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Transformational leadership and measuring emotional intelligence with AHP tool

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ABSTRACT:

This study has two separated goals, the first one is to complete transformational leadership (TL) research from given data. The second one is to generate and test analytical hierarchy process (AHP) measurement for emotional intelligence (EI). In this research, it is shown that how measurements are done and what EI measurements gives, and how to improve it for further research.

The research includes theoretical part first and then the empirical part. Theoretical part is focusing on opening TL and its measurement roots. In addition, it shows what EI is and how to measure EI with AHP tool.

This research used a qualitative survey to gather TL and EI data. TL research is based on Josu takala's beforehand gathered data and EI research is based on gathered data.

The research results show that TL research was completed successfully, and the data was compatible for another research with same subject. Furthermore, EI research shows that it could be possible to measure EI with AHP but the questionnaire, numerical limits and overall construction of SCM needs more modification and testing.

KEYWORDS: Transformational leadership, Emotional intelligence, AHP tool, measuring with AHP

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LIST OF TERMS

Analytic hierarchy process = AHP

Deep leadership model = DLM

transformational leadership = TL

Emotional intelligence = EI

Sand Cone Model = SCM

Consistency ratio = CR

Inconsistency ratio = ICR

1. Introduction

1.1. Background

Transformational leadership (TL) is a model to use leadership skills more effectively towards change. It is very useful to be able to measure, analyse and then improve with numerical values. That is why the subject is interesting and useful for real life situations. The discoveries from previous researches are significant and show this TL model's usability. Basically, the TL model gives you opportunity to become better leader by telling your weaknesses and strengths with numerical measurements. This research needs to be done because of the retesting previous results in TL research which is classified and cannot be mentioned. And therefore, the research is important to execute. (Josu Takala, Antti Kukkola and Jussi Pennanen 2019 and Josu Takala, Jarkko Hirvelä, Pekka Hiippala and Vesa Nissinen 2019 and Takala Josu, Leskinen Juha, Sivusuo Henry, Hirvelä Jarkko, Kekäle Tauno 2006 and Takala Josu, Pennanen Jussi, Hiippala Pekka, Maunuksela Ari, Kilpiö Olli 2019).

Emotional intelligence (EI) is important feature in leadership and that is why it would be useful to be able to measure with numerical, precise values. Because, you can drive peoples to change when you can manage them with the best way possible which is good in human management. Furthermore, having high or improving yourself to have high EI skills have other proven benefits like mental and physical health improvements, better social relationships and higher work performance. The research is needed because there are not EI measurement tool exist that can shoe precise values. These are the reasons why this is done and why this is important. (Peter Salovey, Marc A. Brackett, John D. Mayer 2004 and Huang, N., & Lee, H. 2019).

1.2. Research purpose and aims

The purpose of this project is to complete Vaasa university´s transformational leadership project by retesting research results with AHP tool. Other part of this research is to figure out is it possible to measure EI with AHP model. University gave raw data which had to be analysed with AHP tool and then make TL sand cones from the results. The same model was used and modified to generate emotional intelligence measurement model. This EI model is first time tested and data for this research was gathered from people who has done leadership practises in their life, like manager and managerial positions. Furthermore, EI sand cone models were made and analysed. Below are the three research questions.

(1) What are the results showing in transformational leadership research?
(2) Can you measure emotional intelligence with analytical hierarchy process tool?
(3) What are the emotional intelligence research results showing?

The aim of this research is to get TL model done from the university´s data and then see how EI model is working. The paper is also suggesting improvements for EI model to be used in further researches.

1.3. Research gap

TL have not been tried to transfer verbal words to numerical measurements for a long time so, there are not many researchers in this subject. In addition, EI measurements with AHP tool have not been done ever before. These points must be understood to see where the results are leading. TL model part is mostly based on Josu Takala's and his colleague's researches, and the EI part is based on AHP and TL models which are modified to fulfil the requirements for measuring emotional intelligence. Hence, this paper is only giving some directions for the next researches or works which are needed

in order to make EI measurement with AHP possible. From the scientific perspective, this research will give new information about EI measurement possibilities and is EI skills even a little bit relevant to leadership actions.

1.4. The definition of focal concepts

The focal concepts of this paper are defined in this section. The key concepts are (1) transformational leadership; (2) emotional intelligence; and (3) Analytical hierarchy process tool.

Transformational leadership is including transformational leaders which are self-sufficient, active people who are energic piece of process changes, and main members of their own organisations and teams. Transformational leaders are the ones who helps others to learn new things and develop as a person by encouraging and motivating them with large, multifaceted behavioural and decision-making guidelines. (Josu Takala, Jussi Pennanen, Pekka Hiippala, Ari Maunuksela, Olli Kilpiö 2019).

Emotional intelligence is defined as a state of intelligence where you have increased your ability to operate with your own's and others' feelings, in a way that you guide positively one's actions and thinking. Specifically, this means the ability to recognize emotions, integrate feelings and emotions to help thinking, understanding emotions and control the emotions to gain personal growth. (Mohamed Ali Azouzi, Jarboui Anis 2013).

Analytical hierarchy process tool:

"The AHP-model is Analytic Hierarchy Process It is a mathematical tool used to assist decision makers for their in decision making processes. With the use of AHP, qualitative information can be transformed into quantitative form to make the analysis easier. AHP-model has couple of selected main factors that are divided into sub-criteria. Firstly, the AHP divides values for main factors with total value of 100 %. After that the main factors are divided in the same way to sub-criteria. The final values (priorities) for sub-criteria are the main factor value multiplied by sub-criterion value" (Takala Josu, Pennanen Jussi, Hiippala Pekka, Maunuksela Ari, Kilpiö Olli 2019 p.10).

