

CHALMERS



Measuring Organizational Innovation

In Collaboration with a Swedish Consultancy Firm

*Master of Science Thesis in the Master's Programme Design and Construction
Project Management*

JONATHAN CHAUSSET & LORENZ MC NAMARA

Department of Civil and Environmental Engineering
Division of Building Economics and Management

CHALMERS UNIVERSITY OF TECHNOLOGY

Göteborg, Sweden 2014
Master's Thesis 2014:85

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ABSTRACT

The field of organizational innovation is fragmented and warrants more research on (1) what factors influence the successful implementation of innovative culture and, (2) how should a leader or a group of leaders address these factors in their work to stimulate innovation. The aim of this thesis is therefore to perform a literature study on the relationship between leadership and innovation, and based on this review test and evaluate factors found on a sample of firms through developing a questionnaire tool.

The thesis consists of two research papers:

Paper I reviews several journal articles and meta-studies concerning leadership and innovation. The relevant material from the literature review regarding leadership's impact on innovation is sorted into three organizational levels, namely the individual level, the group level and the organizational level. These levels form a basis for the development of a tool which aims to evaluate the degree to which innovation has been manifested within the different levels within any given organization. This tool is then tested on a number of companies from the industry and analyzed through two iterations in SPSS Statistics, a software package used for statistical analysis in the social science. The tool is revised after the first analysis. Paper I finds that each level of the organization contains several factors related to innovation. An organization's level of innovation can, according to our study, be effectively measured by using the proposed tool which is specifically designed to evaluate the chosen factors in an organization. This paper describes the development of the tool and its contents.

Paper II explains the underlying methodology for conducting the study, namely Action Research, and elaborates on its implications on the study by dividing the work process into five reflective, connected cycles, where the succeeding cycle is a result of the previous completed cycle. The value of documenting through Action Research is to increase our knowledge on collaboration between academia and practice and to share our reflective progress with others pursuing similar endeavors. The paper concludes that researchers or practitioners pursuing similar projects can benefit from reviewing our reflective process of developing the tool. Also, the increased level of reflection has shaped our work and the course of actions that we have taken to successfully develop the tool. The involvement of, and outcomes for, the collaborative consultancy firm are also discussed.

The main findings of both papers indicate that innovation permeates the entire organization and, therefore, has to be addressed and managed at all the above mentioned organizational levels to have a substantial and lasting effect.

Keywords: *Innovation, leadership, factors for innovation, action research.*

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Preface

This thesis is based on the following two papers which will be referred to by their Roman numerals:

- I. Factors for Measuring the Potential for Innovative Performance and its Development through Leadership - A collaboration with a Swedish consultancy firm
Mc Namara, L., Chausset, J. (2014)
 - i. Appendix: Explanation and criterion for analysis approaches
- II. Doing Action Research in a consultancy firm: Reflections on creating a tool measuring organizational innovation - A collaboration with a Swedish consultancy firm
Chausset, J., Mc Namara, L. (2014)

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- Leif Denti: Who early on gave us advice and direction in our work.

1 Introduction

An increasingly competitive national market along with pressure from international competition stresses the importance for organizations to successfully manage innovation-enhancing actions. Higher education, the internet, fast communication, etc., is what forces us to constantly improve in our jobs in order to offer more complex and differentiated products and services. Findings indicate that innovation is positively linked to superior performance, and that it works as a mediator between organizational variables and financial performance (Vincent et al., 2004). However, organizational innovation is a complex matter, and its development involves a multitude of uncertainties and risks, such as unsuccessful implementation of ideas, degree of human motivation and unexpected variations in market demands. Determining and utilizing the main drivers for organizational innovation has therefore received a lot of attention within research lately, leading to a myriad research articles that adopt different approaches and identify a large number of factors that are linked to innovation (Anderson et al., 2004; Hunter et al., 2007; Hülshager et al., 2009; Hammond et al., 2011; Denti, 2012). Despite this extensive amount of literature, there is a degree of ambiguity regarding the critical factors for innovation and how to implement an innovative culture within an organization. The following sections present the main content and structure of this work and summarizes the two included papers. It also justifies the study and briefly presents the main findings.

2 Background

2.1 General purpose of this thesis

The key purpose of this Master thesis is twofold: to determine the main factors for successfully implementing organizational innovation, and to develop a tool that can measure any given organization's present level of innovation. Thereby, the goal has been to determine the areas within the organizational levels (individual, group and organizational) that have the most potential for improvement.

This goal can be further broken down into the following sub-purposes:

- To review literature on recent research on links between leadership and organizational innovation.
- To understand the relation to and impact on innovation of each of the chosen factors in order to select the most important ones.
- To investigate different methods of developing a tool and to validate its relevance and coherence by using a statistical analysis software.
- To utilize and reflect on the action-research process adopted in collaboration with a Swedish-based consultancy firm.

2.2 Case description

The research is carried out in a Swedish-based consultancy firm (hereafter referred to as SCF) specialized within the field of leadership-driven innovation. In brief, SCF was founded in 1991, when they pioneered the linkages of business strategy and leadership, and have since then worked successfully with the development of businesses, leaders and management teams. Presently, they have approximately 20 employees and are active in Scandinavia, but also work on the international market. SCF is an independent, partner-owned company with a mission to “*actively contribute to people feeling good*”

in profitable organizations” (Annual report, 2014) and rely on their core values which are to be Courageous, Accountable, Inspiring and Responsive. In this sense, SCF defines innovative-driven leadership as something that “*develops work methods and strengthens the culture in order to enhance innovative capability*” (Annual report, 2014), and they cultivate this through their work method which builds upon understanding one’s business challenges, taking responsibility in the development process and acting as a role model. The head office is located in Stockholm, and the top-management team consists of the CEO, the founder and two partners. SCF has been cooperating with a number of academic institutions, including Chalmers University of Technology, which is why they asked for support in researching the topic of this thesis. Our task, in cooperation with SCF, has been to develop a tool that can be used to measure the innovative capability of a client company, using identified influencing factors. This tool will then be used by SCF to develop a new service within the field of innovation. The nature of this task, being a collaboration between an organization and academia, lead to the choice of using an action-research approach, which is further discussed below.

2.3 Research approach

The starting point of this study was a review of recent literature within the field of leadership and innovation with the aim of selecting state of the art literature that links leadership capabilities with innovation in organizations. Databases included in the search were Science Direct, Sage Journals and Wiley Online Library to mention a few. To get an overview of the initially overwhelming amount of literature, a mind map was progressively formed, in pace with the selection of relevant articles (see appendix 6.1 Mind map). Several interviews were held throughout the work with both the consultancy firm and external parties with different expertise to assist and provide input on the work progress.

On the whole, it can be said that this research has been carried out as a collaborative management project between an organization and academia, but with less active involvement of managers and more active involvement of researchers in the framing and execution of the research approach. Historically, what has prevailed within management is that most management techniques are developed in practice unlike this case, where it mainly was developed from the academic literature and then implemented by the partner organization into practice. Adler et al. (2007) show that a collaboration between academic researchers and managers of organizations may yield great benefits for both parties, but Adler et al. (2004) also claim that there is a disparity between theory-driven models and management models when it comes to collective action processes. To cover this gap between theory and practice, an Action Research approach has been used as a means to structure the study into separate, but coherent learning cycles with room for reflection and continuous meetings with the partner organization. The strength of Action Research lies in its focus on generating solutions to practical problems (Meyer, 2000) as it involves a spiral of self-reflective cycles of planning, acting, observing and reflecting and the iterative testing of research claims in practice (Koshy et al., 2010). For a detailed description and further elaboration of the Action Research approach see paper II.

3 Summary of papers

3.1 Outline

After this introduction, follows the first paper on the creation of a tool to measure the influence of leadership on implementing organizational innovation and the literature review associated with it.

The second paper provides an analysis of the research approach and its implications for the outcomes.

Appended to this thesis are:

- A mind map of the information collected from the literature review illustrating the classification of different factors into either the individual, group or organizational level and the interconnections between the different levels.
- The final version of the proposed tool containing 31 questions, each corresponding to their unique construct, divided under 10 factors.

3.2 Summary of paper I: Factors for Measuring the Potential for Innovative Performance and its Development through Leadership

3.2.1 Purpose

Paper I reviews an extensive amount of recent research literature within the field of leadership and organizational innovation. This, to determine the contextual factors that influence leaders' abilities to promote innovation in organizations. Furthermore, we investigate how these factors can be measured within any given organization reliably.

3.2.2 Method

Factors have been identified by reviewing recent research on links between leadership and innovation. The tool was then developed out of these factors, tested on a number of companies and analyzed in SPSS.

3.2.3 Results

This study resulted in the identification of 10 factors that are considered important when measuring the potential for innovation within an organization. These factors were categorized into three levels, namely: the individual level, the group level and the organizational level. The categorization of the different factors and the factors themselves enabled the development of a tool that can be used to measure these within any organization. The validity of the tool has been analyzed twice in the statistical analysis software SPSS whereas the first iteration lead to some actual changes while the results of the second iteration formed a basis for the discussion in which suggestions for further revisions have been given.

3.2.4 Conclusions

The paper concludes that leaders can both positively and negatively influence overall organizational innovation by influencing employees' innovation potential when working individually and in groups. However, based on the identified factors, what seems to be the main purpose of leadership, in working with innovation, is to create an organization with a supportive culture for innovation. This involves a decentralization of organizational structures, which allows autonomy and freedom to engage in creative

work, and active promotion of innovative behavior by encouraging team reflection processes and providing the individuals with a vision and a supportive leadership style.

3.3 Summary of paper II: Doing Action Research in a Consultancy Firm: Reflections on Creating a Tool to Measure Organizational Innovation

3.3.1 Purpose

The main objective of paper II is to document, through a reflective process, the tool that was developed in Paper I. Instead of focusing on the product that is being developed, the focus lies on the process that carries the tool to its final stages. What were the major implications, what actions were taken and how did it shape the work?

3.3.2 Method

The most important aspect of this paper is the inclusion of both theoretical and practical knowledge. How these can be used interchangeably and collaboratively, and its implication, are important questions as successful projects often come from using these types of knowledge simultaneously. The Action Research approach has been used to divide the study into five connected cycles which gave us time to reflect on the process. Both Chalmers University of Technology and SCF provided substantial support and guidance to develop this paper. Also, SCF's connection with their clients was a prerequisite for testing and evaluating the tool.

3.3.3 Results

The main findings from this paper derive from the reflective process that takes place from each cycle. All of the cycles have resulted in a very substantial leap forward for the development of the tool, and contributed in their own unique way – from initiation of the project to delivering the tool to SCF. In learning cycle 1 we found that it is important to understand the organization with which one will collaborate in order to initiate the development of a tool that is compatible within that practice. Also, learning cycle 2 resulted in a clear scope for the project and defined the theoretical framework. Learning cycle 3 was a result of the two previous learning cycles, mixing the theoretical and practical knowledge attained from those cycles. That information resulted in the first version of the tool, which was then tested internally for reliability and validity. The information obtained from those tests told us that the questions had to be simplified and reduced in order to work effectively in practice. This resulted in version 2 of the tool, which was developed in learning cycle 4. The information gathered from testing the tool on the industry indicated that it worked well, apart from some exceptions which were changed until learning cycle 5. Finally, we found that it is important to deliver the tool in a way that makes it easy for the user to develop and use it further. Having workshops and creating educational manuals are examples of approaches which can be useful when handing over the tool.

3.3.4 Conclusions

The paper concludes that conducting Action Research is both valuable for researchers and practitioners. The information that it provides for a specific case is useful for future endeavors and will help others pursuing similar projects. The process of reflecting, acting and evaluating constantly progresses the work forward as new information is acquired. Having performed Action Research ourselves, we would like to emphasize

that distancing oneself from a project is important as it encourages individuals to reflect on the given task.

4 Concluding remarks

The purpose of this thesis has been to identify the main factors for organizational innovation and determine the influence that leadership has on these factors. We also sought to initiate a reflective process on how a tool can be developed to measure these factors at various levels in an organization. This has been achieved by a collaboration between two separate knowledge areas, academia and practice, to bring forth the benefits from each field.

Our decision to produce two papers, offering a more comprehensive view of the research, has been beneficial as it provides a deeper understanding of the research process, and we have approached the topic from different perspectives. To identify the factors that have most influence on innovation and how to measure these has been the focus of paper I while the focus of paper II has been to analyze the underlying process of developing the tool to measure these factors.

4.1.1 What have we learned?

In paper I, 10 factors for innovation were identified as positively influencing innovative cultures. These were validated by testing the tool on the industry where we received support and encouragement and where they could relate to the statements that we tested. Perhaps the main revelation in investigating innovation and talking to practitioners was their apparent lack of knowledge concerning that innovation has to permeate the whole organization and cannot originate solely from top management. Many sought to believe that it is the responsibility of top management to create innovative leaps forward for the organization, whereas it most often is the incremental changes and the mind-set and creative ability of each employee that in the long run produces a competitive advantage. Leadership is mainly a mediator for innovation, and an innovative culture is a reflection of a style of leadership, but it is also the responsibility of the employees to be creative in their work and share their ideas with the rest of the organization. If synergies can emerge between the individual levels and the organizational levels, the innovative capacity of the organization will be fulfilled.

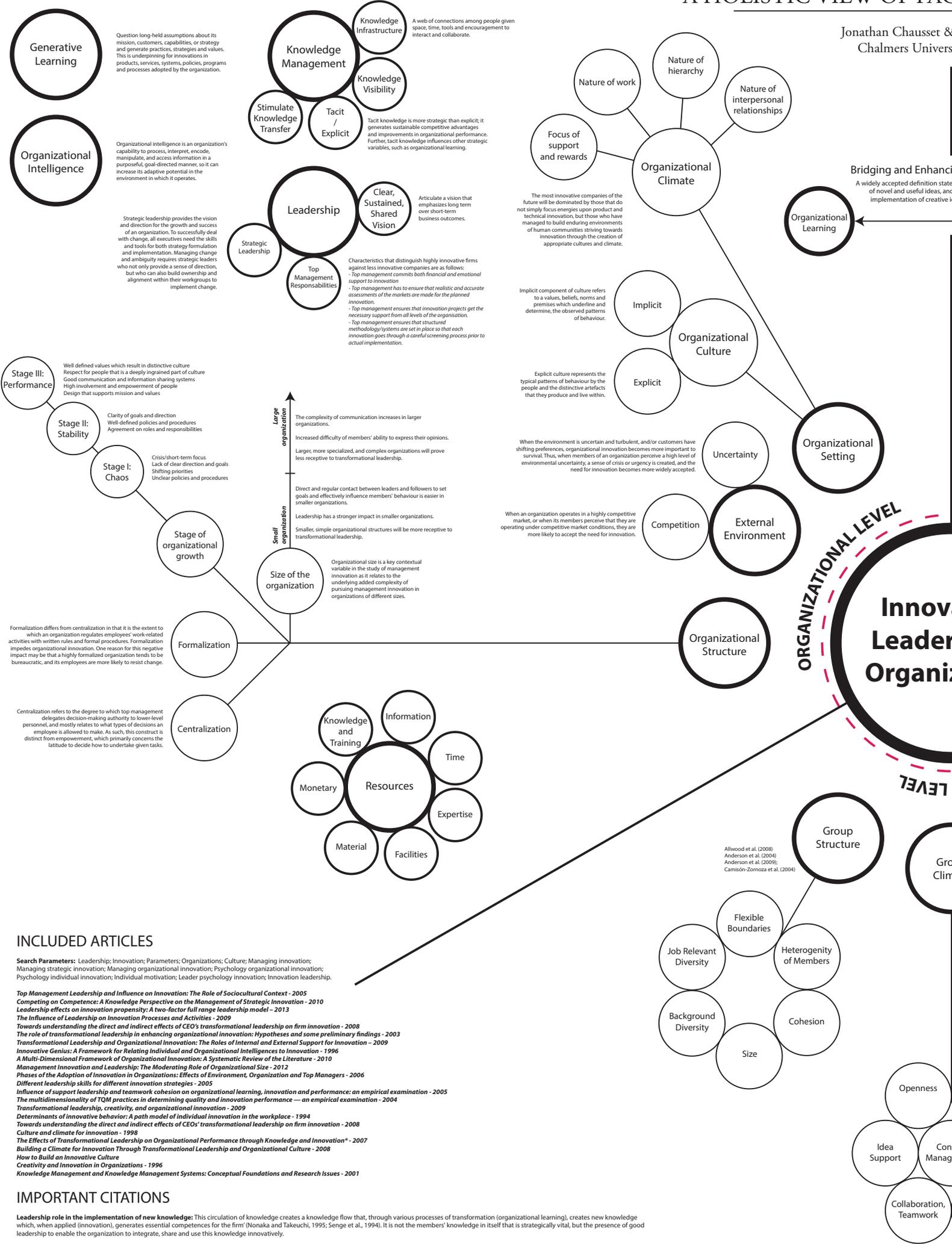
The Action Research process in paper II was used to understand how to approach our research topic and to progressively develop our work forward. We found that the process facilitated and structured our work by creating milestones and targets. Also, we found that doing Action Research takes a lot of time and effort and could be difficult to achieve in some projects which are more time limited.

