = 3, 42; p < .001$). Effect size measured by Eta squared was .668. Pairwise post hoc comparisons indicated a significant difference between Human Relations and Rational Goal ($p = .001$), between Internal Process and Open Systems ($p = .001$), Internal Process and Rational Goal ($p = .002$), and between Open systems and Rational Goal ($p = .001$). There were no difference between Open Systems and Human Relations ($p = .804$).

JCM

Out of the total number of SWOT-statements there were 402 statements which could be coded on the five dimensions of JCM. Table 2 depicts that out of the 402 SWOT-statements captured by JCM, there were altogether 149 (23%) statements captured by Task significance ($M = 9.9, SD = 5.85$), followed by 89 (13%) statements captured by Feedback ($M = 5.9, SD = 3.6$), 86 (13%) statements were captured by Autonomy ($M = 5.7, SD = 2.8$), 41
(6%) statements were covered by Task identity ($M = 2.7, SD = 2.0$), and the remaining 37 (6%) statements were captured by Skill variety ($M = 2.5, SD = 2.1$).

Repeated measures ANOVA was conducted and reveal significant main effect between the five dimensions comprising JCM, ($F = 12.308; df = 4, 56; p < 0.001$). The effect size, calculated using eta squared, was .468. Pairwise post hoc comparisons indicate significant difference between Skill variety and Task Significance ($p = 0.001$), Autonomy ($p = 0.007$), and Feedback ($p = 0.001$), respectively. No significant difference was found between Skill variety and Task identity ($p = 0.724$). The findings depict significant difference between Task identity and Task significance ($p = 0.001$), Autonomy ($p = 0.006$), and Feedback ($p = 0.005$), respectively. Significant difference was indicated between Task significance and Feedback ($p = 0.009$). No significant difference was found between Task significance and Autonomy ($p = 0.051$), and Autonomy and Feedback ($p = 0.873$), respectively.

### Table 2

<table>
<thead>
<tr>
<th>JCM</th>
<th>S</th>
<th>W</th>
<th>O</th>
<th>T</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill variety</td>
<td>28</td>
<td>3</td>
<td>6</td>
<td>0</td>
<td>37</td>
<td>6%</td>
</tr>
<tr>
<td>Task identity</td>
<td>28</td>
<td>8</td>
<td>4</td>
<td>1</td>
<td>41</td>
<td>6%</td>
</tr>
<tr>
<td>Task significance</td>
<td>90</td>
<td>31</td>
<td>17</td>
<td>11</td>
<td>149</td>
<td>23%</td>
</tr>
<tr>
<td>Autonomy</td>
<td>50</td>
<td>16</td>
<td>20</td>
<td>0</td>
<td>86</td>
<td>13%</td>
</tr>
<tr>
<td>Feedback</td>
<td>61</td>
<td>15</td>
<td>11</td>
<td>2</td>
<td>89</td>
<td>13%</td>
</tr>
<tr>
<td>Not accounted for</td>
<td>42</td>
<td>149</td>
<td>13</td>
<td>54</td>
<td>258</td>
<td>39%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>299</td>
<td>222</td>
<td>71</td>
<td>68</td>
<td>660</td>
<td>100%</td>
</tr>
</tbody>
</table>

**OCM vs. JCM**

569 statements fit OCM ($M = 37.93, SD = 9.02, Mdn = 38$), whereas 402 statements fit JCM ($M = 26.80, SD = 9.67, Mdn = 23$). A nonparametric direct test of hypothesis 3 revealed 13 positive ranks (more statements covered by OCM than JCM), 2 negative ranks (more statements covered by JCM than OCM), and 0 ties. A paired samples t-test revealed $t = -5.24$, $df = 14$, $p < .000$ (one-tailed), Cohen’s $d = 1.18$ (classified as high by Cohen, 1988).

**Discussion**
Hypotesis 1: There is a positive correlation between the OCM dimensions and the SWOT statements.

In this study, 86% of statements derived from open ended SWOT interviews were aligned with a particular dimension of the Organizational Climate Measure. The correlation between the two was statistically significant. This shows that if you perform an M-SWOT within the domain of innovation climate, you are likely to derive statements that the literature deem important, rather than statements that are irrelevant to the topic at hand. Furthermore, one might derive statements that are not covered by e.g. OCM, but that might be important in order to understand the local situation of a particular company. In sum, the results support hypothesis 1 of this study.

Hypotesis 2: We predict that the SWOT innovation data will map onto the four competing models in OCM (in terms of the number of statements that fit each model) in the following order, 1) Open Systems model, 2) Human Relations model, 3) Rational Goals model, and 4) Internal Process model.

The four models of OCM represent varying degrees of importance for innovation climate. It was argued that the Open Systems Model is the most relevant model, with the Human Relations Model as the second most relevant model. Some of the dimensions of rational goals are important for innovation climate, whereas the Internal Process Model is seen as antagonistic of innovation climate. The mapping of statements onto OCM dimensions in this study is in line with this assumption: The Open Systems Model is covered by 225 statements; the Human Relations Model by 215 statements; the rational goal model by 109 statements, and the internal process model by 20 statements. All differences were statistically significant, except the difference between the Open Systems Model and the Human Relations Model. In sum, the results support hypothesis 2 of this study.

Hypotesis 3: More SWOT statements fit OCM than JCM.