Deep leadership model (DLM) is a tool that has been developed from the basis of transformational leadership to the Finnish cultural environment. DML is based on beliefs of the new pattern of leadership and the empirical research that has been done to model the pattern. The DLM has been created to strengthen the needs of the leadership teaching in any operational environment. The deep leadership include four cornerstones which has information that is dealing with excellent leadership behaviour and, as it reads in the research, this information does not change in time. The DLM have information that should be deepened in teaching and practiced to the wish of different professions

1.5. Structure of the thesis

The structure in this research is designed to complete its goals. Thesis is divided into 7 chapters. First, introduction is giving background information about the project's problems and offers a justification for the research. After the introduction there are theoretical base for the research. The chapter two is telling about TL and chapter three is telling about EI in order to understand the methods used in the research chapter. The chapter four is focusing on the research methodology and shows the TL and EI research answers. This chapter is also giving general path how the research was done. Furthermore, the chapter five contains the results of the research, and chapter six is the analyse/improvement part. Finally, the last chapter seven presents the conclusions and suggestions for further research EI measurements. The figure 1 under this clarifies the structure of this thesis.

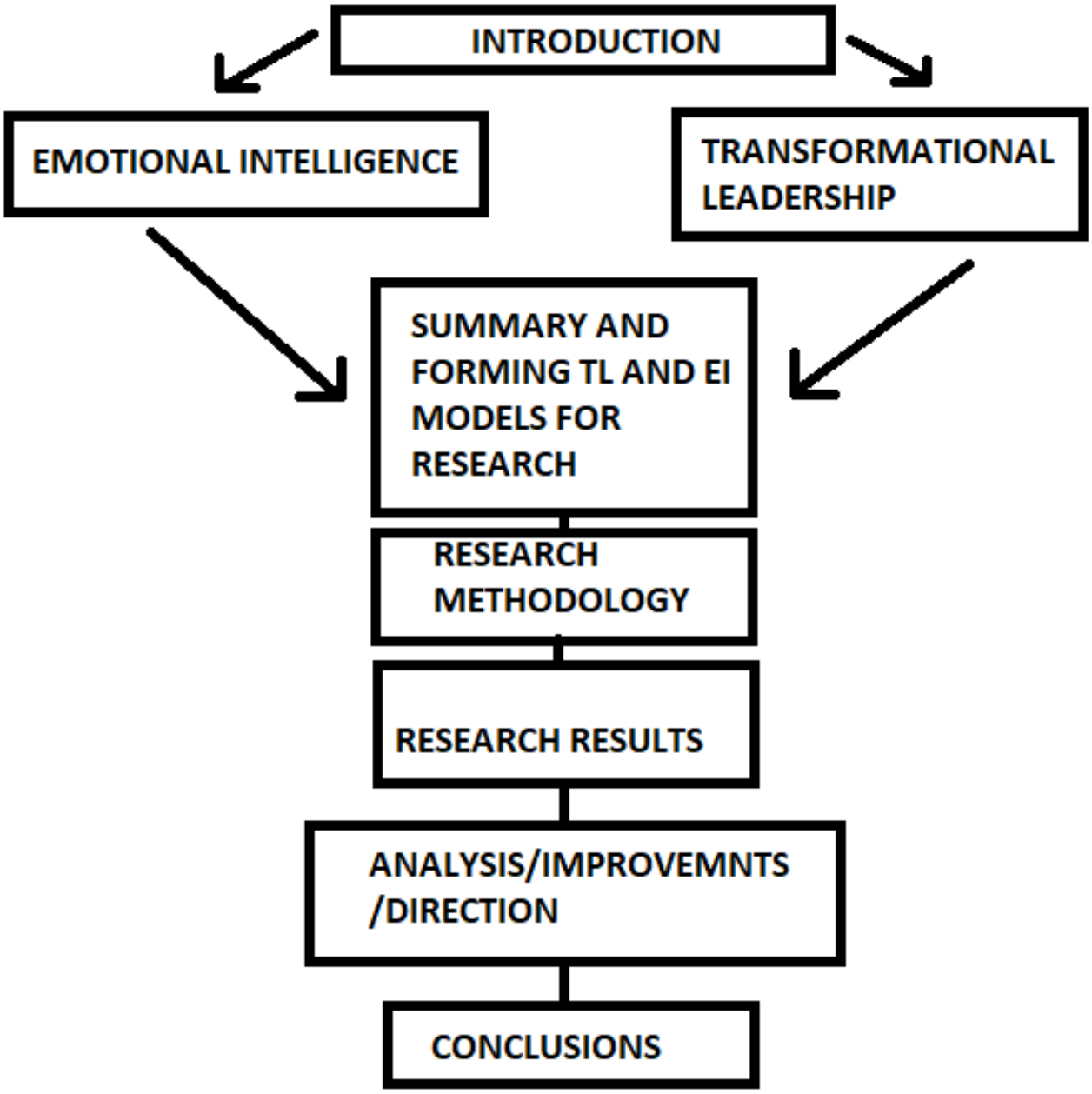


Figure 1. Structure of the thesis

2. Analytical hierarchy process model

Analytic Hierarchy Process (AHP) is a method to support multi-criteria decision making and was originally developed by Prof. Thomas L. Saaty. AHP derives ratio scales from paired comparisons of criteria and allows for some small inconsistencies in judgments. Inputs can be actual measurements, but also subjective opinions. As a result, priorities (weightings) and a consistency ratio will be calculated. Internationally AHP is used in a wide range of applications, for example for the evaluation of suppliers, in project management, in the hiring process or the evaluation of company performance. (Klaus Goepel 2018).