4.1.2 What are the implications for future research?

To summarize, researchers or practitioners seeking to gather information about the relationship between leadership and innovation will benefit from reading paper I. Those interested in creating a similar tool, regardless of research area, will benefit from reading our approach and the steps taken for that endeavour in paper II. Advantageously, both can be used collectively to completely understand our work.

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Generative Learning
Question long-held assumptions about its mission, customers, capabilities, or strategy and generate practices, strategies and values. This is underpinning for innovations in products, services, systems, policies, programs and processes adopted by the organization.

Organizational Intelligence
Organizational intelligence is an organization's capability to process, interpret, encode, manipulate, and access information in a purposeful, goal-directed manner, so it can increase its adaptive potential in the environment in which it operates.

Strategic Leadership
Strategic leadership provides the vision and direction for the growth and success of an organization. To successfully deal with change, all executives need the skills and tools for both strategy formulation and implementation. Managing change and ambiguity requires strategic leaders who not only provide a sense of direction, but who can also build ownership and alignment within their workgroups to implement change.

Stage III: Performance
Well defined values which result in distinctive culture
Respect for people that is a deeply ingrained part of culture
Good communication and information sharing systems
High involvement and empowerment of people
Design that supports mission and values

Stage II: Stability
Clarity of goals and direction
Well-defined policies and procedures
Agreement on roles and responsibilities

Stage I: Chaos
Crisis/short-term focus
Lack of clear direction and goals
Shifting priorities
Unclear policies and procedures

Stage of organizational growth
The complexity of communication increases in larger organizations.
Increased difficulty of members' ability to express their opinions.
Larger, more specialized, and complex organizations will prove less receptive to transformational leadership.
Direct and regular contact between leaders and followers to set goals and effectively influence members' behaviour is easier in smaller organizations.
Leadership has a stronger impact in smaller organizations.
Smaller, simple organizational structures will be more receptive to transformational leadership.

Formalization
Formalization differs from centralization in that it is the extent to which an organization regulates employees' work-related activities with written rules and formal procedures. Formalization impedes organizational innovation. One reason for this negative impact may be that a highly formalized organization tends to be bureaucratic, and its employees are more likely to resist change.

Centralization
Centralization refers to the degree to which top management delegates decision-making authority to lower-level personnel, and mostly relates to what types of decisions an employee is allowed to make. As such, this construct is distinct from empowerment, which primarily concerns the latitude to decide how to undertake given tasks.

Resources
Knowledge and Training
Information
Time
Expertise
Facilities
Material
Monetary

INCLUDED ARTICLES

Search Parameters: Leadership; Innovation; Parameters; Organizations; Culture; Managing innovation; Managing strategic innovation; Managing organizational innovation; Psychology organizational innovation; Psychology individual innovation; Individual motivation; Leader psychology innovation; Innovation leadership.

Top Management Leadership and Influence on Innovation: The Role of Sociocultural Context - 2005
Competing on Competence: A Knowledge Perspective on the Management of Strategic Innovation - 2010
Leadership effects on innovation propensity: A two-factor full range leadership model - 2013
The Influence of Leadership on Innovation Processes and Activities - 2009
Towards understanding the direct and indirect effects of CEO's transformational leadership on firm innovation - 2008
The role of transformational leadership in enhancing organizational innovation: Hypotheses and some preliminary findings - 2003
Transformational Leadership and Organizational Innovation: The Roles of Internal and External Support for Innovation - 2009
Innovative Genius: A Framework for Relating Individual and Organizational Intelligences to Innovation - 1996
A Multi-Dimensional Framework of Organizational Innovation: A Systematic Review of the Literature - 2010
Management Innovation and Leadership: The Moderating Role of Organizational Size - 2012
Phases of the Adoption of Innovation in Organizations: Effects of Environment, Organization and Top Managers - 2006
Different leadership skills for different innovation strategies - 2005
Influence of support leadership and teamwork cohesion on organizational learning, innovation and performance: an empirical examination - 2005
The multidimensionality of TQM practices in determining quality and innovation performance — an empirical examination - 2004
Transformational leadership, creativity, and organizational innovation - 2009
Determinants of innovative behavior: A path model of individual innovation in the workplace - 1994
Towards understanding the direct and indirect effects of CEOs' transformational leadership on firm innovation - 2008
Culture and climate for innovation - 1998
The Effects of Transformational Leadership on Organizational Performance through Knowledge and Innovation - 2007
Building a Climate for Innovation Through Transformational Leadership and Organizational Culture - 2008
How to Build an Innovative Culture
Creativity and Innovation in Organizations - 1996
Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues - 2001

IMPORTANT CITATIONS

Leadership role in the implementation of new knowledge: This circulation of knowledge creates a knowledge flow that, through various processes of transformation (organizational learning), creates new knowledge which, when applied (innovation), generates essential competences for the firm (Nonaka and Takeuchi, 1995; Senge et al., 1994). It is not the members' knowledge in itself that is strategically vital, but the presence of good leadership to enable the organization to integrate, share and use this knowledge innovatively.

Relationship between organizational and individual intelligence: The initiation, idea generation of organizational innovation is dependent upon individual creativity; creativity results in innovation under the following enabling conditions: when there is opportunity for creative expression and an absence of constraints, when there are adequate resources and support to develop ideas, and when there are strong intrinsic incentives.

The relationship between the leadership role and organizational culture: The first step toward creating an innovative culture is recognizing that senior management is often unable to drive it. We can monitor it, enable it, promote it and ultimately decide when and how it gets deployed, but most of us are ill equipped to create it. Instead, an organizational culture is necessary, i.e. the creation of innovation should emerge throughout the whole organization, not just from top-tier personnel.

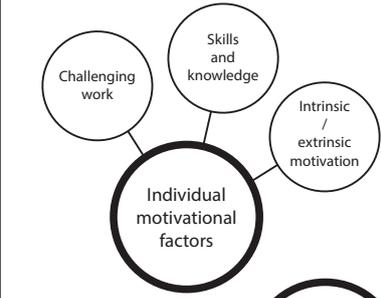
Allwood et al. (2008)
Anderson et al. (2004)
Anderson et al. (2009)
Carnisón-Zorzoza et al. (2004)

FACTORS FOR INNOVATION

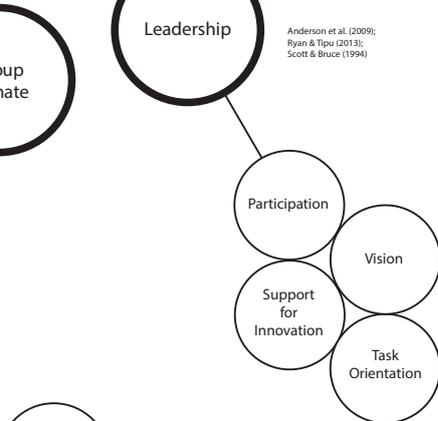
Lorenz Mc Namara
University of Technology

Knowledge Flows

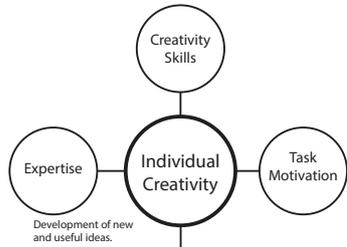
that creativity is the production of innovation is the successful ideas within an organization.



GROUP



Elenkov & Manev (2005)
Allwood et al. (2008)
Anderson et al. (2009); Pitt & Clarke (1999)



Development of new and useful ideas.

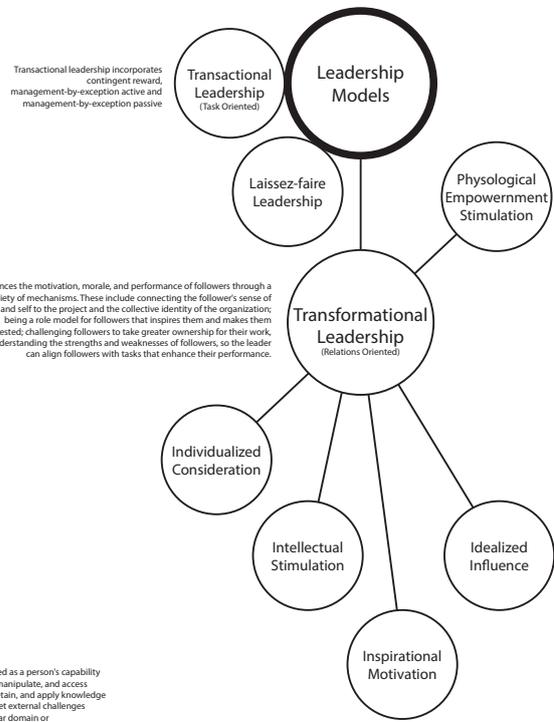
Individual intelligence is defined as a person's capability to process, interpret, encode, manipulate, and access information so as to acquire, retain, and apply knowledge quickly and successfully to meet external challenges or solve problems in a particular domain or context.



Cognitive parameters affecting idea production are given below:
Associative fluency, fluency of expression, figural fluency, ideational fluency, speech fluency, word fluency, practical, ideational fluency, originality, fluency, flexibility, originality, elaboration



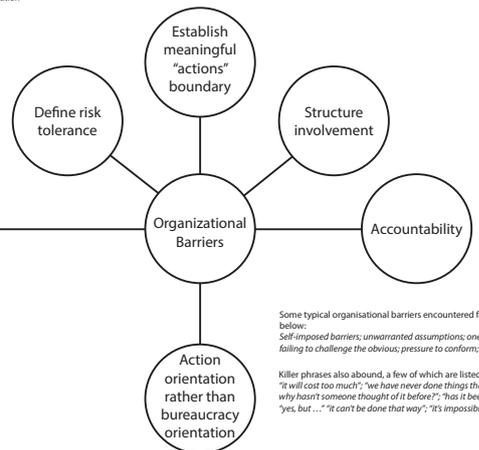
Personality traits for innovation:
High valuation of aesthetic qualities in experience, broad interests, attraction to complexity, high energy, independence of judgement, intuition, self-confidence, ability to accommodate opposites, firm sense of self as creative, persistence, curiosity, energy, intellectual honesty, internal locus of control



Transactional leadership incorporates contingent reward, management-by-exception active and management-by-exception passive

Enhances the motivation, morale, and performance of followers through a variety of mechanisms. These include connecting the follower's sense of identity and self to the project and the collective identity of the organization; being a role model for followers that inspires them and makes them interested; challenging followers to take greater ownership for their work, and understanding the strengths and weaknesses of followers, so the leader can align followers with tasks that enhance their performance.

Inspirational motivation (articulating an appealing and/or evocative vision), intellectual stimulation (promoting creativity and innovation), idealized influence (charismatic role modeling), and individualized consideration (coaching and mentoring).



Some typical organisational barriers encountered for innovation are listed below:
Self-imposed barriers; unwarranted assumptions; one correct answer thinking; failing to challenge the obvious; pressure to conform; fear of looking foolish.

Killer phrases also abound. A few of which are listed below:
"It will cost too much"; "we have never done things that way"; "if it's that good, why hasn't someone thought of it before?"; "has it been done somewhere else?"; "yes, but..." "It can't be done that way"; "it's impossible"; etc.

SURVEY

INNOVATION BAROMETER

The following survey is based on the leadership necessary to create an innovation-driven organizational culture. The survey has been developed by combining our practical experience with academic research and measures the driving factors for innovation. Based on the survey responses, an indication can be made of which areas that have potential for improvement within the innovation-driven leadership.

For more information on innovation-driven leadership, visit www.ledarskaparna.se/en/

As the survey forms the basis for future development, it is important that the answers are given as honestly as possible to get an accurate picture of the organization's current state. Reply based on your perception of how it is throughout the entire organization (i.e. not just your department).

Introductory questions

Gender

- Male
- Female

Age

- < 30 years
- 30 – 49 years
- > 50 years

Position

- Management team
- CEO
- Employee

My view of how we work with innovation within our organization?

- The concept of innovation is seldom taken up within the organization and we do not work actively with it.
- The concept of innovation is taken up from time to time and we are working to some degree with it.
- Innovation is a key area within the organization and we are actively working with it in everyday tasks.

What is innovation for me?

- A radical change of a product, service, activity, or similar.
- A small improvement of an existing product, service, activity, or similar.
- A combination of the above.

Can our industry be innovative?

- Yes
- No
- I don't know

INDIVIDUAL LEVEL

Personality

Self-confidence

Autonomy in the work is encouraged here

- Strongly disagree Disagree Neither nor Agree Strongly agree

Methodology

We actively seek new approaches

- Strongly disagree Disagree Neither nor Agree Strongly agree

Imagination

New ways of thinking are welcome here

- Strongly disagree Disagree Neither nor Agree Strongly agree

Initiative

Taking initiative is encouraged here

- Strongly disagree Disagree Neither nor Agree Strongly agree

Motivation

Incentives

There are possibilities for personal development here

- Strongly disagree Disagree Neither nor Agree Strongly agree

Stimulation

We have stimulating work tasks

- Strongly disagree Disagree Neither nor Agree Strongly agree

Creativity

Opinions

Everyone's opinions are welcome here

- Strongly disagree Disagree Neither nor Agree Strongly agree

Idea creation

New ideas are taken care of

- Strongly disagree Disagree Neither nor Agree Strongly agree

Openness

New ideas are often shared here

- Strongly disagree Disagree Neither nor Agree Strongly agree

Work characteristics

Workload

There is time for reflection in the work

- Strongly disagree Disagree Neither nor Agree Strongly agree

Matching

Tasks are assigned with regard to the individual's skills

- Strongly disagree Disagree Neither nor Agree Strongly agree

Supervision

Our organization offers guidance and support

- Strongly disagree Disagree Neither nor Agree Strongly agree

GROUP LEVEL

Group structure

Variation

We create groups with different areas of expertise

- Strongly disagree Disagree Neither nor Agree Strongly agree

Group dynamics

We prioritize cooperation within our groups

- Strongly disagree Disagree Neither nor Agree Strongly agree

Competence

Groups are provided with skills relevant to the work tasks at hand

- Strongly disagree Disagree Neither nor Agree Strongly agree

Group climate

Knowledge sharing

The importance of knowledge sharing within groups is emphasized here

- Strongly disagree Disagree Neither nor Agree Strongly agree

Interaction

The importance of knowledge sharing between groups is emphasized here

- Strongly disagree Disagree Neither nor Agree Strongly agree

Team development

We allocate time for activities that strengthen the group climate

- Strongly disagree Disagree Neither nor Agree Strongly agree

Conflicts

We prevent and manage conflicts

- Strongly disagree Disagree Neither nor Agree Strongly agree

Brainstorming

We allocate time for idea generation within groups

- Strongly disagree Disagree Neither nor Agree Strongly agree

Leadership traits

Leadership dev.

Our leaders are provided with skills/education on how to lead groups

- Strongly disagree Disagree Neither nor Agree Strongly agree

Leadership skills

The group's specific needs are taken into consideration when assigning a leader

- Strongly disagree Disagree Neither nor Agree Strongly agree

Vision

Leaders often share their own vision with their group

- Strongly disagree Disagree Neither nor Agree Strongly agree

Problem solving

We develop our leaders' problem-solving skills

- Strongly disagree Disagree Neither nor Agree Strongly agree

Decision making

We are encouraged to question and reflect on the decisions that are made

- Strongly disagree Disagree Neither nor Agree Strongly agree

ORGANIZATIONAL LEVEL

Organizational structure

Decentralization

Everyone has the opportunity to influence decisions that are made within the org.

- Strongly disagree Disagree Neither nor Agree Strongly agree

Rules and routines

Our organization is mainly governed by goals rather than by rules and routines

- Strongly disagree Disagree Neither nor Agree Strongly agree

Organizational culture

Tolerance

There is a high tolerance for ideas that do not work

- Strongly disagree Disagree Neither nor Agree Strongly agree

Risk-taking

Risk-taking is permitted here

- Strongly disagree Disagree Neither nor Agree Strongly agree

Allocation of resources

Time

There is enough time to implement new ideas

- Strongly disagree Disagree Neither nor Agree Strongly agree

Physical

Physical resources are available to develop new ideas

- Strongly disagree Disagree Neither nor Agree Strongly agree

Additional comments

If you have any additional comments that you would like to add, please do so below:

Thank you for completing this questionnaire!

Reflektioner kring Lärdagarna 2014

*Lärdagarna 15-16 januari 2014
Förarbete till examensarbete,*

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FÖRORD

Nyskapandet och implementeringen av nya idéer i praktiken är en komplicerad och långdragen process som kan vara både frustrerande och bakåtsträvande. Jag fick under Lärdagarna den 15-16 januari 2014 vittna hur en samlad grupp ambitiösa och erfarna individer drogs igenom just en sådan process. Nedan följer några personliga iakttagelser, reflektioner och funderingar på hur jag upplevde utvecklingen under dagarna. Värdet i rapporten ligger i min förmåga att se processen från ett utomstående perspektiv, och inte begränsas av ramarna man lätt fastnar i när personer arbetar under samma förhållanden, förutsättningar, värderingar etc. Slutligen ligger rapporten som bas till TIB projektet som genomförs under vårterminen 2014 och är ett kärndokument till framtida arbete med Ledarskaparna.