In this study, an attempt was made to map the SWOT statements onto a related model of organizational behaviour, but unspecific towards innovation climate. The reason for this was to investigate whether the SWOT interviews are discriminant to the topic at hand: If the
SWOT interviews related to innovation climate are sensitive towards OCM, but also towards any other general model, then one cannot trust the SWOT interviews to really capture what it intends. The results of this study shows a statistically significant difference between OCM (559 statements) and the Job Characteristics Model (402 statements). One might argue that a surprisingly large number of SWOT statements were aligned with JCM (402 out of 660 statements), given that innovation climate was the topic of the interview. However, one need to take into account that JCM is deeply rooted in the Norwegian work life; to the extent that the Norwegian Work Environment Act has clear traces of the model. Therefore, it is not necessarily surprising that any discussion of work and organizational topic will have relevance to this particular model. Furthermore, several aspects of the model are clearly in line with theories of innovation climate, such as task identity, task significance, autonomy and feedback. In sum, the results support hypothesis 3 of this study.

Limitations of the present study

The present study is not a validation study in the predictive sense, because it does not attempt to establish a relation between a high M-SWOT score and objective measures of innovation. On the contrary, it attempts to establish a conceptual relation between an empirically validated quantitative survey instrument, and a qualitative, interview-based tool. Validity here refers to the relation between one type of measurement and another, and between the measurements and the conception people at work have about their own reality.

We have chosen an uncommon type of qualitative data analysis: Instead of the traditional grounded theory approach (classifying bottom-up), we have chosen to use the OCM dimensions as the classification system (top-down classification). The strength of this approach is that it makes it easy to directly assess the relation between the two tools. The threat (or weakness) is that it might be tempting for the person carrying out the analysis to establish a fit between a statement and a dimension according to the hypothesis of the study, where no such fit is really present. In the current study, the persons carrying out the analysis were not aware of the purpose of the study.

A sufficient inter-rater reliability is also crucial. We did not carry out such a measure in this study, but other studies have shown a sufficient inter-rater reliability for M-SWOT classifications (Hoff, Straumsheim, Bjørkli and Bjørklund, 2009, This issue).

The method is very vulnerable to the behaviour of the interviewer: Any leading questions or other non-verbal communication that skew the conversation will compromise the data. The interviewers of the present study have been specifically trained for M-SWOT
interviewing, with particular emphasis on avoiding to lead the conversation in a specific direction.

Even if the above issues are dealt with, it is difficult to completely rule out that there might be systematic tendencies in the interview setting and data treatment that might compromise the results.

This study has investigated the discriminatory validity of the SWOT statements, but it has not investigated the discriminatory validity of OCM. There have been studies on the discriminatory validity of the OCM survey (Patterson et al. 2005), but we do not know at this point whether this is also the case for this qualitative type of classification. It could be, in principle, that the dimensions in OCM are so wide, that any interview regarding any topic will fit into the dimensions when qualitative data are scored top-down.

The issue of generalization of the M-SWOT data is an important one. Is it so that merely 15 subjects can generalize to a unit or an entire organization? In the qualitative methods tradition, the term semantic saturation refers to the fact that at a certain point there is no need to collect further data, because nothing really new appears in the interviews. However, the M-SWOT has a different type of characteristic, and it is probable that many more interviews are needed than specified in the qualitative methods tradition. This is an empirical question that has not currently been answered.

General discussion

The present study confirms that an M-SWOT approach to innovation climate development is viable with respect to the type of content that the SWOT interviews elicit. This means that it is conceivable to use M-SWOT as a tool for organization development with respect to innovation climate. The strengths of the M-SWOT tool compared to traditional qualitative methods is that one keep central features of quantitative methods; namely the ability to compare results between organizations or divisions, and to compare one or several units over time. It also offers an opportunity to go beyond the limitations of the classical survey approach in important aspects. The data are ‘unbiased’ in the respect that they do not build on pre specified categories that can act as a cue for the respondents. As such, the data are simply the aggregated here-and-now focus of the interviewees. In addition, the data are firmly rooted in the context of a particular organization or division at a particular point in time. Furthermore, the data are flexible in the respect that they can be analyzed according to any type of model after the data has been collected (as opposed to a survey, where the researcher needs to perform a new survey for every model). The data can also be analyzed
according to other types of taxonomies. For example, to analyze the data in terms of the SWOT framework could give the client vital information about the relative focus in the organization on the dimensions here-and-now versus future (SW vs. OT), positive versus negative (S vs. W), and internal versus external (internal SW vs. external OT). Furthermore, it might be useful for the client to analyze the data according to the organizational level the data are geared towards, i.e. Individual-, Team-, Management- or Organization level (IGLO), respectively. A combination of SWOT and IGLO can give further information. For example the client might realize that the management of the organization only focus on individual threats in their internal focus, not on threats related to teams or management. Based on this type of feedback, the organization might change its paths in ways that neither the consultant might have anticipated beforehand.

The flexibility and the process focus of the M-SWOT approach places it firmly in a Lewinian tradition, where emphasis is placed on the contextualized information related to a particular organization at a particular point in time, in relation to positivistic traditions that specify the need of the client up front.

Whether the M-SWOT tool actually make the organization more reflexive on topics that researchers within organizational theory deem important, is an empirical question. Fortunately, this is methodologically fairly straight forward, because the M-SWOT can be conducted for the same organization or unit at several points in time, for example before and after a feedback session. A control group with only M-SWOT measurements but no feedback session can act as a reference.
References


links to managerial practices, productivity and innovation. *Journal of Organizational Behaviour, 26*, 379-408.