Using AHP as a supporting tool for decision making will help to gain a better insight in complex decision problems. As you need to structure the problem as a hierarchy, it forces you to think through the problem, consider possible decision criteria and select the most significant criteria with respect to the decision objective. Using pairwise comparisons helps to discover and correct logical inconsistencies. The method also allows to "translate" subjective opinions, such as preferences or feelings, into measurable numeric relations. AHP helps to makes decisions in a more rational way and to make them more transparent and better understandable. (Klaus Goepel 2018).

Mathematically the method is based on the solution of an Eigen value problem. The results of the pair-wise comparisons are arranged in a matrix. The first (dominant) normalized right Eigen vector of the matrix gives the ratio scale (weighting), the Eigen value determines the consistency ratio. (Klaus Goepel 2018).

3. Transformational leadership

First, it is good to point out that leaders and leadership styles have different kind of variations which means that features of successful leader are generic. Transformational leaders are self-sufficient, active people who are energic piece of process changes, and main members of their own organisations and teams. Transformational leaders are the ones who helps others to learn new things and develop as a person by encouraging and motivating them with large, multifaceted behavioural and decision-making guidelines. (Josu Takala, Jussi Pennanen, Pekka Hiippala, Ari Maunuksela, Olli Kilpiö 2019). Furthermore, transformational leadership have affected to employee's psychological health, job attitudes and performance. This is happening with giving more resources and less demands, and high-quality work motivation which means more autonomous motivation and less controlled motivation (Fernet, Claude, Trépanier, Sarah-Geneviève, Austin, Stéphanie, Gagné, Marylène, Forest, Jacques 2015). Deep leadership model (DLM) is a tool that has been developed from the basis of transformational leadership to the Finnish cultural environment. DML is based on beliefs of the new pattern of leadership and the empirical research that has been done to model the pattern. The DLM has been created to strengthen the needs of the leadership teaching in any operational environment. The deep leadership include four cornerstones which has information that is dealing with excellent leadership behaviour and, as it reads in the research, this information does not change in time. The DLM have information that should be deepened in teaching and practiced to the wish of different professions. Here is Josu Takala's and his colleagues DLM below. (Josu Takala, Jarkko Hirvelä, Pekka Hiippala and Vesa Nissinen 2019).

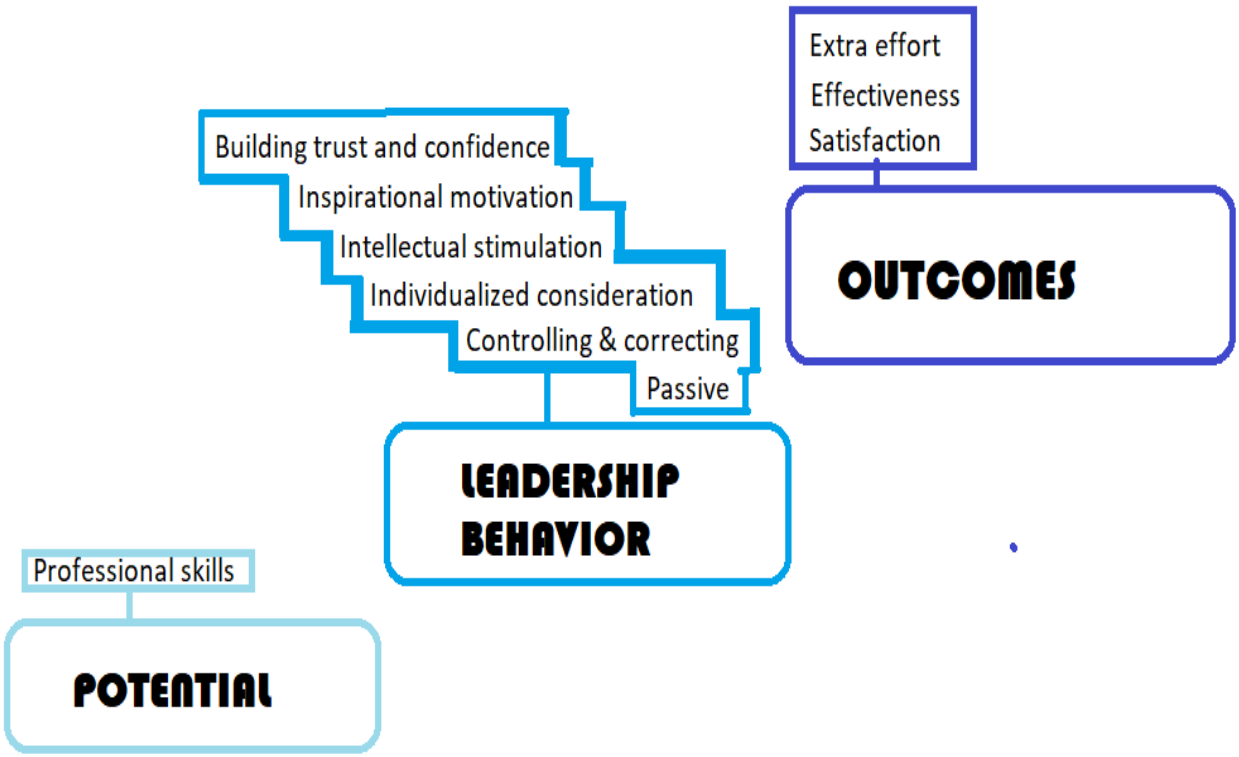


Figure 2. DLM

Psychological and social factors have been included in this DLM. Also, this research has integrated functional, organisational and structural factors to the comprehensive Sand Cone Model where every three categories of factors have impact to the outcomes. In the process of doing DLM the most challenging task was to connect the Sand Cone Model with human resource groups, such as information systems, know-how, organising methods and working processes. One thing to take consider is that these models are more practical than true. Some models are more usable in empirical testing than theories but models that are tested with structural equation models are not more usable in empirical testing than theories. The DLM is included in the second group and the strength of the

structure has been tested in an empirical study, and this empirical study has been reported in a doctoral dissertation. (Josu Takala, Jarkko Hirvelä, Pekka Hiippala and Vesa Nissinen 2019).