VAD FINNS I DOKUMENTET

1. Resultat från intervjuer
2. Vad som skiljer ett ”in-ut” perspektiv mot ett ”ut-in” perspektiv
3. Verktyg för att driva en idédriven företagskultur hos Ledarskaparna
4. Lärdagarna sedda från ett utomstående perspektiv
5. Realize och Ledarskaparna
6. Förvirring och frustration bland medarbetare
7. Slutord

Fotnot: Reflektioner i detta dokument tar inte hänsyn till Dag 3 under Lärdagarna, och vissa diskussioner har därför fallit bort. Innehållet bör dock vara relevant då de kort sammanfattar resterande dagar och förväntningar som presenterades före eventet.

RESULTAT FRÅN INTERVJUER

En central del kring Lärdragarna har varit att hålla intervjuer före eventet för att förstå medarbetarnas förväntningar. Dessa förväntningar påverkar en förändringsprocess och ger beroende på resultat en indikation på deras förmåga och vilja att driva idéer till färdigställd produkt, koncept, verktyg eller liknande. Intervjuerna visade tydligt hur olika medarbetare (med olika expertis, bakgrund och ansvarsområde) hade olika förhållningssätt till Lärdragarna. Att arbeta med en heterogen grupp av personer kan vara motigt då alla har en strävan efter sin egen agenda samt försöker forma dagen för att nå sina egna förväntningar.

Vad som framgick tydligt under intervjuerna var en vilja att inom företaget föra samman alla medarbetare och skapa en mer enhetlig bild inom företaget. Jörgen Weiss har varit en central del av detta där man skapat samlade dokument på hur man arbetar, vilka värderingar företaget har och hur man förhåller sig till kund.

Nedan sammanfattas intervjuade personers tankar, förväntningar och reflektioner kring Lärdragarna:

- Att genom förändring skapa en hävstång för företaget och omsätta med 20 % vinst.
- Att förklara hur medarbetare kan leva upp till den nya varumärkesplattformen som har ett fokus på innovation.
- Att skapa idéer som på sikt kan skapa större engagemang, delaktighet och utväxling.
- Att tillåta allt/tänka totalt nytt/kasta upp allting/ifrågasätta allt.
- Att stanna upp och reflektera kring vad den nya varumärkesplattformen betyder.
- Att skapa en mer gemensam bild hos medarbetarna.
- Att samlas, lära av varandra och förstärka tryggheten i gruppen.
- Att stärka ”vi-känslan” bland medarbetare.
- Att skapa konkreta idéer på vad som kan göras kortsiktigt och långsiktigt.
- Att få sig presenterat ett antal nya processer, metoder och övningar som kan generera något nytt till kund (framförallt ett nytt verktyg som kan användas mot kund).
- Att testköra Realize för att utvärdera om ett partnerskap är lämpligt.
- Att ifrågasätta ledningen inom företaget (stys företaget på rätt sätt?).
- Att förstå definitionen av innovationsdrivande ledarskap.

Trots att Lärdragarna rörde alla punkter så tror jag ändå att många gick därifrån och önskade mer. Den breda massan av förväntningar kan inte förmedlas under enbart 2 dagar utan kommer kräva ett kontinuerligt framtida arbete för att tillfredsställas. Det kan i många fall bli kontraproduktivt med en alltför hög ambitionsnivå, där man stressar igenom moment för att hinna med. Fokus borde istället ligga på att förtydliga de viktigare punkterna, med utrymme för reflektion och diskussion. En tydligare indelning/schemaplanering hade även kunnat bidra till en högre grad av tydlighet.

Nedan följer en kort beskrivning/reflektion kring några av de områden som fick extra fokus under Lärdragarna.

VAD SOM SKILJER ETT ”IN-UT” PERSPEKTIV MOT ETT ”UT-IN” PERSPEKTIV

Det utvecklades tydliga skillnader mellan dag 1 och dag 2 under Lärdragarna. Den lösa strukturen under dag 1 resulterade i ett ”in-ut” perspektiv hos medarbetarna där man inte tog mycket hänsyn till den externa miljön/marknaden/kundbehovet utan främst utvecklade idéer med avsikten av det tankesättet. Det betydde att många av de framtagna idéerna var mindre relevanta dag 2 då det framgick att de inte

nödvändigtvis mötte det externa behovet, och därför inte gav något mervärde. Styrkan under dag 2 var förmågan att se nya företagsidéer ”utifrån och in”. Resultatet av detta var mer värdeskapande idéer som är mer realistiska att implementera i praktiken, och som därmed är mer värda att lägga ner tid och pengar på.

Det grundläggande problemet kanske inte ligger i vilken metod man använder, utan kan vara begränsat till mer fundamentala byggstenar. Vill man driva ett lyckat ”in-ut” perspektiv så måste det tydligt framgå vilka värderingar och tillvägagångssätt företaget har. Ofta sågs frustration kring vag definition/presentation av företagsmodell, vilket leder till skapandet av många, väldigt spridda idéer. Samtidigt kräver ett ”ut-in” perspektiv att man förstår den avsedda marknaden företaget vill arbeta mot. Även detta var otydligt och det blir då svårt att förstå målgrupp och kundbehov. Dessa begrepp måste förtydligas för att inte få en lika stor spridning av idéer, utan snarare idéer som följer en röd tråd som ligger parallell med företagets strategi. Medarbetare nämnde under dagarna att *”finns det något forum där ni kan dela med er mer utav det här”* och *”är det möjligt att ha någon timmes diskussion/presentation av det här så att vi förstår vad ni pratar om?”*.

VERKTYG FÖR ATT DRIVA EN IDÈDRIVEN FÖRETAGSKULTUR HOS LEDARSKAPARNA

TIB (Team Innovations-Barometer) framstod under Lärddagarna som ett nyckelverktyg för framtida arbete. Styrkan i verktyget ligger i möjligheten att utvärdera, exempelvis, en ledningsgrupps innovationsförmåga genom att använda parametrar för ett innovationsdrivande ledarskap. På så sätt kan man utgå ifrån deras behov och använda rätt språk, verktyg och tillvägagångssätt. En mogen innovationskultur kommer kräva en viss typ av konsultation medan en mindre mogen kan behöva fokus på bättre kommunikationer, en mer upplöst företagsstruktur, etc.

Utformningen av det här verktyget kommer vara färdig tills maj månad då det kan användas praktiskt med kund. Det kanske viktigaste att nämna är inte verktyget i sig utan det goda initiativet att ta in ambitiösa studenter för att driva ner kostnaden av en sådan implementation. Detta innebär låg risk för företaget, och möjligheten att skapa ett ”win-win” scenario, där båda parterna gynnas av samarbetet. *”Vi behöver en metod för att kartlägga den innovativa förmågan”* och *”vi behöver lära känna kunden bättre, den som känner kunden bäst vinner”* var citat som tydligt beskriver vikten i att bättre förstå kunden, för att sedan kunna genomföra en lyckad konsultation med så mycket värde som möjligt för kunden.

Det fanns en skepticism under dagarna om realismen att implementera de idéer som togs fram. Jag tror att en viktig del mot en mer idédriven företagskultur är att möjliggöra att man jobbar inkrementellt på liknande sätt under året. För att kunna göra det så behövs rätt verktyg inom företaget där man delar med sig av idéer och ger feedback. Hemsidan kan fungera som ett smidigt forum där medarbetare har möjligheten att dela med sig utav idéer på bloggar och liknande så att man tillsammans kan kommunicera företagets riktning, och på sikt implementera de idéer som har störst potential. Denna typ av adhokrati, där alla har samma möjlighet att påverka och bidra genom den egna individens ambition och motivation är viktig. Detta är även ett forum för medarbetarna att dela med sig och förstå vad samtliga personer arbetar med. Feedback och uppmuntran är ytterligare nyckelord som kan användas i ett sådant forum som sporrar individerna att arbeta med en högre grad av självsäkerhet (då man får bekräftelse utav resten av gruppen). *”Jätteroligt, fantastiskt och inspirerande”* var ord som personer beskrev dagarna med, och samma känsla kan föras över till forumet om en liknande idéprocess sker där. Slutligen vill jag ta upp ett påstående som Realize presenterade under dag 2 – *”om en grupp fungerar och rätt förutsättningar finns så levererar en grupp individer mer kreativitet än vad samtliga individer hade gjort på egen hand”*.

LÄRDAGARNA SEDDA FRÅN ETT UTOMSTÅENDE PERSPEKTIV

En eloge till det goda bemötandet ska ges till samtliga personer involverade under Lärdagarna, vilket inte enbart skedde mot mig utan även gavs mot varandra. Detta skapar en trygghet bland grupper där samtliga personer vågar dela med sig av sina tankar och reflektioner, och där ingen dömer andras åsikter. Denna mogenhet är viktig om man tillsammans ska lyckas med att arbeta som en enhet med delade värderingar och arbetssätt.

Vad som även uppskattades var Ledarskaparnas intresse att höra vad de nyanställda samt jag hade för reflektioner kring eventet. Denna input är viktig för att förstå hur medarbetarnas ramar begränsar och styr idéprocessen, och vilka konsekvenser detta resulterar i.

Det bör vara möjligt att använda liknande input även under det vardagliga arbetet med Ledarskaparna. Externa individer/kunder kan användas genom att exempelvis svara på en enkät för att få en bild av vad de tänker om Ledarskaparnas arbete. Detta kan följas upp efter avslutat projekt med kund för att utveckla arbetsmetoden till framtida arbete. Även användandet av externa konsulter kan bidra till ”nya ögon” som även det gynnar utvecklingen av företagets arbetsmetoder.

REALIZE OCH LEDARSKAPARNA

Efter att ha diskuterat med både Realize och Ledarskaparna så framgår det varför båda parterna har intresse av ett nytt partnerskap. Skillnaden i vilken säljtaktik som används präglar starkt de båda affärsmodellerna. Ledarskaparna, med deras något mer erfarna medarbetare, använder sig till stor del av befintliga kundnät och kontakter. Detta är strävigt då man inte selektivt har samma potential till att själv välja vilka kunder man vill arbeta med, utan lätt hamnar i kontakt med befintliga, redan kända kunder. Styrkan i Realize är deras förmåga att sälja sin produkt väl. Detta genom ett tydligt och starkt varumärke, samt ett förhållningssätt till hur man vill sälja.

De gemensamma fördelarna med ett partnerskap kommer innefatta flera delar. Exempelvis möjligheten att ”dela kunder”, eller nyttja motpartens kundnät för att sälja mer. Utöver det så kan varumärket stärkas av att man har en känd samarbetspartner som arbetar med liknande konsultation. Kanske är det till och med möjligt att sälja båda tjänster till samma företag, om man säljer det som ett större paket. Ledarskaparna hade exempelvis kunnat bidra till en starkare innovationskultur hos ledningsgrupp och organisation, medan Realize bygger på genom att skapa nytänkande inom organisationen.

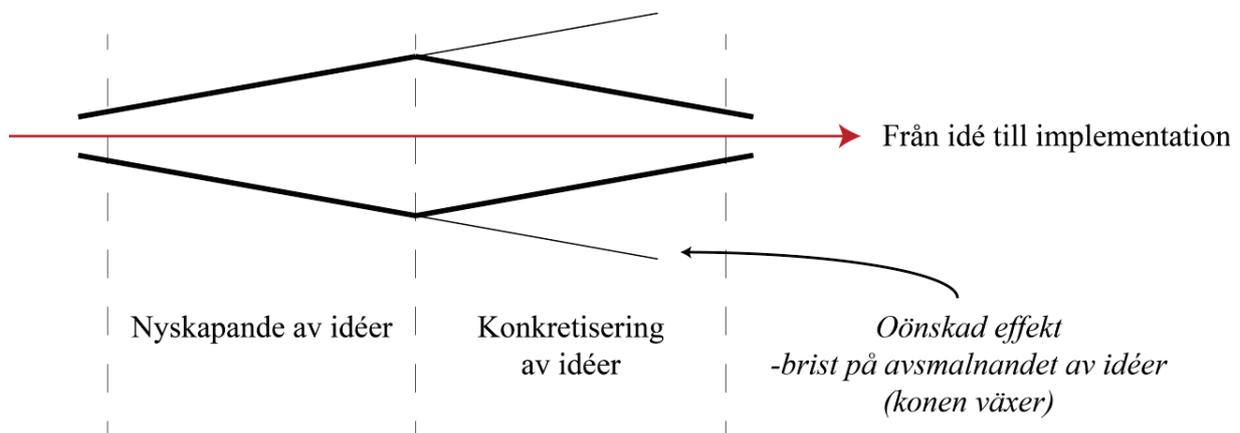
Sett ur ett kritiskt perspektiv så tror jag att Ledarskaparna behöver börja med att stärka sitt varumärke, både bland sig själv och mot kund för att inte ta sig vatten över huvudet med ett nytt partnerskap. Det är dock ingen tvekan om att ett partnerskap hade kunnat vara gynnsamt om skött rätt från båda parter – en så kallad ”win-win” situation.

FÖRVIRRING OCH FRUSTRATION BLAND MEDARBETARE

Trots ett starkt engagemang att ena medarbetarna till en mer samlad grupp presenterade vissa under Lärdagarna en frustration kring att de inte fått information (eller fått det presenterat för sig) om diverse saker som ledningsgruppen tog för givet. Ett större fokus kunde ha lagts på att presentera företagets vision, för att sedan därifrån generera idéer utifrån den visionen.

Syftet med dagarna var att ”tänka nytt, allt är tillåtet”. Problemet med det tankesättet är att man lätt bortser från grundstenarna som företaget står på, och idéer och koncept är ofta ur linje med företagets strategi. Detta gav intrycket av att man ville utveckla ett helt nytt företag, snarare än att bygga på det befintliga. Resultatet av detta var i vissa fall en viss frustration kring hopplöshet och ”vi har mycket arbete framför oss”, då det uttrycktes att man fick ”börja om på nytt”. Jag tror att detta kan hämma motivationen och viljan att driva igenom idéer då det i grava termer kan kännas lönlöst, då det kan framgå att företaget saknar många av de kritiska elementen som behövs för att fortsätta leva.

Ytterligare ett problem med dagarna, för att fortsätta ge så konstruktiv kritik som möjligt, var bristen på en avsmalnande idéprocess. Anledningen till att en del frustration uppstod under dag 2 berodde på en förväntan att man då skulle börja konkretisera vad som hade sagts under dag 1. Istället lades ett stort fokus på ytterligare nyskapande och ny-tänk (framförallt ett mer ”ut-in” perspektiv istället för ett ”in-ut” perspektiv). Hade dagarna tjänat på att ha tydligare mål, som att skapa tre nya projekt för företaget (där ett projekt beskriver att man tar en idé som medarbetarna tror på och driver den igenom till färdigställd produkt/process/strategi)? Den kreativa konen kan beskrivas som nedan, och är viktig för att få idéer till implementation.



Figur: Från idé till implementation.

Individer under dagarna uttryckte sig även i termer som ”det går för snabbt, jag behöver mer tid att reflektera över vad som har sagts och de framtagna idéer som skapats”. Även detta pekar på en önskan om att ha det här ”tänket” mer utspritt över året, och det dagliga arbetet istället för att använda det under brainstorming-dagar.

Slutligen behöver det tilläggas att flera individer uttryckte sig utmattade och svaga i slutet av dagarna. Intensitetsnivån var väldigt hög vilket även det skapade en del frustration och hopplöshet. Hade det gått att sprida ut dagarna mer över året, kanske via virtuell kommunikation, för att inte ta allt på en och samma gång? Kan det vara aktuellt att ha liknande event 1 gång i månaden, via Skype eller liknande, där man delar med sig av idéer och kommunicerar vad som har hänt under den gångna månaden?

Även om event som dessa är effektiva i sin utformning där många idéer tas fram så kan resultatet lätt bli ”krystat”, där brist på tid inte ger individer möjlighet till reflektion och diskussion. Man tvingas snarare producera en viss mängd idéer oberoende på kvalitet av dessa. Det kan lätt bli ett kvantitets-fokus istället för ett fokus på att ta fram så värdeskapande idéer som möjligt.

SLUTORD

Flera medarbetare uttryckte sig i termer som *"jag tror att kommande år är avgörande för företaget och dess framtid"*. Det pekar på att det är viktigare än någonsin att skapa ett tydligt fokus som man kan kommunicera till medarbetarna, och som driver företaget i en mindre spretig riktning. Personligen så tror jag att det viktigaste i dagsläget är att hitta kärnan i bolaget och skapa en tydlig vision för att driva resten av affärsidén framåt. Mycket ansvar ligger på ledningsgruppen att ta tag i dessa faktorer för att skapa en nytändning bland medarbetarna.

Samtidigt är det viktigt att man arbetar som man lär ut. Ska man ha ett tydligt innovationsfokus så är det kritiskt att man själv fungerar utifrån den målbilden. Företaget kommer annars ha problem med att skapa trovärdighet utifrån den nya varumärkesplattformen.

Som en slutlig punktnot så tror jag att mycket handlar om att konkretisera och skala av vad som redan finns inom företaget. Vad är fokus och vad skapar inte värde för affärsidén? Resultatet av denna stärkta tydlighet hade bidragit till en ökad självsäkerhet bland medarbetarna, med en tydligare vision och strategi att arbeta mot.

Slutpunkt: Följande sidor innehåller ett appendix med en liten sammanfattning av vad som har tagits upp i dokumentet.

Paper I

Factors for Measuring the Potential for Innovative Performance and its Development through Leadership

In Collaboration with a Swedish Consultancy Firm

LORENZ MC NAMARA & JONATHAN CHAUSSET

ABSTRACT

As market demands continuously increase and put more emphasis on new solutions, organizations need to manage innovative actions to stay competitive and survive. However, the issue is that innovation often fails because proper mechanisms and support are lacking in the organizational environment. The focus of this paper has been to investigate factors that influence the development of an innovative culture. We take a holistic approach by addressing innovation at both the individual, group and organizational levels. We found that innovation has to be addressed and managed on all the mentioned levels to make an impact in the long-term. The chosen factors can be seen as a web of connectors, influencing each other and working together to produce value for the organization, i.e. a missing factor can disturb the web of connectors and work as a bottleneck for innovation. This corresponds well with what other researchers have found on the subject. The product of this research is a tool to measure the potential for innovative performance at the three organizational levels, which enables us to 1) identify whether or not the identified factors meet the established goals for the organization so that we can 2) manage, improve on and connect these factors for a flourishing innovative culture. The tool is comprehensive, but can be developed even further by including additional areas of research and adapting it to fit targeted market segments.

Keywords: *Innovation, factors for innovation, innovation driven leadership.*

1 Introduction

The demands organizations face nowadays on an increasingly competitive market create a need for new innovative products and services. The importance of innovation for organizational success has, therefore, been increasingly noted in business research, and top managers' leadership styles have been identified as one of the most important factors affecting employees' creative behavior and the organization's innovative capacity (Jung et al., 2003). To lead innovation is said to be one of the most challenging aspects for contemporary leaders (Oke et al., 2009). It involves not only the creative act of generating new ideas but also the purposeful transformation of these ideas into useful products and services (Bedell et al., 2007). The leader has to successfully create a synergy between the intrinsic abilities of the innovator (i.e. the individual employee) and the extrinsic features of the surroundings (i.e. the group and/or the organization). To do so successfully, leaders or top management have to identify the various factors for innovation at the different levels and take appropriate action on the organizational and group level to create a culture that encourages innovation at the individual level, which in turn facilitates innovation at the organizational level. In addition, it is important to identify individuals with relevant expertise, and delegate suitable actions to them.

Numerous studies have researched different aspects of innovation, such as what organizational processes facilitate the generation and implementation of innovation (Munshi et al., 2009; Clarke & Pitt, 1999) and what enables some organizations to adopt innovation more successfully than others (Damanpour & Schneider, 2006; Gumusluoğlu & Ilsev, 2009). A review of the research does, however, indicate that it is easy to neglect the organization-wide nature of business-related innovation by focusing on a specific area of the innovation process and, thereby, restricting it to a specific unit or event. Unless the creative acts of individuals and groups are coordinated to create organization-level outcomes, the company as a whole may not be able to respond effectively to the challenges of a competitive market (Jung et al., 2008), or may counteract strategic business goals.

The approach adopted in this study was Action Research in collaboration with a Swedish based consultancy firm (hereafter referred to as SCF) specialized within the field of leadership and innovation. In brief, SCF was founded in 1991 and presently has approximately 20 employees. SCF is an independent and partner-owned company with its head office located in Stockholm. SCF has been cooperating with a number of academic institutions, including Chalmers University of Technology, which is why they asked for support in researching the topic of this thesis.

The study aims to answer the following three research questions;

- *Which are the most important factors that influence the potential for organizational innovation?*
- *How can a tool be developed, tested and verified to measure these factors in any given organization?*
- *What does the results obtained from testing the tool tell us about leadership's influence on innovation?*

2 Method

2.1 Identifying the factors

We initially reviewed recent literature within the field of leadership and innovation with the aim of selecting state of the art literature that links leadership capabilities with innovation in organizations. We searched for both journal articles and meta-analyses in multiple databases by combining keywords such as “leadership”, “organization”, “factors” and “innovation” in various ways. “Creativity” was also used because it is sometimes used interchangeably with innovation. This yielded a huge number of hits, so we had to narrow it down by progressively creating more specific search formulations out of our keywords, and mainly choosing articles that were recently published. Databases included in the search were Science Direct, Sage Journals and Wiley Online Library to mention a few. We analyzed the articles’ abstract, research question(s) and results in order to identify those articles that (1) treated leadership and innovation (or creativity) as interdependent variables and (2) treated innovation as having an impact on at least one of the selected organizational levels. To get an overview of the initially overwhelming amount of literature, a mind map was progressively formed, in pace with the selection of relevant articles. Several interviews were held throughout the work with both the consultancy firm and external parties with different expertise to assist and provide input on the work progress.

In order to facilitate the research we divided leadership’s impact on innovation into three organizational levels based on the work of several meta-studies; the individual level, which includes personality traits, motivation, cognitive factors and work characteristics, the group level, which includes structure, climate and leadership and, finally, the organizational level, which includes structure, resources and culture. The articles, definitions and subtopics used for each area of research are presented in Table 1 under Results.

2.2 Method for testing

After having collected the data several criteria decided the method that would be used to create the tool. First, the areas of research related to the individual, group and organizational levels for innovation were broken down into numerous subtopics based on the data collected from the meta-studies (Anderson et al., 2009; Hammond et al., 2011) and a doctoral dissertation (Denti, 2012). One question for each of these subtopics was created and resulted in a total of 60 factors for innovation. The tool uses a closed answer system where the respondent has to pick an answer from a given number of options. This ordinal response rate range between; *strongly disagree, disagree, neither agree nor disagree, agree and strongly agree*.

The tool was tested and evaluated on five individuals within the top management team of SCF. The next step in the process was to verify what questions correlated well with their subtopic and eliminate those that did not. This was done by performing an analysis in SPSS using the Cronbach’s Alpha method which led to the elimination of 24 statements. This new version of the tool with a total of 31 statements was then tested in practice on 7 companies. All in all, we received 33 responses, averaging approximately 4 individuals per company. We collected the data online by providing the respondents with a link to a web-based tool.

3 Developing the framework

Attempts to understand factors through which leadership may influence organizational innovation generate substantial research on leadership styles and organizational innovation. This broad and multifaceted research area offers a plethora of articles ranging from comprehensive meta-analyses focusing on organizational innovation to case studies focusing on how different leadership styles affect innovation.

Many researchers seem to limit their research to one of the above mentioned organizational levels, whereas others, like Anderson et al. (2004, p. 163) point out that it is important to treat the different levels of innovation as three nested levels: *“individuals are nested within teams (or departments), which are nested within organizations”*. It is, therefore, not sufficient to study innovative capacity at one level without taking into account the interrelationships between the levels. The following sections of the theory, thereby, look at the various levels not as independent areas of research, but as interdependent and possibly in competition with each other.

3.1 The multi-level nature of innovation in organizations

Anderson et al. (2004, p. 28) used a generally accepted definition of workplace innovation, which reads *“it is 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, the organization or wider society.”* Several meta-studies in recent years (Anderson et al., 2009; Hammond et al., 2011) have tried to combine various concepts surrounding innovation and have, thereby, identified with several factors that are required for the successful implementation of creative ideas and knowledge in organizational practices. These factors are sorted according to the different levels of the organization, as shown in *Table 1: Factors for Innovation at the Individual, Group and Organizational levels*.

Moreover, Camisón-Zornoza et al. (2004) emphasized in their meta-analysis that the organizational level is a decisive determinant for organizational innovation as the physical capacity, number of employees and financial resources were identified to influence the implementation of innovation in practice. Calantone et al. (2002) divided their research on firm innovation capabilities into commitment to learning, shared vision, open-mindedness and intra-organizational knowledge sharing. The first three mentioned factors can be grouped under the individual level, whereas the last factor can be grouped under the organizational level, where organizational structure, formalization and bureaucratic form often determine the knowledge sharing culture of the organization.

Frambach and Schillewaert (2002) suggest a framework that addresses the adoption of decisions at two levels: the organizational level and the individual adopter within the organization. They propose that training and education, organizational technical support and incentives, and control structures play an important role to align the individual and the organization when implementing innovation. Bharadwaj and Menon (2000) support this argument that the presence of both individual and organizational creativity mechanisms lead to the highest level of innovative performance. Their results show that *“it is not enough for organizations to hire creative people and expect the innovative performance of the firm to be superior. Similarly, it is not enough for firms to emphasize management practices to enhance creativity and ignore individual mechanisms”* (p. 8). They conclude that doing both should lead to higher innovation performance.

Hemlin et al. (2008) produced a similar concept for innovation, arguing that “the extent to which an individual’s (or group’s) creative potential is expressed depends considerably on the environment in which that individual (or group) works. Therefore, they investigated the interactions between individuals and groups and the environment. The concept of Creative Knowledge Environments (CKE) was put forward to examine environmental influences, taking into account, to mention a few, individuals, group characteristics, the physical environment and the organization. Assuming that strong innovative capabilities is a sensible goal for an organization, top management leadership can be identified in the literature as a strong facilitator. The next section thus connects the role of leadership with innovation in organizations.

3.2 The role of leadership in organizational innovation

As mentioned above, a wide range of factors have been identified to influence the creativity of employees and, thereby, generate organizational innovation. Jung et al. (2003) write that leaders define the context in which their followers interact and work toward a common goal which implies their connection with the above-mentioned factors and their responsibility to create the right circumstances for innovation to take place within an organization. Furthermore, research shows that leadership factors are consequential for top-management’s influence on innovation, and it is therefore important that individual-level factors are considered in the role of the leader as well as the group level factors within the management team so that the right prerequisites, and support exist at the organizational level (Elenkov & Manev, 2005). Also, Hammond et al., (2011) found that leadership is positively related to creative and innovative behaviors of followers, and is achieved by shaping the work environment in a number of ways.

According to Dobni (2008), the propensity of an organization to be innovative is dependent on the organizational architecture, and that organizational managers and leaders play a strong role in determining the innovation propensity. Leaders construct the organizational architecture and create the organizational capability to innovate through sharing an innovation-promoting vision, hiring and supporting innovation-oriented personnel and rewarding innovative behavior (Ryan & Tipu, 2013).

Scott and Bruce (1994) found that the quality of supervisor-subordinate relationship highly influences innovative behavior. A good relationship between leaders and employees results in employees perceiving support, trust and autonomy to be high (i.e. the employees perceive support for innovation to be high in the organization). Glynn (1996, p. 28) concluded in his research that “*much of an organization’s innovative orientation lies within its visionary leadership*”. It is the leadership’s responsibility to adopt a strong business orientation toward innovation and embed this orientation in their organization’s operating systems and cultural values. This indicates that leadership has a strong influence on what type of innovation the organization pursues.

Mumford and Licuanan (2004) contribute to the above underpinning the impact of leadership on the nature and success of creative efforts. But, leadership of creative efforts is a complex activity, taking into account the nature of the leaders, the leaders’ interactions with followers, the effective direction of followers’ activities, the leaders’ interactions with the organization and the characteristics of the employees. Crossan and Apaydin (2009) provide a multi-dimensional framework of organizational innovation linking leadership with innovation as a process and innovation as an outcome. They found that leaders have to possess substantial technical and professional expertise and creative skills, but also the ability to process complex information. Thus, leadership

training and development seems crucial in order to build necessary leadership attributes for leadership driven innovation.

3.3 The individual level

The individual level has been identified by a number of researchers as one of the most influential areas for innovation (e.g. Hammond et al., 2011; Anderson et al., 2004). Hammond et al. (2011) investigated the impact that individual differences, motivation and job characteristics have on individual-level workplace innovation. Their meta-analysis found that creative personality, openness, job complexity, autonomy and role expectations showed a strong correlation with individual innovation. Intrinsic motivation, job self-efficacy and creative self-efficacy were positively related to individual innovation, but not as strongly correlated. Anderson et al. (2004) used a similar approach, suggesting that individual innovation requires that the person is both able (e.g., has certain cognitive abilities and personality characteristics) and willing (e.g., is motivated, experienced job dissatisfaction) to be innovative. Furthermore, job characteristics (autonomy, job demands) will determine whether the individual will and can engage in innovative behavior, i.e. some individuals will leave the organization if they are dissatisfied with the work, while others will try to change the situation.

Hunter et al. (2007) treats creativity (i.e. innovation) as something that emerges from an interaction between the individual and the situation. They argue that creative people (people that show the individual attributes related to creative achievement) appear especially reactive to climate variables that have an effect (negative or positive) on innovation. Typical climate questions having an effect on individual creativity could be “employees feel free to express their ideas to bosses” or “people are not afraid to take risks around here”, indicating that regardless of individual characteristics the right organizational setting is important to support creativity.

Furthermore, Bharadwaj and Menon (2000) also believe that individual creativity refers to different activities that are undertaken by individual employees within to enhance their capability for developing something, which is meaningful and novel for the work environment. But in this respect it is the responsibility of the organization to institute formal approaches, tools and resources to encourage creative behaviors within the organization. Thus, they concluded that the highest level of innovation performance comes from a combination of individual and organizational creativity mechanisms.

Leadership support for innovation, managerial role expectations, career stage and systematic problem-solving style was found by Scott and Bruce (1994) to be significantly related to individual innovative behavior as these relate to the quality of the supervisor-subordinate (leader-employee) relationship. Rothaermel and Hess (2007, p. 898) suggested that antecedents to innovation can be found at the individual, firm and network levels. They found that antecedents to innovation “*lie across different levels of analysis and can have compensating or reinforcing effects on firm-level innovative output*”. It is inappropriate to investigate firm adaptation and innovation without the consideration of its intellectual human capital. To develop a strong intellectual capital base, both time and commitment of resources will result in those innovative requirements that are necessary to succeed.

Glynn (1996, p. 1081) conceptualize individual and organizational intelligence as being functionally similar and writes that “*organizational intelligence is a social outcome and is related to individual intelligence by mechanisms of aggregation*”. He states that innovation is impossible in the absence of creative geniuses who initiate innovative

processes and intelligent organizational systems that recognize and support viable innovation. Job characteristics are described as fitting the right individual who has the appropriate levels and types of intelligence with the job that requires that intelligence. Intrinsic motivation is also seen as a necessity for creativity and innovation and is likely to have a stronger effect than extrinsic motivation. Motivational variables were concluded to be necessary to take creative, inventive ideas and apply them to organizational needs and problems.

3.4 The group level

Even though many of the creative proposals derive from the individual level, new ideas are generally pursued toward implementation by work groups. Researchers have identified several group-level factors related to innovation in organizations. However, there are some variances with regard to the magnitude and direction of effects of these variables, and the state of the team-level innovation literature is like a jungle of inconsistent findings (Hülshager et al., 2009). Nevertheless, some of the key variables that seem to pervade as important throughout most of the literature are the creation of an open and secure environment allowing autonomy and intrapreneurial behavior. This is often achieved within the sociocultural context of a relatively lower power distance culture in which trust between the involved parties may come more easily (Elenkov & Manev, 2005). Hemlin et al. (2008) discussed this in their study of creative knowledge environments (CKE) and explain that the creative potential, i.e. the basis for innovation, is expressed by varying degrees, depending on the environment in which the group works. They go on to say that innovative environments generally tend to emphasize diversity, flexible boundaries, collaboration and teamwork and mediate a sense of collective pride and faith among their employees. Anderson et al. (2009) argue in their meta-analysis of team-level predictors of innovation that team process variables (i.e. vision, support for innovation, internal/external communication and cohesion) have a strong positive impact on innovation. They go on to say that the size of the team shows a positive relation with team innovation, as larger team sizes bring a multitude of skills and knowledge, but a slightly negative relation with individual innovation as the tendency to engage in social loafing and free-riding increase in larger teams. Anderson et al. (2004) found that team composition (heterogeneity) is of foremost importance because the resources (knowledge, skills, abilities) to be innovative mainly reside within the team members and depend upon variables such as diversity of background and experience, amount of education, age and tenure. So, the formation of work groups or business units stimulates the process of collective learning and competence development through either physical or non-physical interactions between organizational members. This holds true for the interaction between groups as well and it is, therefore, important to avoid inter- and intra-organizational boundaries as they may act as barriers to communication and stimulate a competitive rather than co-operative internal culture. (Pitt & Clarke, 1999).

3.5 The organizational level

Innovation at the organizational level is arguably the most complex level of analysis (Anderson et al., 2004). Here, a variety of factors such as individual characteristics (e.g. the open-mindedness of the CEO) or organizational characteristics (e.g. market share, structure, culture, level of formalization or climate) play an important role. Hammond et al. (2011) noted that contextual influences are equally important for both the ideation phase as well as for the implementation phase. A positive climate, having adequate

resources, supervisor support and leader-member exchange quality were all positively related to innovative performance.