This DLM framework offers huge opportunities for teaching and coaching leadership program. When people understand and internalize the nature of the model and the related questionnaire, as tools and directors of individual thought, they can improve their leadership skills. The purpose of leadership teaching and coaching is to lower the gap between theory and practice. It is proven that this individual leadership profile and feedback are seen to provide a practical understanding of the principles, and to improve leadership in leader trainees. DLM is giving a new aspect to the research by giving more grounds to analyse leadership behaviour. (Josu Takala, Jarkko Hirvelä, Pekka Hiippala and Vesa Nissinen 2019).

The next figurative model is based on the Sand Cone Model. This model is a figurative way of describing development or concepts that has some multi-focused, multidimensional or hierarchical forms in it. The idea in this Sand Cone Model is to illustrate the structure of the studied phenomenon in such a way that there can be shown: any hierarchies, relative importance of sub-objects or relationship between them. The figurative sand cone must be internally stable-structured and same time externally clear to analyse, it can be even visually engaging. The factors on the bottom of the hierarchical structure of this model are design that in the bottom are internally crucial for the organisation. The "glossiest grains of the cone" are set to the top of the model to finalize the posture of the cone and make the customer-oriented factors clearly visible. These factors are commonly not very internally crucial instead they are results of the internal factors. (Josu Takala, Jarkko Hirvelä, Pekka Hiippala and Vesa Nissinen 2019).

Based on this DLM Josu and his colleagues have formed a Sand Cone Model (SCM) which have same dimensions. The SCM model is a descriptive way to show different kind of concepts which have multifigured, multidimensional or hierarchical forms. The actual idea in SCM is that it points up the researched object in a way that there can be show any possible hierarchies, importance of sub-objects or relationship between all of them. The elements of the researched object are built to look and be good. This means it must

be built internally stable and externally clear to be interpret easily, it should be visually attractive. When looking the SCM from the distance it has stable base for bigger things and detailed area for smaller things. The bottom of SCM model's hierarchy are those factors that are internally important to organisation but, they are only base of external stakeholders' values. The SCM's the most important things are set to the top of the model to finish and to generate the customer-oriented factors. The top factors are commonly not very internally crucial, they are more like results of these internal factors. (Takala Josu, Leskinen Juha, Sivusuo Henry, Hirvelä Jarkko, Kekäle Tauno (2006).