Three components of the organizational work environment were discussed by Amabile (1996) and included all factors within organizations identified as important for creativity and innovation. First, organizational motivation towards innovation includes the absence of elements that can undermine creativity, e.g. political problems, destructive criticism and competition within the organization, strict control by upper management and an excess of formal structures and procedures. Another component important for favoring innovation is resources, which includes everything that the organization has available to aid work in the targeted domain for innovation. This can include a variety of elements, like sufficient time for producing novel work, people with the necessary expertise, funds, material resources, systems and work processes, relevant

TABLE 1
Factors for Innovation at the Individual, Group and Organizational levels

Research area	Factor	Key studies
<u>Individual</u>		
Personality	Autonomy, tolerance of ambiguity, proactivity, openness to experience, creativity	Hammond et al. (2011)
Motivation	Intrinsic (versus extrinsic), job self-efficacy, creative self-efficacy Personal initiative	Hammond et al. (2011); Glynn (1996) Hunter et al. (2007)
Cognitive ability	Divergent thinking, ideational ability, task-specific knowledge and education	Hammond et al. (2011)
Work characteristics	Autonomy, leadership support Tolerance of ambiguity, job complexity Stimulation Appropriate training Job demands	Scott and Bruce (1994) Hammond et al. (2011) Hunter et al. (2007) Rothaermel & Hess (2007) Anderson et al. (2004)
<u>Group</u>		
Structure	Flexible boundaries, job relevant diversity Heterogeneity of memb., backg. diversity (N) Cohesion, size (N)	Allwood et al. (2008) Anderson et al. (2004) Camisón-Zornoza et al. (2004)
Climate	Openness, emotional safety, idea sup., security Collaboration, teamwork	Elenkov & Manev (2005) Allwood et al. (2008)
Leadership	Internal/external communication, conflict (N) Vision, support for innovation, participation, task orientation	Pitt & Clarke (1999) Anderson et al. (2009); Ryan & Tipu (2013); Scott & Bruce (1994)
<u>Organizational</u>		
Structure	Level of formalization (N) Centr. (N), int./ext. communication, autonomy Intra-organizational knowledge sharing	Anderson et al. (2004) Amabile (1996) Calantone et al. (2002)
Culture	Support for experimentation Internal comp. (N), tolerance of idea failure Commitment to learning	Hammond et al. (2001) Amabile (1996) Calantone et al. (2002)
Resources	Market share (N) Time, expertise, money, facilities, material, information, knowledge and training	Anderson et al. (2004) Amabile (1996); Camisón-Zornoza et al. (2004); Frambach & Schillewaert (2002)

information, training, and more. The last component includes both the level of the organization as a whole and the level of individual departments and projects. He found that management can facilitate innovation by allowing freedom or autonomy, matching individuals to work assignments (on the basis of skills and interests), provide work supervision (clear planning and feedback, good communication between supervisor and work group and enthusiastic support) and, finally, constitute effective work groups that represent a diversity of skills and knowledge (i.e. are made up of individuals who trust and communicate well with each other, challenge each other's ideas in constructive ways, are mutually supportive and are committed to their work).

The identified factors of innovation related to leadership are summarized in Table 1.

4 Developing and testing the tool

The development of the tool involved two iterations of testing in practice and analyzing in SPSS. The first version of the tool contained 55 questions and was tested on five individuals from the top management team of SCF. The answers were analyzed in SPSS with the Cronbach's Alpha method which led to the elimination of 24 statements. The new version of the tool containing 31 questions was then tested again on 7 companies from different industries, resulting in 33 responses averaging approximately 4 individuals per company. The following section presents the results from the second test and goes more in depth into how we analyzed the results received in SPSS. An explanation of the concepts used in the analysis of the results and the criteria that determine how we address the collected data can be found in the appendix: *Explanation and Criterion for Analysis Approaches*. The main methods of analysis used in this test are the Cronbach's alpha method with the addition of the Internal Consistency Reliability Analysis and the Factor Analysis. The data has been computed in SPSS Statistics, a software package widely used for statistical analysis in the social science.

Table 2 presents a break-down of the various factors used in this paper. Here, the factors are analyzed individually to understand how strongly the constructs relate each factor. Cronbach's Alpha is the collective score of all the constructs under each factor and gives the consistency among those constructs. "Cronbach's Alpha if deleted" presents the score that Cronbach's Alpha would receive if one of the constructs would be removed. The Corrected Item Total Correlation is relevant as it measures a construct's correlation with all the other constructs. Finally, the mean value has been derived for each of the constructs. To note is that the factors with only two constructs are limited as one of the constructs cannot be removed, as at least two constructs per factor is necessary. Here, reformulation or addition of other constructs might be needed if the values are below the accepted level.

Performing an Internal Consistency Reliability Analysis should be the first step in analyzing a set of constructs to make sure that there is a consistency between what the different constructs measure. If the results from this iteration are sufficient, other types of analyses can be done.

TABLE 2

Internal Consistency Reliability Analysis

	Factor	Cronbach's Alpha	Construct	Cronbach's Alpha if deleted	Corrected Item Total Correlation	Mean Value
INDIVIDUAL LEVEL	Person.	,907	Self-confidence	,913	,718	4,3636
			Openness to experience	,888	,798	3,5455
			Originality	,861	,838	3,9697
			Taking initiatives	,847	,885	4,1212
	Mot.	,720	Incentives	n/a	,573	3,6970
			Stimulation	n/a	,573	4,0909
	Cogn. Ability	,690	Divergent thinking	,623	,486	4,1212
			Ideation	,427	,647	3,3030
			Openness	,725	,402	3,9394
	Work Char.	,179	Alternating work pressure	,443	-,035	3,9697
			Job satisfaction	-,222	,233	3,2727
			Mentorship	,082	,113	3,0606
GROUP LEVEL	Group Struc.	,824	Competence variance	,682	,754	3,4848
			Dynamics	,708	,736	3,6364
			Job-relevant competence	,849	,584	3,4545
	Group Climate	,623	Knowledge sharing	,604	,300	3,6667
			Information sharing	,544	,436	3,5758
			Team-building	,694	,089	2,5152
			Conflict management	,460	,572	2,8182
			Brain-storming	,473	,534	3,5152
	Leadership Traits	,664	Leadership development	,672	,309	3,4545
			Leadership competence	,533	,593	3,0606
Vision			,653	,314	3,3939	
Problem solving			,518	,637	3,1212	
Decision making	,667	,319	3,5152			
ORGANIZATIONAL LEVEL	Org. Struc.	,797	Decentralization	n/a	,664	3,2121
			Policies and procedures	n/a	,664	3,4242
	Org. Cul.	,773	Tolerance	n/a	,630	3,4848
			Risk taking	n/a	,630	3,3333
Avail. Res.	,753	Time allocation	n/a	,604	2,3939	
		Physical resources	n/a	,604	2,8182	

Table 3, 4 and 5 measure the Inter-Item Correlations at the various organizational levels. Table 3 presents the correlations among the constructs at the individual level of analysis, whereas Table 4 presents the correlations at the group level and, finally, Table 5 presents the correlations at the organizational level. This is interesting as some constructs are very dependent on each other whereas others are not. We have limited the analysis to not include the correlations between the various organizational levels.

TABLE 3

Inter-item Correlation Matrix at the Individual Level

	Self-confidence	Openness to experience	Originality	Taking initiatives	Incentives	Stimulation	Divergent thinking	Ideation	Openness	Alternative work	Job satisfaction	Mentorship
Self-confidence	1,00	,633	,672	,701	,537	,297	,648	,317	,252	,017	,459	,068
Openness	,633	1,00	,738	,795	,426	,334	,581	,549	,448	,128	,223	,093
Originality	,672	,738	1,00	,848	,414	,213	,642	,580	,326	-,163	,407	,185
Taking initiatives	,701	,795	,848	1,00	,531	,268	,728	,576	,415	-,067	,357	,152
Incentives	,537	,426	,414	,531	1,00	,573	,535	,503	,379	-,012	,389	,208
Stimulation	,297	,334	,213	,268	,573	1,00	,248	,128	,341	,200	,064	,376
Divergent thinking	,648	,581	,642	,728	,535	,248	1,00	,574	,271	-,228	,330	,403
Ideation	,317	,549	,580	,576	,503	,128	,574	1,00	,455	-,179	,308	,232
Openness	,252	,448	,326	,415	,379	,341	,271	,455	1,00	-,036	,059	,121
Alternative work	,017	,128	-,163	-,067	-,012	,200	-,228	-,179	-,036	1,00	,043	-,101
Job satisfaction	,459	,223	,407	,357	,389	,064	,330	,308	,059	,043	1,00	,284
Mentorship	,068	,093	,185	,152	,208	,376	,403	,232	,121	-,101	,284	1,00

TABLE 4

Inter-item Correlation Matrix at the Group Level

	Competence variance	Dynamics	Job-relevant competence	Knowledge sharing	Information sharing	Team-building	Conflict management	Brain-storming	Leadership development	Leadership competence	Vision	Problem solving	Decision making
Competence variance	1,00	,746	,553	,203	,339	,114	,486	,423	,142	,408	,425	,505	,563
Dynamics	,746	1,00	,539	,201	,371	,184	,446	,639	,089	,404	,365	,645	,623
Job-relevant comp.	,553	,539	1,00	,374	,515	,249	,589	,536	,383	,636	,604	,493	,557
Knowledge sharing	,203	,201	,374	1,00	,608	-,068	,185	,139	-,185	,076	,395	,111	,062
Information sharing	,339	,371	,515	,608	1,00	-,037	,278	,324	,116	,332	,326	,119	,145
Team-building	,114	,184	,249	-,068	-,037	1,00	,167	,142	,466	,400	,205	,501	-,025
Conflict management	,486	,446	,589	,185	,278	,167	1,00	,671	,051	,561	,535	,371	,537
Brain-storming	,423	,639	,536	,139	,324	,142	,671	1,00	-,042	,298	,576	,466	,539
Leadership dev.	,142	,089	,383	-,185	,116	,466	,051	-,042	1,00	,557	-,100	,463	-,017
Leadership comp.	,408	,404	,636	,076	,332	,400	,561	,298	,557	1,00	,264	,478	,232
Vision	,425	,365	,604	,395	,326	,205	,535	,576	-,100	,264	1,00	,330	,425
Problem solving	,505	,645	,493	,111	,119	,501	,371	,466	,463	,478	,330	1,00	,364
Decision making	,563	,623	,557	,062	,145	-,025	,537	,539	-,017	,232	,425	,364	1,00

TABLE 5

Inter-item Correlation Matrix at the Organizational Level

	Decentralization	Policies and procedures	Tolerance	Risk taking	Time allocation	Physical resources
Decentralization	1,00	,664	,230	,175	,506	,607
Policies and procedures	,664	1,00	,320	,318	,459	,482
Tolerance	,230	,320	1,00	,630	,409	,377
Risk taking	,175	,318	,630	1,00	,180	,062
Time allocation	,506	,459	,409	,180	1,00	,604
Physical resources	,607	,482	,377	,062	,604	1,00

An interesting analysis for discussion is the difference between leaders' and employees' perception of how innovation manifests in their organization. Here, different results are presented, including the average value for each organizational level, the total average response for the whole organization and by which amount the factors differ in terms of range. The data has been divided between leaders in a top management position with employees spread out in the rest of the organization.

TABLE 7

Analysis of Leaders' and Employees' Perception of Innovation

	Cronbach's Alpha	Mean at the Individual Level	Mean at the Group Level	Mean at the Organizational Level	Total Mean	Mean Range
Leader (5)	,715	3,983	3,477	3,400	3,667	2,400
Employee (28)	,935	3,783	3,321	3,107	3,459	1,893
<u>Total: (33)</u>	,931	3,788	3,324	3,111	3,462	1,970

The Component Matrix is part of the Factor Analysis and gives a value of how well a construct measures various dimensions (or components). The number of dimensions as well as the intensity of a construct's impact on the various dimensions are those that are relevant bases for discussions.

TABLE 6
Component Matrix and Total Variance

Constructs	Components							
	1	2	3	4	5	6	7	8
Self-confidence	,737	-,188	-,116	,090	-,342	-,084	,383	-,073
Openness	,726	-,161	,201	,204	-,315	-,333	-,095	,153
Originality	,780	-,085	-,221	,004	-,268	-,159	-,092	-,021
Taking initiatives	,850	-,123	-,157	,094	-,217	-,168	-,018	,125
Incentives	,668	,119	,119	,132	-,282	,360	-,158	-,020
Stimulation	,364	,262	,388	,518	-,152	,324	,015	,124
Divergent thinking	,746	,068	-,299	,244	-,265	-,066	-,097	-,154
Ideation	,639	-,226	,024	,026	-,073	,059	-,581	-,094
Openness	,497	-,460	,142	,435	,277	,139	-,172	,213
Alternative work	-,016	,057	,751	-,151	-,088	-,145	,351	,106
Job satisfaction	,502	-,136	,018	-,327	-,203	,517	,280	-,215
Mentorship	,360	,432	-,024	,298	,271	,329	-,089	-,264
Competence variance	,732	,056	-,012	,110	-,055	,018	,495	,037
Dynamics	,802	,063	,002	,261	-,120	-,055	,153	-,038
Job-relevant competence	,777	,267	-,225	-,095	,246	,130	,039	,154
Knowledge sharing	,325	-,259	-,702	,121	,305	-,262	,132	-,057
Information sharing	,459	-,025	-,631	,076	,062	,113	,105	,368
Team-building	,247	,694	,097	,066	-,054	-,168	-,032	-,422
Conflict management	,718	,033	,128	-,313	,299	,194	,021	-,005
Brain-storming	,774	-,086	,143	-,114	-,042	,222	-,082	-,038
Leadership development	,097	,857	-,029	-,059	-,011	-,112	,016	,286
Leadership competence	,492	,594	-,102	-,034	,277	,146	,020	,260
Vision	,632	-,083	-,300	-,393	,100	,095	,013	-,346
Problem solving	,603	,471	,142	,085	,098	-,363	,125	-,136
Decision making	,774	-,179	,194	-,025	-,100	,008	-,048	,016
Decentralization	,611	-,245	,122	-,544	-,041	-,083	-,060	,225
Policies and procedures	,726	-,260	,233	-,362	-,063	-,113	-,033	-,021
Tolerance	,463	-,286	,164	,176	,626	-,173	,162	-,238
Risk taking	,299	-,513	,357	,288	,461	,050	,133	,031
Time allocation	,669	,181	,259	-,058	,200	-,359	-,288	-,055
Physical resources	,655	,287	,084	-,345	,315	-,003	-,106	,173
% of Variance	37,24	10,37	7,78	6,02	5,93	4,52	4,01	3,36
Cumulative (%)	37,24	47,61	55,39	61,41	67,34	71,86	75,87	79,23

The above presented data collection are not discussed only individually by table, but also collectively as they together create interesting results. The point of the discussion is not to crunch numbers, but to understand the factors importance for innovation and their relationships to each other. This is discussed in the following section.

5 Interpretation of the analysis

The following section discusses the data acquired through the test of the tool and the implications of the results of the analysis carried out in SPSS have on the research questions. Target values, and similar, mentioned below can be found in the appendix: *Explanation and Criterion for Analysis Approaches*.

5.1 Internal consistency reliability analysis

The results illustrated in Table 2 show that only two factors have a Cronbach's alpha higher than our target value of 0.8 while four other factors are over the acceptable minimum of 0.7, and the remaining four are below. Out of these remaining four factors, *Work characteristics* deviates significantly with a value of 0.179, which implies that the responses to the tool within this factor were inconsistent and that the questions leave too much room for interpretation and might not be adequately linked to the factor. As we can see in the table, we can increase the Cronbach's alpha value to 0.443 by deleting the construct *Alternating work pressure*. Alternatively, we could reformulate the question associated with this construct since the present formulation has been interpreted differently resulting in the large variance in responses. Likewise, there are constructs within other factors that could be deleted, or their questions could be reformulated, in order to increase the Cronbach's alpha value. Since all the chosen constructs derive from the factors in Table 1, which are supposed to be related to each other according to our literature review, it is likely that our own interpretation of the factors have affected their consistency when transforming them into questions. In other words, the way that we formulated the questions so that they would relate to a specific construct, according to our understanding of it, might not have been interpreted in the same way by the respondents. This would naturally lead to a degree of ambiguity and a variance between the answers.

Regarding the Corrected Item Total Correlation we can see that the majority of the constructs fall within the recommended range of 0.3 to 0.7 while some obtained a value higher than 0.75, and therefore can be considered to be redundant. Others obtained a value below 0.2 indicating that they do not contribute sufficiently. The ones that obtained a value over 0.75 are too strongly related to the overarching subject of innovation and may therefore have their respective questions revised to indicate more specifically what is being asked. Similarly, the constructs that obtained a value below 0.2 may either be revised so that it becomes more apparent what they are asking for or deleted entirely. In regards to the factor *Work characteristics* one can see that two of its constructs have a value below 0.2 where one of them is even below zero. We assume that the respective questions are too diffusely formulated or leave too much room for personal interpretation.

All of our constructs received a Mean value around or above the middle of our scale (1-5) which either indicates that: our questions are formulated so that it is too easy set a high score; the respondents were too optimistic when answering the questions, which again could be due to the formulations; or that the respondents do work at companies that are highly innovative. When analyzing the answers, we saw that some constructs such as: *Time allocation*, *Physical resources* and *Team-building*, repeatedly received low values. As these constructs are important prerequisites for innovation, it is strange that they received the lowest values. Furthermore, we could see that there was a great variety of answers although the majority tended to be on the higher side of the scale, which shows that innovation is a complex concept. This ambiguity of what it actually

is that the tool aims to evaluate might confuse the respondent when answering the questions which, in turn, naturally would lead to a great variety of responses.

5.2 Inter-item correlation

The inter-item correlation matrix on the individual level shows that there is some disparity within the correlations between the different constructs, but the majority of the constructs are positively correlated to each other. However, *Alternative work* shows, unsurprisingly, several figures with negative value which once again suggests that it should be removed or that these questions should be reformulated. *Mentorship* also has rather low, but mainly positive, values. On the group level matrix, we can see a similar set of values where the negative values are dispersed mainly within constructs such as *Team building*, *Leadership development* and *Decision making*. Finally, the organizational level matrix shows a slightly higher set of values more similar to the individual matrix, but without any negative values.

What these matrixes tell us is that some of the constructs can be deleted or revised as the questions do not correlate sufficiently or even positively with the other questions. Furthermore, no two separate constructs received a correlation value of over 0.9 which at least indicates that the constructs do not overlap with each other excessively.

By deleting or revising one or more of the low correlating constructs, we could increase the reliability of our innovation scores and the internal consistency reliability coefficients.

5.3 Factor analysis

As the factor analysis identifies ‘hidden’ components which represent the organizing principles of the known constructs, we can observe in Table 6 that every construct is constituted by several underlying components. The aim is to find the significant components that are associated with our constructs and determine what they mean so that ambiguous constructs can be reformulated to become more specific. The factor loadings indicate how strongly each of the identified components relate to the observable constructs used in the analysis. The eight included components constitute 79.23 percent of all identified components and, thereby, explain most of the ‘hidden’ variations relevant to our set of constructs. Preferably, the components should have a high score within only one construct ($>$ than or $=$ 0.7) since it makes it easier to determine what the component means. In other words, the conceptual characteristic of a component is determined by the constructs which have a high score on that specific component. In our case, we can see that the characteristic of component 1 is determined by several different constructs, which is normal but makes it harder to determine what the component means. Component 2, however, has mainly received high scores on *Team-building*, *Leadership development* and *Leadership competence* which thereby can be used to describe the component since its characteristics are similar to what the three constructs measure. Similarly, the characteristics of the other components can be determined by the constructs that received a high score. The negative scores indicate that the characteristic of the component is the opposite of whatever the construct measures.

Some constructs have scores below 0.7 in all components and could therefore be left out if the factor analysis would be iterated since they have such low values. We chose not to do so since at least one of their components fall above the slightly lower level of 0.4 viable for real-life data. The only exception is *Knowledge sharing* which has values

less than 0.4 in all components. The constructs that have more than 0.4 in two or more components can be reformulated or deleted since they are too ambiguous.

5.4 Comparing leaders' and employees' perceptions of innovation

When comparing the answers from employees with the ones from leaders, several interesting conclusions can be drawn. We can see that the leaders' Cronbach's alpha value were significantly lower (0.673) than those of the employees' (0.934). This could mean that there is a broader spectrum of interpretation of the tool and a greater variation of characters among the leaders while the employees tend to share a similar interpretation of the tool and be more unanimous in their answers. This could be due to the leaders being in a position where they have greater access to information and knowledge of the actual situation of their organizations while employees receive a filtered version of the current situation. It could also be that the leaders are distanced from the day-to-day work within the organization, which would provide them with less information than the employees of the actual situation on the shop floor. Furthermore, we can see that the different mean values are higher among the leaders, which tells us that even though their responses vary more than those of the employees they do so within a higher level of the grading scale. So, the leaders appear to share a more optimistic view of the organization, which could be due to the above-mentioned reasons, namely that they have more information or that they are distanced from the actual situation of the organization. It could also be that individuals who seek a leadership role tend to be more optimistic or possess similar character traits that make their answers more positive, which can be seen on their higher average at the individual level. Another interesting issue that the difference in average values shows is that the leaders might believe that they take appropriate actions toward enhancing the innovative climate, but that the results of their actions are not sufficient at the level of the employees. Yet another reason could be that the leaders do take sufficient actions toward improving innovation, but that the results of their actions appear earlier at the individual and group levels since people are apt to change their mindsets and actions within a relatively short period of time, while the results at the organizational level have not taken place yet. The reason for this could be that, in the context of an organizational time perspective, where changes often develop slowly, there are so many obsolete structures that are deeply ingrained in the organization from a time when standardization rather than innovation was the watchword.

6 General discussion

When developing a tool of this type, is it necessary to iterate the process of revising and analyzing the tool until almost perfect scores are obtained? Preferably, the scores should fall within the acceptable target values, but interpretation allowances should be made for the variability of scores from different respondents. Other influencing factors are: the number of items on the test, the length of time allowed for answering the test, and other sources of error indicated by the reliability coefficient.

It is hard to determine whether or not a weak value obtained in SPSS on a factor means that this factor has less of an impact on innovation or vice versa. The formulations of the questions in the tool may contribute to a variety of interpretations. Our literature review does, however, validate that all the chosen factors have some degree of

connection to organizational innovation, and that several of them are directly influenced by the leaders.

When reviewing the results of the test, it becomes apparent that some constructs tend to obtain a lower score than others. As we can see in Table 2, some of the lowest mean values were obtained on the constructs belonging to the factor *Resources* on the organizational level. This makes us aware of a dilemma that many leaders face nowadays in which they are able to exert influence on innovation by stimulating open discussions, non-conformist thinking and autonomy and facilitate the implementation of innovative ideas, but under the constant constraints of limited resources and specific requirements from internal or external factors. So one of the major bottlenecks for innovation seems to be the allocation of resources, especially time. As testing of new ideas often requires a great deal of time it is seldom prioritized. This implies a certain degree of complexity for the leader to promote innovation by successfully handling not only the aspect of time but all of the aforementioned factors mentioned in Table 1 as well. Such a demanding task could be solved by the leader's conscious actions towards granting work autonomy, encouraging new initiatives and allocating sufficient resources without giving up control of the work. It could also be solved by assigning an innovation manager, or similar, with the main responsibility of maintaining a balance between control and autonomy while also managing the risks associated with innovation such as: failure of new ideas and unexpected outcomes. However, it is important to understand that risk-taking should not be avoided entirely as it is inherent in innovation. Conversely, it should be taken advantage of by instilling an organizational culture that encourages experimentation and thereby shows trust in its employees' ability to undertake creative endeavors. Furthermore, external advisors on innovation could also be used to solve this complex task with the use of appropriate tools aimed at evaluating the innovative climate, such as the one proposed in this study.

The final version of the tool shows factors that are important for innovation to develop in an organizational context. This version can, however, be revised further by taking the above discussed results of the statistical analysis into consideration. What also emerged during the literature review and the analysis was that even though these different constructs are divided under specific factors they are more or less interconnected, something that has to be taken into consideration by the one(s) responsible for managing these factors.

6.1 Summary of findings

In conclusion, it seems clear that leaders can influence innovation both positively and negatively by influencing employees' innovation when the employees work individually and in groups. The most important factors involved in this process have been identified in this paper through an extensive study of recent literature sorted into three distinct levels, namely: the individual level, the group level and the organizational level. The categorization of the different factors and the factors themselves can be found in Table 1 in this report.

A tool has been developed with the purpose of measuring the identified factors within any given organization and, thereby, assesses the innovation culture and identifies areas with potential for further development. The validity of the tool has been analyzed twice in the statistical analysis software SPSS, whereas the first iteration led to changes, the results of the second iteration formed a basis for the discussion in which suggestions for further revisions have been given.

The relationship between leadership and innovation involves numerous actions that a leader can take to influence innovation, as described in the literature review. However, based on the identified factors, what seems to be the main purpose of leadership, in working with innovation, is to create an organization with a supportive culture for innovation. This involves a decentralization of organizational structures, which allows autonomy and freedom to engage in creative work. It also involves an active promotion of innovative behavior by encouraging team reflection processes and providing the individuals with a vision and a supportive leadership style. All of this, while maintaining a balance between risk and action.

6.2 Limitations of the study

Although we believe that our findings contribute to the innovation literature, some limitations should be kept in mind when drawing conclusions from our results. Several areas of research were excluded from our search as they overlap with other existing research. For example, leadership models such as transformational leadership and transactional leadership describe tailored strategies that can be used for a specific aim, which does not correlate well with the amount of flexibility we seek for our tool. Also, empowerment was described as an influential factor for innovation, but often overlapped with motivation or organizational barriers (i.e. organizational structure and degree of centralization and formalization). Organizational climate and organizational culture has been used interchangeably in the literature, and often describes a holistic picture of the organizational context for innovation. However, organizational culture is the most overarching concept and is therefore placed under the organizational level, whereas climate relates more to the systems and behaviors that exist within the organization between the different functions and is, therefore, put under the group level.

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8 Appendix

Explanation and Criterion for Analysis Approaches

Cronbach's Alpha	<p>Explanation: Cronbach's Alpha is an estimate of the internal consistency reliability associated with scores derived from a scale.</p> <p>Criterion: The Cronbach's Alpha value must be at least 0.70, but preferably higher. Nunnally and Bernstein (1994) state that 0.70 is an acceptable minimum for a scale, and that basic research should rely upon scales that yields scores with a minimum reliability of 0.80. In cases where important decisions are being made based on scores from a scale, a reliability in excess of 0.90 should be expected. Thus, we seek to achieve scores with at least 0.80 to ensure strong factor validity.</p>
Cronbach's Alpha if deleted	<p>Explanation: This value is the result of what would happen if the construct would be removed completely to the overall Cronbach's Alpha value for a factor.</p> <p>Criterion: An increase in Cronbach's Alpha may justify the removal of a construct as it entails that that construct does not measure the same thing as the other constructs. However, the removal of a construct can be ignored if Cronbach's Alpha already is high, thus meaning that the constructs somewhat measure the same thing and that additional changes are not required even if the value would increase slightly.</p>
Corrected Item Total Correlation	<p>Explanation: Theoretically all constructs should be inter correlated with each other positively as they are measuring the same factor. A high value between two items indicate that they are measuring the same thing. Corrected item total correlation is a composite score of a construct with all the other remaining constructs. The higher the value the stronger the correlation between the scores of one construct and the combined scores of the other constructs.</p> <p>Criterion: Ferretich (1991) recommends that corrected item total correlation should range between 0.30 and 0.70 for a good scale. Once a construct starts exceeding 0.75 the constructs start being redundant as they are almost measuring the whole scale by itself. A value below 0.2 means that the construct linked to the factor is not giving a good enough contribution to the measured factor and should be removed.</p>
Mean Value	<p>Explanation: The mean value is the average of a set of numbers computed by adding the value of each number and dividing by the total number of numbers. A high mean value of a factor indicates that it is easy to attain a high number and a low mean value indicates that that factor is harder to attain a higher value on. Thus, the purpose of including the mean value is to understand how the scales functions in each factor, i.e. a higher value of a factor does not necessarily mean that that factor is better than a factor with a lower value, but only that it might be harder to attain a high value of the latter.</p> <p>Criterion: If a factor's mean value differ heavily from other factors' mean values there is an indication that those factors' measurement scales are different. This should be taken into consideration when using the tool in the future. For an example: if most factors received a mean value of 3.5, but one of the factors received a score of 4.5, then that factor will be noted as "easier" to attain a higher value on, and could be in need of reformulation.</p>

Inter-Item Total Correlation

Explanation: Inter-item total correlation gives an indication of whether or not a construct is correlated with the other set of constructs in a questionnaire. Here, high values are desirable because that indicates that they measure the same thing, even though they are based on different constructs. But, if any of the correlations are too high (say above 0.9), a construct may be in need of removal as the two constructs seem to be measuring the same thing.

Criterion: All items should be positive. Constructs with low correlation to the other constructs could be removed as they are not related to the other statements in the questionnaire. If the majority of a construct's figures are negative when matched with other constructs it can be removed from the list of statements.

Factor Analysis

Explanation: Factor analysis is a statistical method used to describe variability among observed, correlated variables in terms of potentially lower number of unobserved variables called factors. The factor loadings, also called component loadings, are the correlation coefficients between the constructs and factors.

Criterion: The rule of thumb in confirmatory factor analysis argue that loadings should be 0.7 or higher to confirm that independent variables are represented by a particular factor. However, real-life data may not meet this criterion which is why many researchers will use a lower level such as 0.4 for the central factor and 0.25 for other factors. In our case, the factor analysis only support what has been found in the internal consistency reliability analysis and are not in its own excluding any construct from the set of statements in the questionnaire, i.e. they are interpreted in the light of theory used and prone to margins of error.

Paper II

Doing Action Research in a Consultancy Firm: Reflections on Creating a Tool to Measure Organizational Innovation

In Collaboration with a Swedish Consultancy Firm

JONATHAN CHAUSSET & LORENZ MC NAMARA

ABSTRACT

Using an Action Research approach in collaboration with a Swedish Consultancy Firm (SCF) we have developed a tool measuring factors for innovation in organizations. The purpose of this paper is to reflect over the process of progressive problem solving aimed at creating knowledge that will guide the project throughout its stages. As Action Research tries to address particular problematic situations in practical contexts, it fits well with our situation of merging theoretical and practical knowledge. This resulted in a five step learning cycle, from project initiation to project completion, where every successive iteration is a result of the knowledge derived from the previous. We found that Action Research advanced the progress of the project in a helpful manner, especially in the context of facilitating decision making of how to proceed forward. Also, we found that by documenting the project in this way, it become easier to follow a red line throughout the project and reflect critically on our actions both during the cycles and between the cycles. Finally, this paper can help others pursue similar endeavors by providing an iterative process of reflection and incremental improvements.

Keywords: *Action research, survey creation, innovation in organizations.*

1 Introduction

Doing research in collaboration with organizations is rewarding, but may also prove difficult because it entails dealing with different types of knowledge: theoretical knowledge available in the scientific community and practical knowledge expected from the organization with which one collaborates. This research approach requires that different knowledge are skillfully balanced, i.e. that the approach is not biased towards any direction nor excludes any valuable input, regardless of knowledge origin. To ensure this, the researchers should first have a pre-understanding of the culture, norms and setting of the addressed context, and understand the implicit rules embedded in the organizational practices (Schein, 1990). Also, the researchers should understand how to adapt their theoretical knowledge attained from the scientific community into practical knowledge that is useful for the collaborative organization.

The value of this type of research is the possibility to contribute and bridge the gap between internal practical knowledge and external theoretical knowledge by pursuing both insider and outsider perspectives. One of the most common ways of bridging this gap of knowledge is to devise a scientific approach with the organization in question. This approach is called Action Research (Herr & Anderson, 2005) and has the aim of developing theories within the practice itself and test them through various experiments which are divided into multiple iterations. The collaborative organization can benefit highly by infusing theoretical knowledge within the boundaries of its practice, thus increasing the total amount of knowledge available to the firm. Researchers, on the other hand, can test theoretical knowledge derived from the scientific community in a practical environment, thus test its validity and enhance the knowledge. Challenges often faced in Action Research may include: 1) difficulties balancing the researcher's agenda with the agenda of other participants and 2) difficulties motivating involved participants towards goals of others, as all actions taken are rarely divided equivalent between the participant's goals.

Learning commonly takes place through reflecting on actions taken. Therefore, this article aims to reflect on the research process of a collaborative endeavor between master's students and a consultancy firm by using a *look, think, and act* approach (Stringer, 2014). This reflective process has been ongoing throughout the collaborative project and documented through comprehensive field notes, which this article is based on. This allows us to evaluate the steps taken towards the created tool and incrementally improve its quality and validity. The tool's purpose is to measure and provide a holistic framework of an organization's innovative culture. The data derived from this can, in turn, be used for analysis and as a basis for discussions with the client for future improvements on their management of innovation. The Action Research approach used in this article is divided into five learning cycles and aims to answer the following questions:

- 1) Learning Cycle 1:
RQ: Why are explorative interviews and participating in company activities important for understanding the organization (e.g. its' norms, values, expectations and culture)?
- 2) Learning Cycle 2:
RQ: Why is a review of the literature important to define the scope?
- 3) Learning Cycle 3:
RQ: Why is testing and evaluating the tool internally important for validity?

4) Learning Cycle 4:

RQ: Why is testing and evaluating the tool externally important for validity?

5) Learning Cycle 5:

RQ: How can the final tool be reviewed and launched effectively?