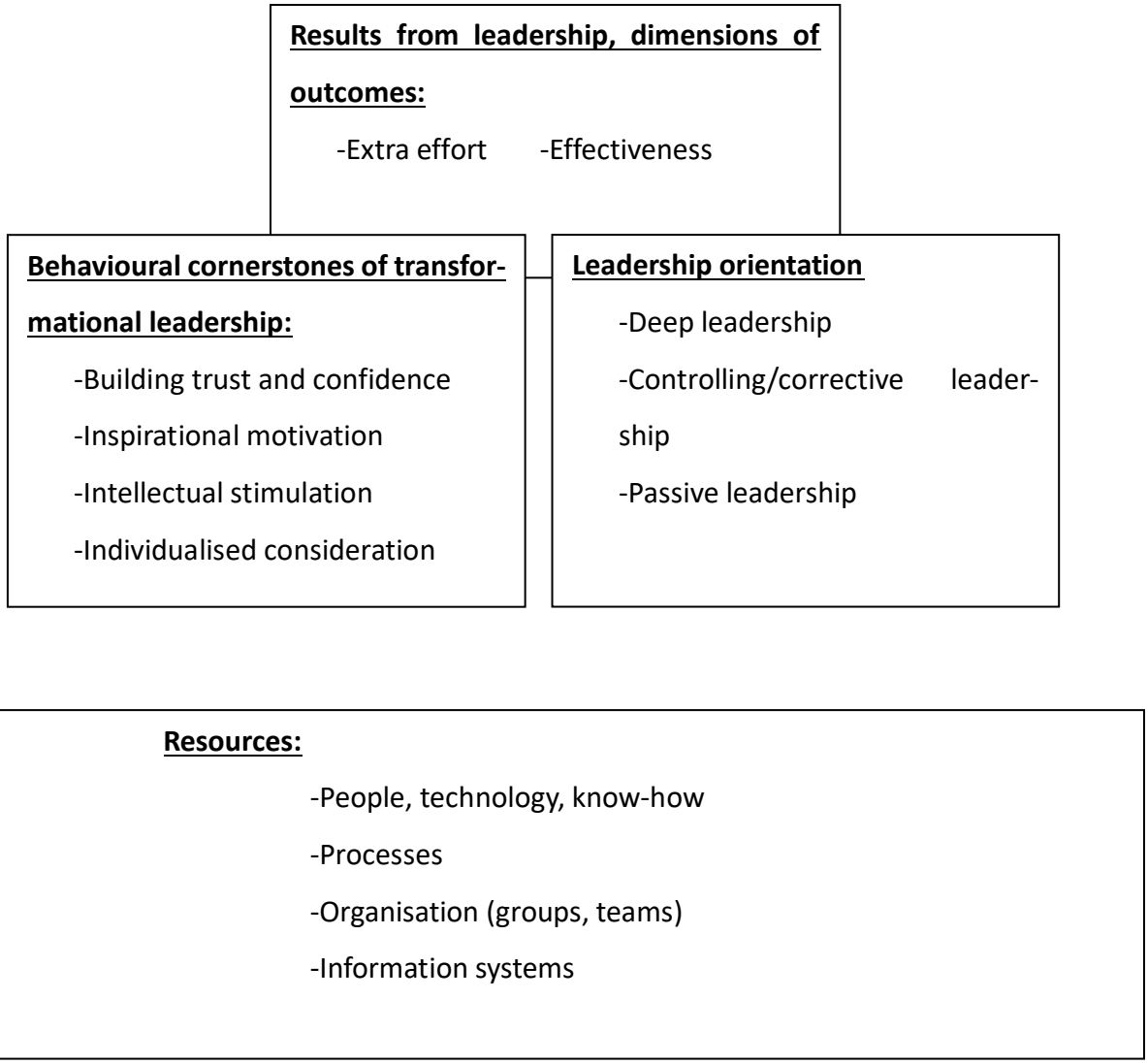


Figure 3. Sand Cone Model From DLM

The SCM from DLM have three layers where the first one is resources. Resources means professional skills and it is including people/technology/know-how, processes, organisation which can be groups/teams and information technology. Second layer is divided into two different sections: Behavioural cornerstones of transformational leadership and Leadership orientation. Behavioural cornerstones of transformational leadership include Building trust and confidence, Inspirational motivation, Intellectual stimulation, Individualised consideration. Leadership orientation include deep leadership, controlling/corrective leadership, passive leadership. Top layer is Results from leadership, dimensions of outcomes and it is including Extra effort, Effectiveness, Satisfaction. (Heli Tommila, Josu Takala, Juha Jokitalo, Riitta Penttinen 2019). Based on this SCM there are formed a leadership profile which can be calculated with for example arithmetic means, root means square or geometric means. This pyramid is visually clear, and it is easy to interpret.

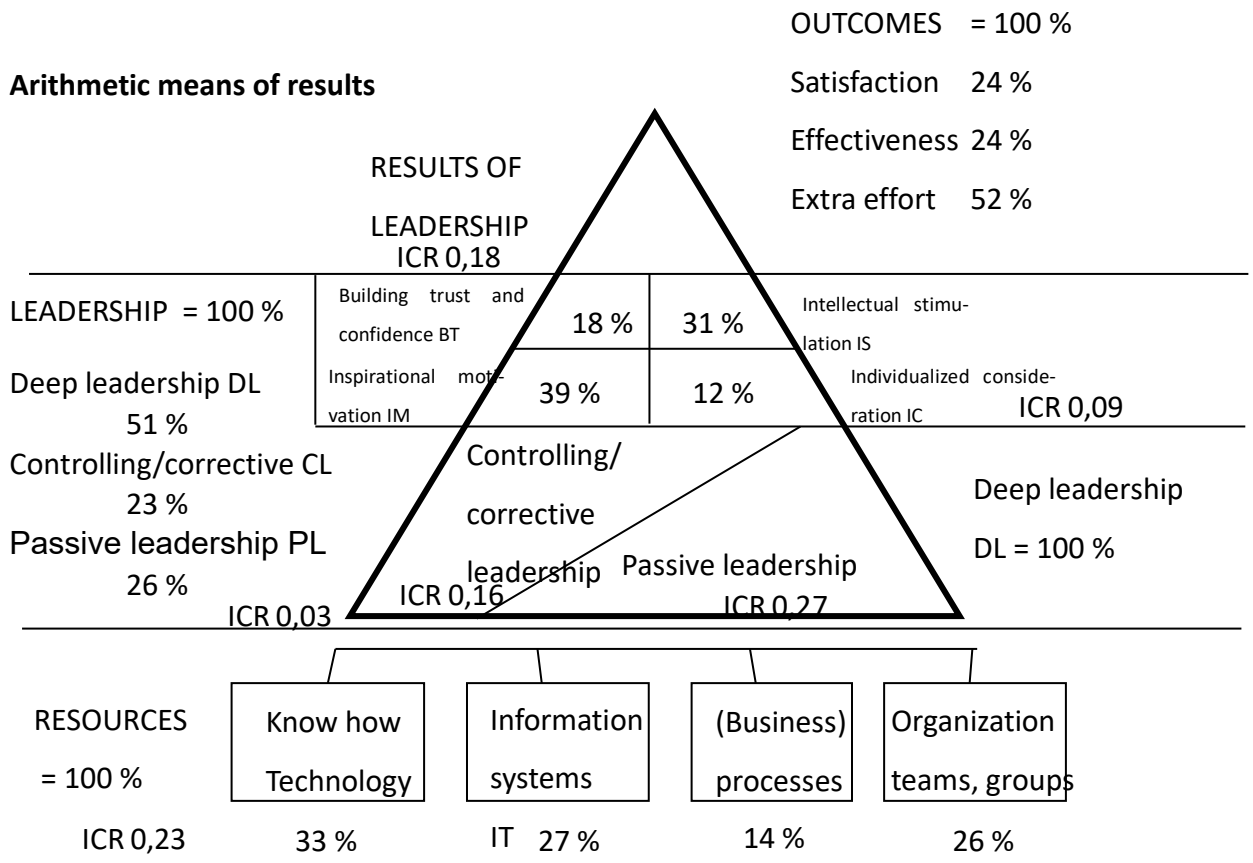


Figure 4. Leadership profile from DLM and SCM

In this picture of leadership profile there are random numbers to demonstrate the way it works. DLM Results show the current situation of excellent leadership behaviour in the studied groups. In this case we can say for example that the answers with inconsistency ratio (ICR) over 0.3 have put aside and not taking into calculations. From the results we can see that the most important result is getting extra effort (52%) from people or group it is taken from. the most important part of leadership is Deep leadership (71 %). Deep Leadership have four cornerstones which are all equally important (the four in the middle). Resources results are achieved by people and the most important with Know-how (33%). All these inconsistency ratios are lower than 0.3 and that is why they are acceptable.

4. Emotional intelligence

Emotional intelligence (EI) is defined as a state of intelligence where you have increased your ability to operate with your own's and others' feelings, in a way that you guide positively one's actions and thinking. Specifically, this means the ability to recognize emotions, integrate feelings and emotions to help thinking, understanding emotions and control the emotions to gain personal growth. (Mohamed Ali Azouzi, Jarboui Anis 2013). The most important thing to succeed in managing relationships is to understand and manage your own emotions as well as to understand the emotions of others. The best way to understand EI is with an Emotional Intelligence Competence Framework. (Jacka, J. Michael 2018.

The Emotional Intelligence Framework
PERSONAL COMPETENCE - HOW WE MANAGE OURSELVES
Self-awareness - Recognizing your emotions as they occur
:· Emotional Awareness: Reconizin your emotions and their effect
:· Right Self-assessment: Knowing your strengths and limits
:· Self-confidence: Stron understanding of self-wor and capabilities
Self-regulation - Using self-awareness to better manage emotions
:· Self-control: Keeping negative emotions and impulses under cotrol
:· Trustwortiness: Maintaining standards of honesty and integrity
:· Conscientiousness: Taking responsibility of own actions
:· Adaptability: Flexibility in dealin wit changes
:· Innovation: Open for new, novel ideas and approaces
Motivation - Understanding the emotional tendencies that guide or facilitate reacing goals
:· Acievement Drive: Striving to improve or meet a standard of excellence
:· Commitment: Aligning with the goals of the group or organization
:· Inititative: Readiness to act on opportunities
:· Optimism: Persistence in following goals
SOCIAL COMPETENCE - HOW WE MANAGE RELATIONSHIPS
Empathy - Awareness of oters' feelins, needs and concerns
:· Understanding Others: Sensin other's feelings and perspectives also, taking an active interest in their concerns
:· Developing Others: Sensing others' development needs and strengthen their abilities
:· Service Orientation: Anticipating, recognizing, and meeting the needsof customers.
:· Leveraging Diversity: Cultivating opportunities through different kinds of people
:· Political awareness: Reading a group's emotional currents and power relationships
Social skills - The art of inducing desirable responses in others
:· Influence: Using effective tactics for persuasion
:· Communication: Listening openly and sending solid message
:· Conflict Management: Negotiating and resolving disagreements
:· Leadership: Inspiring and guiding individuals and groups
:· Change Catalyst: Initiating or managing change
:· Building Bonds: Nurturing instrumental relationships
:· Collaboration and cooperation: Working with others toward shared goals
:· Team capabilities: Creating group synergy in achieving collective goals.

Figure 5. The Emotional Intelligence Framework

Personal competence is about handling your personal knowledge of yourself in the other words how effectively we manage ourselves. Personal competence has three stages: Self-awareness, self-regulation and motivation. And, social competence focusses more on how effectively we can manage relationships. Social competence has two stages empathy and social skills.

There are three different kind of EI competing models: Mayer and Salovey, Bar-On and Goleman. Mayer and Salovey model also known as ability model include four stages: 1. Observing emotions which means you can detect emotions in faces, voices, cultures and ability to recognize your own emotions. 2. Using emotions which means the ability to take advantage of emotions and use them to execute different kind of cognitive tasks, like problem solving and critical thinking. 3. Understanding emotions which means the ability understand the emotional language and appreciate the complex relationships of emotions. For example, this is including a skill to react for small emotional changes and ability to notice and describe how emotions evolve over time. 4. Manage emotions which means the ability to handle and change emotions both in ourselves and others. That is why person with high EI can achieve goals better as a team even people have negative emotions. (Mohamed Ali Azouzi, Jarboui Anis 2013 and Mary Pat McEnrue, Kevin Groves 2019 and Peter Salovey, Marc A. Brackett, John D. Mayer 2004).

Mayer and Salovey model measurements are based on The Mayer Salovey Caruso Emotional Intelligence Test (MSCEIT). In the MSCEIT there are 141 items that are divided among 8 tasks (two for each side). The test yields seven scores: one for each of the four sides, two area scores, and a total EI score. The two area scores are termed: Experiential EI (sides 1 and 2 combined), and Strategic EI (sides 3 and 4 combined) (Marina Fiori, Jean-Philippe Antonietti, Moira Mikolajczak, Olivier Luminet, Michel Hansenne, Jérôme Rossier 2014). These two areas which have four different categories are those ability model's four stages.

Bar-on model also known as mixed model includes five stages: 1. Self-awareness which means the ability to recognize emotions, strengths, weaknesses, effort, values and goals. Furthermore, see how these impact others in decisions making situations. 2. Self-regulation which means the control of negative or disturbing emotions and impulses, same

time how to adapt yourself to changing situations. 3. Social skills which means handling relationships to guide people to the wanted direction. 4. Empathy which means taking care of other people's emotions in the decision making. 5. Motivation which means the urge to achieve the goals. (Mohamed Ali Azouzi 2013).