The Action Research project was conducted in collaboration with a Swedish Consultancy Firm (hereafter referred to as SCF) during the period January 2014 – May 2014. The research aimed at investigating what organizational factors are most influential for organizational innovation. Findings from the research and the research in whole is presented in paper I (Mc Namara & Chausset, 2014, in this volume).

In the theoretical framework we provide some background to why Action Research is suitable for specific circumstances and why reflecting and questioning the various process iterations is important for research and practice. The Action Research is divided into 5 cycles followed by a comprehensive reflection part. We conclude the paper by discussing lessons learnt and steps taken in order to reach the final product.

2 Theoretical framework

2.1 Action Research methodology

One popular definition of Action Research was developed by Dick (2002):

“Action Research is a flexible spiral process which allows action (change, improvement) and research (understanding, knowledge) to be achieved at the same time”.

A complementary, but similar definition was introduced by Hopkins (2002, p. 42):

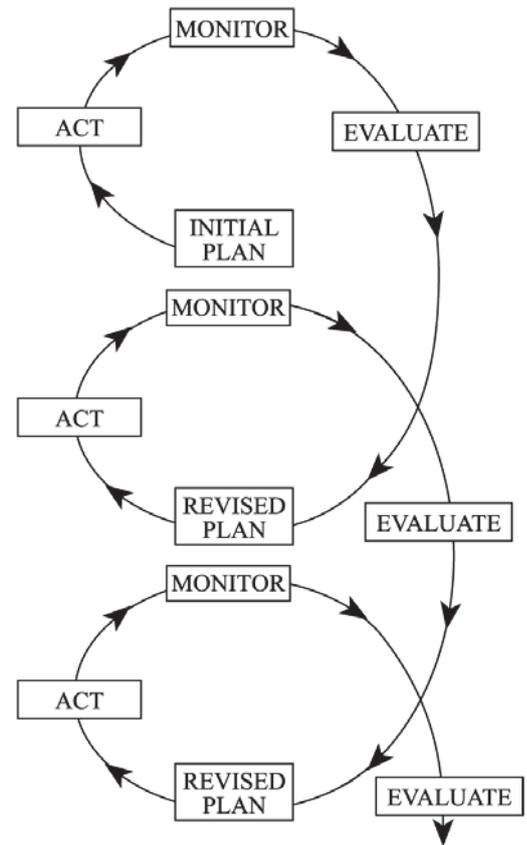
“Action Research combines a substantive act with a research procedure; it is action disciplined by enquiry, a personal attempt at understanding while engaged in a process of improvement and reform”.

Both definitions require that internal practical knowledge and external theoretical knowledge merge in a collaborative effort to strengthen both areas of knowledge. Such a project is primarily concerned with linking in a chronological order: planning, acting, observing and reflecting (Costello, 2003). An examination of the Action Research methodology suggests that: it has a practical, problem-solving emphasis; is carried out by individuals, professionals and educators and involves research and systematic and critical reflection with the aim of improving practice. It is also understood that such research involves gathering and interpreting data, often on an aspect of teaching and learning. But maybe most importantly, it involves a critical reflection model that reviews actions undertaken and plans for future actions (e.g. Dick, 2002; Hopkins, 2002).

Thus, the main goal of the Action Research approach is to reflect on the outcome of each cycle that has generated new knowledge, which in turn will give rise to further action. After completing each cycle, a new cycle can be initiated and the process is repeated to further improve the research.

It is also important not to treat practical and theoretical knowledge as opposite ends of a spectrum, but as complementary “knowledge workers” whose relations to theory and practice depend on their situational and cultural contexts (Samuelsson, 2006). The collaboration should be beneficial at both ends of the spectrum, and overlap so that some theoretical knowledge is injected in the practical environment while practical knowledge is attained in academia. This is one of the main benefits of collaborating across knowledge boundaries and the value of pursuing an Action Research approach.

The Action Research project was performed in collaboration with SCF during 5 consecutive months. The location of the work was not fixed, and required that we worked at multiple locations, either at their offices, externally with clients or at the university. The aim of the collaboration project was to investigate which factors are most influential on the development of innovative organizational cultures. We found that innovation had to be treated holistically and managed on all organizational levels. Also, we found that the factors for innovation, derived from the literature review, were working as indicators for creating innovative cultures as we validated them on organizations in practice.



Kemmis (1983). *Becoming critical: Knowing through Action Research.*

3 The Action Research story

The iterative process of the Action Research is described in 5 learning cycles (figure 1).

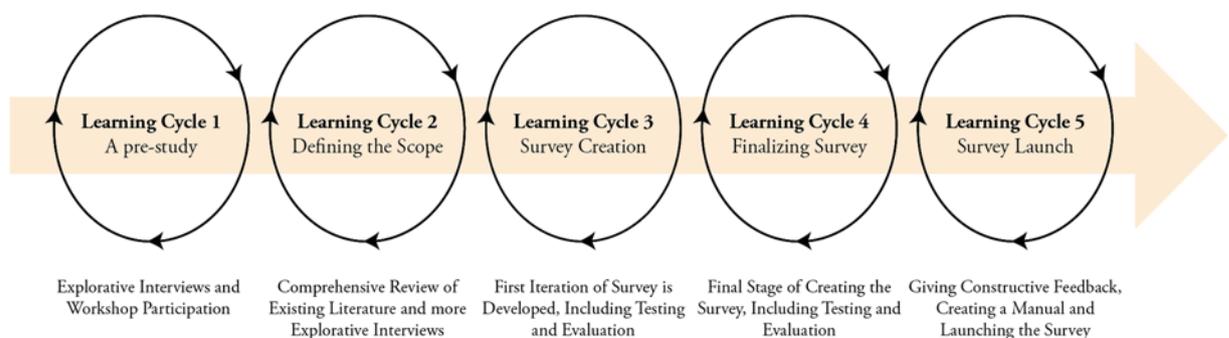


Figure 1: Our Action Research Process

All cycles follow the same *look, think* and *act* pattern (Stringer, 2014) and each cycle is an outcome of the previous completed cycle. The final product has, thus, been

carefully developed through several processes to ensure that it captures what we originally pursued. These are explained more in detail below.

3.1 Learning cycle 1: The pre-study

3.1.1 Explorative interviews and workshop participation

The time schedule for cycle 1 spanned three weeks, including three interview sessions as well as participating in a workshop. In total, four interviews were conducted with SCF: including the CEO, a partner, an employee responsible for sales and marketing and a newly recruited employee. Our participation in the workshop was divided into two days, whereas the first day focused on brainstorming sessions and the other day focused on concretizing and realizing creative ideas. In this cycle we seek to answer the following research question: *Why are explorative interviews and participating in company activities important for understanding the organization (e.g. its' norms, values, expectations and culture)?*

3.1.2 Design and approach

The collaboration was established to develop the tool that would measure the innovative climate in organizations. To do this, we needed to acquire situated knowledge of the organization through explorative interviews. These allowed us to attain information about what exactly they needed and sought to achieve. Also, the interviews gave us a natural pathway to enter the workshop, and to understand employee expectations and reflections. Here, we took the role of observers, using an outsider perspective on an internal, closed group of employees. Also, this allowed us to meet all of the employees and introduce ourselves to the organization.

3.1.3 Findings, reflections and plan of action

A wide variety of responses from the interviewees indicated that 1) there was little cohesion in expectations between employees and that 2) employees struggled with understanding the company's definitions, vision and mission. We hypothesized that creating the tool could prove difficult as the organization had issues communicating its vision towards its employees. Concerning the issue of understanding the organization's vision, we also had difficulties aligning the tool with a specific vision.

As the workshop progressed, numerous creative and attainable ideas were generated by involved and committed employees. We noticed, however, that there was an indication of skepticism whether or not the organization could implement and realize them in practice. We describe this phenomenon in the figure below (Figure 2). Here, we emphasize that it is important to select the most valuable ideas and concretize them towards practical solutions/products/services within the organization.

We were positively surprised by the amount of effort and energy that was emphasized on the creation of the tool. This was valuable as it gave us the encouragement and incentive to pursue the project at a fast pace. Also, we began to understand that there existed a strong synergy for both parties to succeed with the project. The collaboration would improve on and fuse the knowledge available at both ends of the spectrum, i.e. their practical knowledge and our theoretical knowledge.

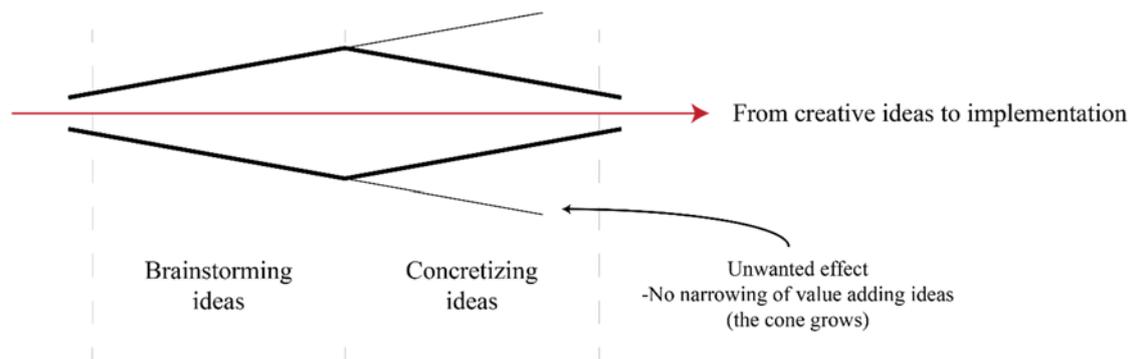


Figure 2: A model for implementing creative ideas

Having met all the employees in their environment, we received valuable feedback and were able to discuss, both formally and informally, what their expectations and hopes were for the tool. We got the indication that they were not fully aware of this themselves, and that strong initiative taking was necessary from us to create the tool. Also, participating in the workshop helped us manage expectations of the project and set the level of work effort that we were able and capable to put in for our future collaboration.

To best illustrate our ambition and participation in the project we decided to write a post-workshop report underpinning some of the major thoughts and reflections from the workshop (available in appendix 6.3 Reflections on workshop: found in this volume). This proved to be highly appreciated and valuable for them as we were able to see the workshop from an outsider perspective. Many of the reflections given confirmed the issues that they had, but could not concretize by themselves. To not be limited by organizational frames and barriers (that manifests when working under similar conditions, assumptions, values, etc.) is, thus, important in order to attain new knowledge for the organization. The report worked as a core document for future work and provided the necessary directions to kick-start the project.

To conclude, we had now established a relationship between us, the researchers, and them, the practitioners, and set project expectations in order to move on to cycle 2. This, in many ways, mimics the above figure by starting off the project carefully (defining expectations etc.), followed by a more comprehensive gathering of data resulting in an end product which hopefully corresponds with initial expectations. Thus, the close collaboration with SCF in the project's early stages was very important as it made us aware of the issues they had, set the level of freedom in our work and made them understand what we wanted to attain with the project. Without this cycle, it would have been very difficult to research properly and take into account the practical setting that the theoretical knowledge would have to fit into when reviewing it. Cycle 2, which follows, is reviewing the literature not solely from a theoretical perspective, but from a practical perspective as well.

3.2 Learning cycle 2: Defining the scope

3.2.1 Comprehensive review of literature and explorative interviews

This cycle put effort on selecting the appropriate research approach to create the first iteration of the tool development (cycle 3). First, a comprehensive literature search was conducted, followed by semi-structured interviews, both with SCF and with people from academia. We here seek to answer the following research question: *Why is a review of the literature important to define the scope?*

3.2.2 Design and approach

During our literature review, we limited the search to the following keywords: *innovation, leadership, innovation driven leadership, innovative organizations, creativity and managing organizations*. The search results that had a strong relationship with both innovation and leadership were selected as important. Also, an initial search limitation was to only include results published during 2000 – 2014. We expanded the search by including meta-analyses for the period 1980 – 2014, treating leadership and innovation at various organizational levels.

For the interviews, we generated “open questions” that were directed towards having an open discussion rather than providing direct answers. The intention was to give room for personal opinion about what research we were to include in the tool and what they believed to be valuable for their work.

3.2.3 Findings, reflections and plan of action

To better illustrate what we had found in the literature review, a mind map was developed. This approach proved effective as we were able to get an overview for ourselves and to organize the various areas into larger fields of research. Especially, we found that most research could be put either under the individual, group or organizational level. The result of this is reported in paper I (Mc Namara & Chausset, 2014, in this volume). Also, we believe that the mind map can be used to easily illustrate to others what research is included in the tool and what we decided to exclude.

Interviews were conducted with SCF to match what we found with how they wanted to develop the tool. This proved to have little effect for our limitation as they did not contribute with sufficient information to what they wanted to achieve. This was not due to lack of effort from their part, but rather lack of knowledge about what they wanted to attain, and to our lack of experience in conducting such interviews. Our mind map was probably too extensive and vague for practical purposes. Their new strategy to focus on innovation had not been completely defined and it was difficult to connect our research to their practice. Our presumption that we would get concrete input and guidance at this stage proved to be wrong. However, the small amount of direction gave us the opportunity to pursue the work as we pleased.

We sought the help of an expert on leadership and innovation issued in the field of Psychology. He pointed out that “*the collection of the right factors are crucial to lay the proper groundwork and to create the right tool questions*”. Also, the questions should be formulated appropriately and need to be evaluated in multiple iterations. He also gave valuable insight and constructive feedback to the areas of research that we had at the time, and contributed to the removal and addition of some factors. This phenomenon, where researchers from different professions share their knowledge is very valuable as it entails the distribution and development of knowledge to academia and, also, to practice.

The information obtained from this cycle resulted in a fundamental change: the addition of innovative factors at the group level. This derived mainly from discussions with experts on the subject of organizational innovation and incorporating additional literature searches. This level bridged the gap between the individual and organizational levels. Also, we decided to test the tool through an iterative process to strengthen its validity. We used factor analysis, conducted with a program referred to as SPSS. It is, from this analysis, possible to observe correlations and the degree of validity of the questions and factors. This approach will be described more in detail in future cycles.

Moreover, we now felt confident to initialize the creation of the tool as the scope had been defined and we had decided on a course of action for validating the tool. If cycle 1 had a strong focus to understand the practical context, cycle 2 had a strong focus to understand the theoretical framework that had to be researched. Hopefully, the outcome of cycle 3 will be the result of the mixture between the practical knowledge in cycle 1 and theoretical knowledge in cycle 2.

3.3 Learning cycle 3

3.3.1 First iteration of tool is developed, including testing and evaluation

The first iteration of the tool was designed after having defined the scope in learning cycle 2, where the potential relevant factors had been identified. In order to test the factors, a group of people were selected and an SPSS analysis was conducted to ensure question relevance and high correlation. This cycle seek to answer the following research question: *Why is testing and evaluating the tool internally important for validity?*

3.3.2 Design and approach

Based on the literature review, our mind map and our discussion with an expert we set out to create 55 questions sorted under 10 factors identified as having a strong correlations with innovative performance. During this cycle, the questions were directed exclusively to top management personnel. We formulated the questions so that the answers gave an indication of how leaders managed each factor rather than how each factor manifested in practice. The reasoning behind this came from our presumption that top management did not have an accurate picture of how the entire organization felt they were performing regarding their innovative capacity, but only had the knowledge of how they were working with specific factors for innovation.

The tool was pre-tested on 5 individuals in SCF: 3 top management and 2 employees. The tool was sent out via email and the respondents were asked to answer on a four grade Likert scale ranging between strongly disagree to strongly agree in an excel sheet. Moreover, we requested that the respondents gave feedback directly in the excel sheet, which they did. This was valuable input for the development of the first iteration of the tool.

To analyze the questions, an SPSS analysis was conducted to test the correlations between questions and factors.

3.3.3 Findings, reflections and plan of action

The initial approach had been to only include top management personnel in the creation of the tool. The reasoning behind this had been that SCF only had practical experience and knowledge about working with top management. What we soon realized, however, was that innovation has to be treated on all organizational levels to have a substantial effect. This input, being derived from our theoretical background and as outsiders to their existing practice substantially changed the way the tool had to be used. Having tested the tool internally with SCF, we decided to reformulate the questions to increase the target group to regular employees as well. An example of this transformation is shown below:

“We encourage employees to take initiatives” → “This organization encourages taking initiatives”

The first statement provides an answer whether or not leaders work to encourage employees to take initiatives, whereas the second statements answers how individuals in the organization (both leaders and non-leaders) experience support to take initiatives. The questions might seem similar, but are directed to answer two very different types of approaches.

Because of the changes explained above, we began to feel skeptical whether or not the final statements would correspond well with the initial. The process of reducing, simplifying and reformulating the statements jeopardized that the final tool did not measure the factors that had been originally researched. The SPSS analysis conducted below is, thus, necessary as it ensures that the statements “measure the same thing”.

Through the SPSS analysis we found that some questions were redundant. The questions were reduced from the initial 55 to 31 questions by only allowing Cronbach’s Alpha (Cronbach, 1951) values higher than 0.75. The total Cronbach’s Alpha of all factors increased from 0.917 to 0.926, whereas the individual factors increased as shown in Table 1 below. Some varied slightly and others underwent more drastic changes.