Goleman model which has four stages: 1. Self-awareness 2. Self-regulation 3. Social awareness and 4. Relationship management. This model is done by psychologist Daniel Goleman who has the book called "Emotional Intelligence – Why it can Matter more than IQ". (Mary Pat McEnrue 2019). This model is the one that is used in this research.

Mixed model is measured with The Emotional Intelligence Appraisal which is a report of yourself based on your skills. twenty-eight questions are used to achieve a full EI score and to form four connected scale scores. Those answers to the four major skills of Daniel Goleman's model of EI. (Mary Pat McEnrue 2019).

All these tests are testing perception, understanding and managing of emotions. Perception skills includes recognizing emotions for example, in faces, music, design and stories. Understanding skills include synesthesia (One stimulation of sensory or cognitive path leads to another automatic and involuntary experience in a second sensory or cognitive path for example, feel noises as a taste), feeling biases, blends, progressions, transitions and relativity. Lastly, managing skills include managing yourself and others, and it is tested with questions. (Peter Salovey 2004).

3.1. SCM for emotional intelligence

In this chapter there is introduced a possible way how to integrate the SCM, the AHP model questions and EI measurements. The goal is to shape a reasonable EI measurement or improvements to transformational leadership model. First, there must be sand cone model to describe the resources, EI elements, personal orientation and outcomes.

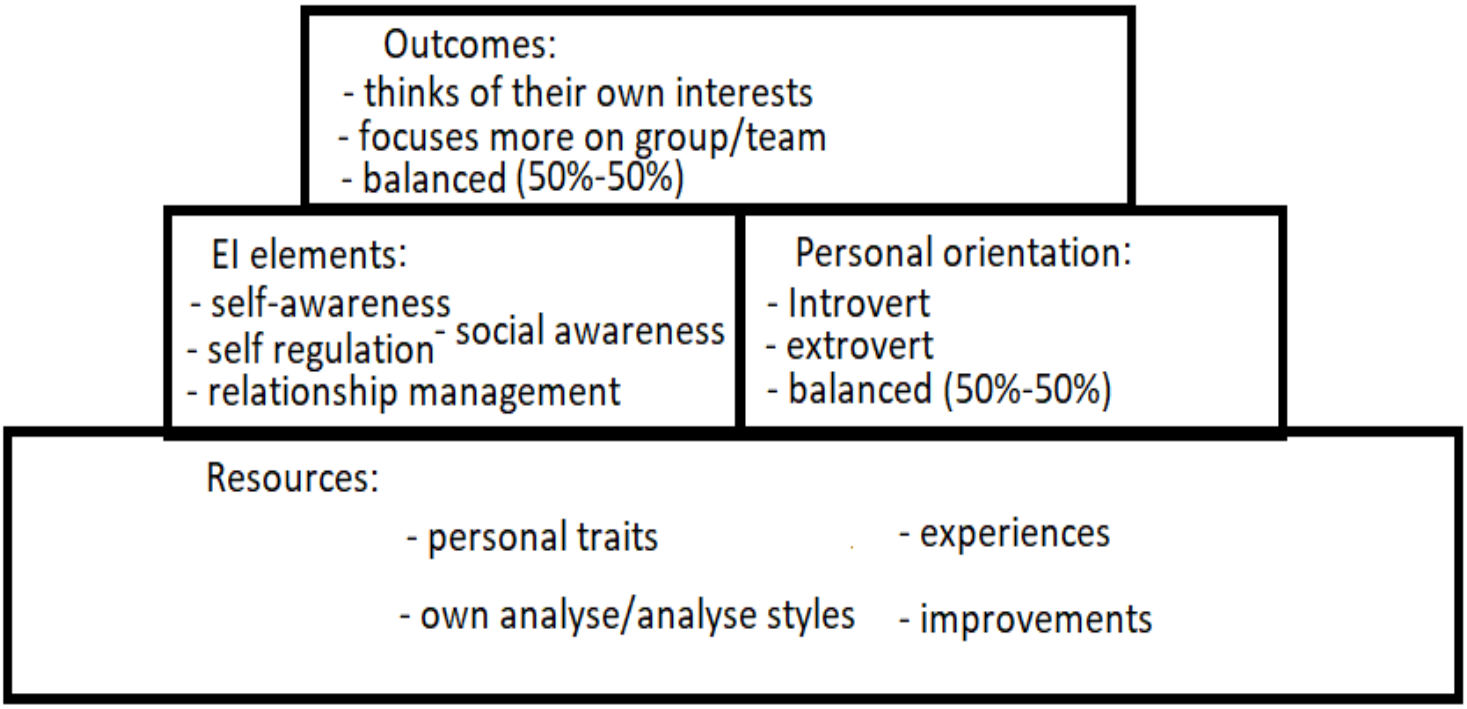


Figure 6. Emotional Intelligence Sand Cone Model

In the EI sand cone model the resources come from four different areas which can determine your EI elements. There are personal traits, own analyse/analyse styles, improvements, experiences. This can be equated to Josu Takala's deep leadership sand cone model where the resources are: 1. People, technology, know-how which is like the personal traits, the base of one's capabilities 2. Processes are like own analyse/analyse styles because both have something going on. For example, manufacturing process and emotional process in a happy situation. 3. Organisation are like experiences there are the developed values and habits in it. 4. Information systems are like improvements because both are the auxiliary tools to make things better (Takala Josu 2019).

In the EI model personal traits include openness to experience, conscientiousness, agreeableness and neuroticism. Own analyse/analyse styles means the way you analyse one's and others' feelings. For example, you can be good to analyse yourself with thinking about your previous actions and you can be bad at reacting to your emotions when they occur at the different situations, and you can analyse others only by their talking.