Factor for Innovation #	Total amount of questions	Questions reduced to	Change in Cronbach’s Alpha
1	6	4	0.818 → 0.870
2	4	2	0.621 → 0.800
3	4	3	0.611 → 0.800
4	5	3	0.714 → 0.877
5	4	3	0.564 → 0.779
6	10	5	0.720 → 0.810
7	8	5	0.646 → 0.879
8	6	2	-11.2 → 0.900
9	4	2	-0.444 → 0.800
10	4	2	0.756 → 0.889
Total:	55	30	0.917 → 0.926

Table 1: Conducting an SPSS Analysis

To conclude, learning cycle 3 provided us with information that helped us improve the tool. To validate the tool internally is important because 1) SCF got the opportunity to test the tool first hand and get a grip of its development and 2) we needed valuable input on how we could modify the tool. Cycle 3 was necessary as it improved on the existing tool and validated our presumption that the reviewed factors could be used practically. The following section presents learning cycle 4, including a very comprehensive part of our work where the final version of the tool is created and tested in the industry.

3.4 Learning cycle 4

3.4.1 Final stage of creating the tool, including testing and evaluation

Cycle 4 included several steps that had to be undertaken to answer the following research question: *Why is testing and evaluating the tool externally important for validity?* These steps are presented in the list below:

- Manage practical implications.
- Formulate the questions appropriately.
- Decide on target group.
- Test pilot the tool on organizations.

- Evaluate answers based on SPSS analysis.
- Enable a process for feedback.

3.4.2 Design and approach

To manage all the practical implications regarding the tool we initiated a discussion with SCF to understand how we could validate the tool for use in a variety of companies. The formulation of the questions needed work as we received feedback from multiple individuals who were concerned that the statements were too academically formulated. Here, we put emphasis on readability, layout and understandability for the given audience. Moreover, to choose the right target group for the tool was initiated by evaluating the pros and cons of including lower-tier employees, or to only focus on top management personnel. Having analyzed and performed changes in the above steps, we tested the tool on 34 employees in 7 organizations, including both management personnel and regular employees. This allowed us to see correlations between leader and employee perception of how innovation is managed in the organization.

Having revised the tool and gathered the respondents' data, a SPSS Analysis was executed including the following set of questions to work with when giving feedback as well as including in our paper:

- What is the distributions of responses among all questions?
- What is the average value of each innovation factor?
- Which three factors give the highest values and why?
- Which three factors give the lowest values and why?
- What are the allocation of answers for the respondents' for each factor?
- What has the CEOs answered and is his/her answers consistent with what the others have answered?
- What is the overall results for respective organization and how well is those values in line with the organization's target for innovation?

All the relevant information was documented so that the feedback process in cycle 5 would go as smooth as possible.

3.4.3 Findings, reflections and plan of action

The most prevalent issue that we had to manage early on was on how we should distribute and collect the tool with the respondents. We decided to use an online based solution, where the respondents were provided with a web-link to a webpage where they were able to easily answer the statements. The effort to do this proved beneficial for all involved parties, which facilitated the process and increased the professionalism of the tool. Finally, we found that the online based tool (in contrast with having to send out a PDF to each involved individual) could be embedded in SCF's webpage and be more easily accessible to increase marketing and potential sales. We suggested this for future development of the tool.

To ensure that the questions were easily understood we talked with a marketing and sales specialist that had expertise in how to design, evaluate and test tools similar to ours. She provided additional support and guidance and gave us the confidence and validity that we needed to test-pilot the tool. Also, as a result of the discussion with her, minor changes were made to develop the tool further, like introducing a five grade scale

instead of a four grade scale, reformulate some of the questions to make them more understandable and to insert an introductory test with the tool. This input of knowledge from an external source is invaluable as her perception of the tool is outside our frame of limitation and, thus, can give often apparent but not considered information to increase quality and validity.

After a lot of “ifs” and “buts”, we decided to change the target group to include all personnel, regardless of their level of position in the organization. This was a result of a discussion that we had had with SCF. This new target group would make comparisons between the different levels of the organization possible, and give a valuable advantage to SCF when performing the work with their clients.

SCF provided 7 organizations to test the tool on. The process of selecting appropriate organizations, distributing the tool and awaiting responses took approximately three weeks. The data was then evaluated through SPSS which proved effective in understanding the behavior of each factor.

To conclude, we had now completed testing the tool on 7 organizations with 33 unique responses. What we found is that the tool can be applied in various organizations, regardless of size or industry. Also, employees within different levels of the organization managed to give responses on all questions. This is valuable as we seek to have a tool with a foundation that can be used everywhere without exceptions, and that that tool can be customized if desirable to fit a specific situation. The information from testing the tool validated that the tool functioned as hypothesized. However, some constructive criticism was given which is altered in cycle 5. This, together with launching the tool and creating the final adjustments is described in detail in cycle 5.

3.5 Learning cycle 5

3.5.1 Giving feedback, creating a manual and launching the tool

The final cycle in developing the tool began with analyzing the respondents’ answers and to give feedback. Second, we created a manual to accompany the tool so that the user (in our case SCF) could feel confident in using. Finally, having all the pieces in place, we delivered the final tool to SCF and, at the same time, held a workshop, where we explained what it contained, how it should be used and how it could be altered in the future for improvements. All the above steps in cycle 5 seek to answer the following research question: *How can the final tool be reviewed and launched most effectively?*

3.5.2 Design and approach

The feedback process was divided into several steps. First, the answers were analyzed with the help of SPSS. Then, the results were discussed with individuals in SCF in order to extract the most valuable and comprehensive feedback possible. The feedback was provided at the organizations’ offices and took approximately one to two hours to complete. The organizations also got the opportunity to give us feedback on our work as we had prepared some general discussion questions.

The creation of the manual was a necessity as we understood that some elements of the tool would be difficult to understand. The design needed to be short and concise but still include all of the necessary information. Here, we explained the background to the tool, how it should be used in practice, the theoretical framework underlying the included factors, how the answers should be interpreted, some notes and a cover letter to accompany the tool. We considered three pages to be a sufficient length for the manual.

The launch of the tool was mainly focused on creating a valuable and efficient workshop for SCF so that they could start using it. Also, this worked as a final milestone for a long collaboration between us.

3.5.3 Findings, reflections and plan of action

To provide feedback on the questionnaire results was very satisfying as it gave us an insight into how the tool was received in practice. Giving feedback to various organizations working in different industries was an important element as it showed that the tool could be used in any organization in any industry. We also received invaluable input from the respondents about changes that could be made in the tool to create a more fruitful discussion. Some of these changes were made before delivering the final tool to SCF.

The manual was created to facilitate the work for the user of the tool (in our case SCF). This inclusion of a manual was positively received and we were now ready to deliver the tool as we could include proper documentation of how it should be used. We felt that it was important to deliver a complete product to make the transition of delivering it as easy as possible for them.

The workshop became a natural ending to a successful collaboration. Here, we managed to deliver the tool and provide information that they could use to develop it further. Also, we received their opinions of our work effort and results and had the opportunity to knot all the loose ends that still remained. As the project had involved managing different types of knowledge, the concretization and delivery became crucial for all involved parties. In our opinion, we managed to capture the theoretical framework that we had created in a tool that could be used in a very practical context, with direct value for SCF. We have previously discussed the benefits that comes from injecting external theoretical knowledge within a practical environment, and how that increases the organizations total amount of knowledge and its knowledge boundaries. We, on the other hand, have increased our understanding of how theoretical knowledge can be applied in practice and the difficulties associated with it

This cycle seeks to answer how the final tool “*can be reviewed and launched most effectively*”. What we learned is that giving feedback to organizations increased their knowledge of the subject of managing innovation at the same time as it allowed us to review the complete tool. Some adjustments were made, including the addition of a manual which would accompany the tool underlying how it should be used. Also, questions were changed to become clearer and questions were added for more comprehensive analyses. Finally, the workshop proved effective in launching the tool. Here, we described how we had pursued the project, from initiation to final product, and what theoretical framework constituted the factors for innovation that the questions were based on. Also, how the tool should be used and analyzed was described. Lastly future improvements were proposed.

The next section presents our reflections of the above performed cycles and some main findings from the various cycles.

4 Discussion

The Action Research approach has been valuable because it entailed a reflective process of progressive problem solving which contributes of information on how to develop the tool and provided a road to achieve the final product. Also, the mix of theoretical and practical knowledge in the development of the tool has proved to be effective in creating synergy and sharing knowledge between the collaborating parties. The main contributions of this paper can be described as outcomes and implications, as they distinguish our work from other similar projects. These are discussed below and summarize the above described journey of how to develop a tool measuring factors for innovation in organizations. Also, our own interpretations of doing Action Research is presented in the sequential section.

4.1 Outcomes and implications

The iterative process of using the Action Research approach has provided us with a process for achieving stronger findings. This might help researchers or practitioners that seek to undertake similar endeavors. Below we discuss the main successes and difficulties that we had carrying out this and the outcomes it led to.

First, we found that it is very important to understand both parties' intentions with the project prior to initiating the work. This will set expectations and anticipated workload and, thereby, make it possible to set the pace and time schedule for the project. Here we showed the amount of effort and energy that we were able to put in early on, which set expectations high and gave SCF an incentive to invest more of their time into the collaboration. This created a strong synergy between us, where collaboration and communication were emphasized to create a win-win scenario. Thus, according to the project outcome and the reflective process undertaken, we have found that the philosophy of creating the maximum amount of synergy between both parties is crucial if the output should be valuable and meet the expectations. By striving to deliver more than expected, a positive atmosphere can be created where both parties are encouraged to increase the synergy that is taking place. Thus, by progressing the project forward and delivering over expectations, the work was positively acknowledged and received by SCF.

Completing learning cycle 2 was probably the most important milestone as it set the direction of our upcoming work. Here, we found that a substantial amount of information existed in academia about the research topic. Even though we treated leadership and innovation together, and not separately, we were overwhelmed by the amount of relevant material that we could use to create the tool. Reflecting over how we could overcome this issue, we decided to pinpoint each area of research on a large sheet of paper. We could, thereby, see overlapping areas of research and identify how the different topics were connected. This documentation proved useful when initiating interviews with SCF as we could illustrate the amount of research that we had found. Trying to limit the research by conducting interviews was difficult, and we soon realized that it was our responsibility to decide what to include and what to discard. This resulted in us taking more initiatives as we were given the freedom to pursue the work our way. Thus, we pursued our academic approach to the project and our proposed findings when possible. The findings were either accepted or rejected, depending on their suitability in their practical environment.

After having completed the first version of the tool, SCF got the opportunity to give input and reflect over the results. Surprisingly little negative feedback was given and as

we mainly got responses in terms of “*keep going*” and “*good job, this looks great*” we sensed that we needed more criticism and constructive feedback on our work. We, therefore, sought the help of a professional having done similar research and who was able to give valuable guidance in our work. The lesson to learn is that little intervention and control from SCF forced us to pursue the work our own way, which was beneficial as we had the freedom to make our own decisions but also learn from our own mistakes. We found that, in order to aim the work in the right direction and inject new knowledge and expertise, guidance and support from external sources are a necessity. Thus, there must be a balance between various forms of constructive feedback, freedom of work and guidance and support.

The third learning cycle made us realize that creating a tool that will give fair and accurate responses takes a lot of time and effort. Even though the first iteration of testing the tool progressed the tool substantially, we realized that we had a long way to go as multiple additional actions were identified as necessary for improving the tool even further, in cycle 4. This process of constantly developing the product into something that SCF could work effectively with made us feel, to some extent, as if we drifted away from the theoretical framework that initiated the work. The issue of connecting our theory to their practice was problematic because the two types of knowledge proved useful in different circumstances. Our approach was more general and scientific, taking into account a lot of research based on data from all conceivable industries. They, on the other hand, worked in a very specific setting and were in need of a product that matched that setting. The compromise necessary for connecting our different types of knowledge was to adapt so that a synergy emerged between us by incorporating knowledge from both parties to the final product. After having tested the tool, we removed and reformulated the questions to fit the setting they were used to work with. Also, an analysis was conducted in SPSS to ensure that the questions “measure the right thing”. To conclude, this cycle made us understand that we had to adapt the tool further but without losing the essence of what we wanted to measure to begin with.

Testing the tool in cycle 4 was interesting because it entailed managing a lot of practical issues. This meant that we had to distance ourselves from the theoretical setting that we were used to work with, in academia, and instead work more in a practical environment. This meant managing and communicating with clients and making sure that the testing of the tool progressed as planned. What we found difficult was to find a sufficient amount of respondents so that we would be able to draw substantial conclusions. But, taking into account the time limit that we had we were satisfied with the response rate and felt confident to give feedback to the respondents in the seven organizations that had participated in testing the tool.

Cycle 5 was mainly focused on giving constructive feedback to the respondents. Here, we began with setting a structure for how the feedback was given so that we could replicate it for each organization. This proved efficient as we were able to do a lot of work in a small period of time. Also, we tried to deliver above expectations both to SCF and to the respondents. This created a positive atmosphere between all involved parties and gave the respondents an incentive to give us constructive feedback on the tool that they had tested. The outcome of this approach was successful and we felt confident that everyone involved felt as if their time was well spent.

To facilitate the transition of delivering the tool to SCF we developed two approaches. First, a manual to accompany the tool was produced. This was appreciated as it provided SCF with a document to distribute to employees that were interested in using the tool. Also, a workshop was held with the majority of SCF where we were able to provide our

thoughts and reflections on the final tool and how it could be used in practice. Finally, we proposed ways in which it could be developed further.

4.2 Our experience of doing Action Research

Considering all the cycles collectively, we conclude that the outcomes of the various iterations have been both expected and unexpected. We can now, at the end of the project, acknowledge that the effort to do Action Research has been worth it as we otherwise would not have been able to execute it as well as we did. Each cycle progressed the work forward substantially, given the time available, and we were able to complete more than we aimed to accomplish.

We believe that many researchers naturally progress into doing Action Research regardless of the approach being an active decision or not. But, the process of constantly reflecting and then taking actions dependent on outcomes can be a missing parameter in some projects. Instead, a pre-defined pattern of how a tool can be developed might be in place dictating the project process. Using Action Research, the benefits are not limited to the development of the product but extended to improve on the entire process as well. This way, the process can be adapted to the situation and reinvented for each unique project.

The value, and what is maybe most important, is the documentation of this reflective process so that others can take advantage of what is found (and how it has been found!). Also, documenting our thoughts and collaborative effort enabled us to reflect in an additional step on our initial thoughts and to be more critical (and less biased) towards our course of action.

Taking a more critical standpoint, we can conclude that the limited amount of time available for the project forced us to make compromises along the way. First, a more comprehensive literature review could have been performed to include more material. Second, testing the tool on additional organizations would have increased the reliability of the tool. Because of this, SCF has the opportunity to develop the tool further and adapt it more to their practical context. Also, we need to acknowledge that it is not a final product in terms of potential. We are, however, confident that this will be pursued in the future and are interested in following its upcoming developments. We are, therefore, trying not to distance ourselves from the project and instead regard it as a project that will be interesting to follow.

5 Concluding remarks

Conducting Action Research is both valuable for researchers and practitioners. The information that it provides for a specific case is useful for future endeavors and will help others pursue similar projects. The process of reflecting, acting and evaluating constantly progresses the work forward as new information is acquired.

The main lessons learnt from the study are:

- 1) Connecting theory with practice can be difficult and entails the adaptation of both parties to maximize the collaborative synergy.
- 2) The two types of knowledge are rarely compatible and have to be adapted to the intended setting. Doing this successfully can create good prerequisites as it involves strengths from both knowledge fields.
- 3) By developing a process progressively, the information attained early on might not fit into the later stages of the project. For example, the information attained

from the literature review in learning cycle 2 was a bit difficult to insert into a simple, practical tool in learning cycle 3-5. Had the process been predefined, information could have been researched that would better fit into that context.

- 4) Time often limits practitioners from reflecting over their work. The focus is mainly on completing the task itself and moving on to the next value adding activity. But, reflecting over how the activity has progressed, including its implications and successes can improve the process which is necessary for the completion of future activities. An Action Research approach embeds such reflection in the process and into the project time frame.
- 5) By dividing the project into learning cycles, a more structured approach can be reviewed as it creates a time frame of when the various parts should be completed.
- 6) The limitations experienced during the project hindered us from developing the work faster and can be divided into the following:
 - a. The variety of work flow and non-predefined milestones made it difficult to maximize time. We sometimes experienced lack of work while we at other times experienced an overwhelming amount of work to be achieved. Here, little guidance from our supervisors and limited experience on our part was an issue which created difficulties planning the work process.
 - b. Setting meetings with practitioners was difficult as their time for the project was limited. In future endeavors, more efficient strategies for collaborating could be developed which are not as time consuming as setting meetings.
 - c. Getting respondents for testing the tool required more time than was expected and more data would have increased its validity even further.

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In Collaboration with a Swedish Consultancy Firm

Master of Science Thesis in the Master's Programme Design and Construction Project Management

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