Or, you can analyse yourself thinking about your previous actions only and others by their facial expressions but not by their talking. Experiences means that you have gone through certain experiences in your living environment and you have knowledge in these situations which have built your values and habits. Improvements are the tools to make you better.

In the second row there are EI elements and personal orientation. EI elements includes Goleman's four stages of EI. Personal orientation means the way you operate yourself with others. Basically, are you introvert, extrovert or balanced 50% both.

Outcomes are 1. thinks of their own interests 2. focuses more on group/team 3. balanced 50% both. The thing here is that when you get your outcome you can see that 1. do you know yourself better or 2. do you have better group management or 3. Are you good at both which means the highest form of EI. The AHP model's values are giving the direction and then you can transform the value to the sand cone model's outcomes to see where you do must evolve to get better EI skills. For example, if you get the most 1. Then you must improve your skills in the relationship management and social awareness. Because, your self-awareness and self-regulations skills are in the better level. The point is to get balanced and the highest values as possible which means then you have mastered the EI skill.

3.2. EI questionnaire

Second, there must be questions to make the AHP model to measure EI. The questions are formed by mimicking transformational leadership research questions, which are not shown in this research, and the analogy in the same. So, there are 3x4 questions and 4x3 questions. Here is the question table:

Attributes	Comparison	Attributes

Recognizes own feelings	-9-8-7-6-5-4-3-2 1 23456789	Controls own emotions
Recognizes own feelings	-9-8-7-6-5-4-3-2 1 23456789	Sees others' moods
Recognizes own feelings	-9-8-7-6-5-4-3-2 1 23456789	Changes others' moods
Controls own emotions	-9-8-7-6-5-4-3-2 1 23456789	Sees others' moods
Controls own emotions	-9-8-7-6-5-4-3-2 1 23456789	Changes others' moods to positive
Sees others' moods to positive	-9-8-7-6-5-4-3-2 1 23456789	Changes others' moods to positive

Attributes	Comparison	Attributes
Skills to motivate yourself and set goals	-9-8-7-6-5-4-3-2 1 23456789	Impulsiveness and being argumentative
Skills to motivate yourself and set goals	-9-8-7-6-5-4-3-2 1 23456789	Ability to empathy and listen
Skills to motivate yourself and set goals	-9-8-7-6-5-4-3-2 1 23456789	Skills to guide others and make lasting relationships
Impulsiveness and being argumentative	-9-8-7-6-5-4-3-2 1 23456789	Ability to empathy and listen
Impulsiveness and being argumentative	-9-8-7-6-5-4-3-2 1 23456789	Skills to guide others and make lasting relationships
Ability to empathy and listen	-9-8-7-6-5-4-3-2 1 23456789	Skills to guide others and make lasting relationships

Attributes	Comparison	Attributes
Individual personality and behaviour	-9-8-7-6-5-4-3-2 1 23456789	Analysing yourself different ways

Individual personality and behaviour	-9-8-7-6-5-4-3-2 1 23456789	Improving yourself
Individual personality and behaviour	-9-8-7-6-5-4-3-2 1 23456789	Taking advantage of tour previous experience
Analysing yourself different ways	-9-8-7-6-5-4-3-2 1 23456789	Improving yourself
Analysing yourself different ways	-9-8-7-6-5-4-3-2 1 23456789	Taking advantage of previous experience
Improving yourself	-9-8-7-6-5-4-3-2 1 23456789	Taking advantage of tour previous experience

Attributes	Comparison	Attributes
Succeeded by yourself	-9-8-7-6-5-4-3-2 1 23456789	Knows how to end up with a consensus
Succeeded by yourself	-9-8-7-6-5-4-3-2 1 23456789	Helps the team to succeed
Knows how to end up with a consensus	-9-8-7-6-5-4-3-2 1 23456789	Helps the team to succeed

Attributes	Comparison	Attributes
Makes selfish decisions	-9-8-7-6-5-4-3-2 1 23456789	Everyone is satisfied with the relationships
Makes selfish decisions	-9-8-7-6-5-4-3-2 1 23456789	Thinks the team's interest first
Everyone is satisfied with the relationships	-9-8-7-6-5-4-3-2 1 23456789	Thinks the team's interest first

Attributes	Comparison	Attributes
Improving yourself	-9-8-7-6-5-4-3-2 1 23456789	Focuses on guiding others

Improving yourself	-9-8-7-6-5-4-3-2 1 23456789	Analyse the situation to make the best decision
Focuses on guiding others	-9-8-7-6-5-4-3-2 1 23456789	Analyse the situation to make the best decision

Attributes	Comparison	Attributes
Wants to help themselves with others	-9-8-7-6-5-4-3-2 1 23456789	Wants to help others by themselves
Wants to help themselves with others	-9-8-7-6-5-4-3-2 1 23456789	Trying to make the best solution for both team and they
Wants to help others by themselves	-9-8-7-6-5-4-3-2 1 23456789	Trying to make the best solution for both team and they

Figure 7. Emotional intelligence questionnaire

3.3. EI verbal measurement table

Third, there must be a scalable table to know your state of EI. This whole project is mirroring a matlab platform (http://webapps.puv.fi/sca/) and that is why it have same mathematical formulas. That means after the questions you calculate your ratios in prospector, analyser and defender scale. Then you must convert these to the EI sand cone model's outcomes where prospectors are focuses more on group/team, analysers are balanced, and defenders are thinks of their own interests. Here is the table to show the EI state.

AHP state	Verbal measurement

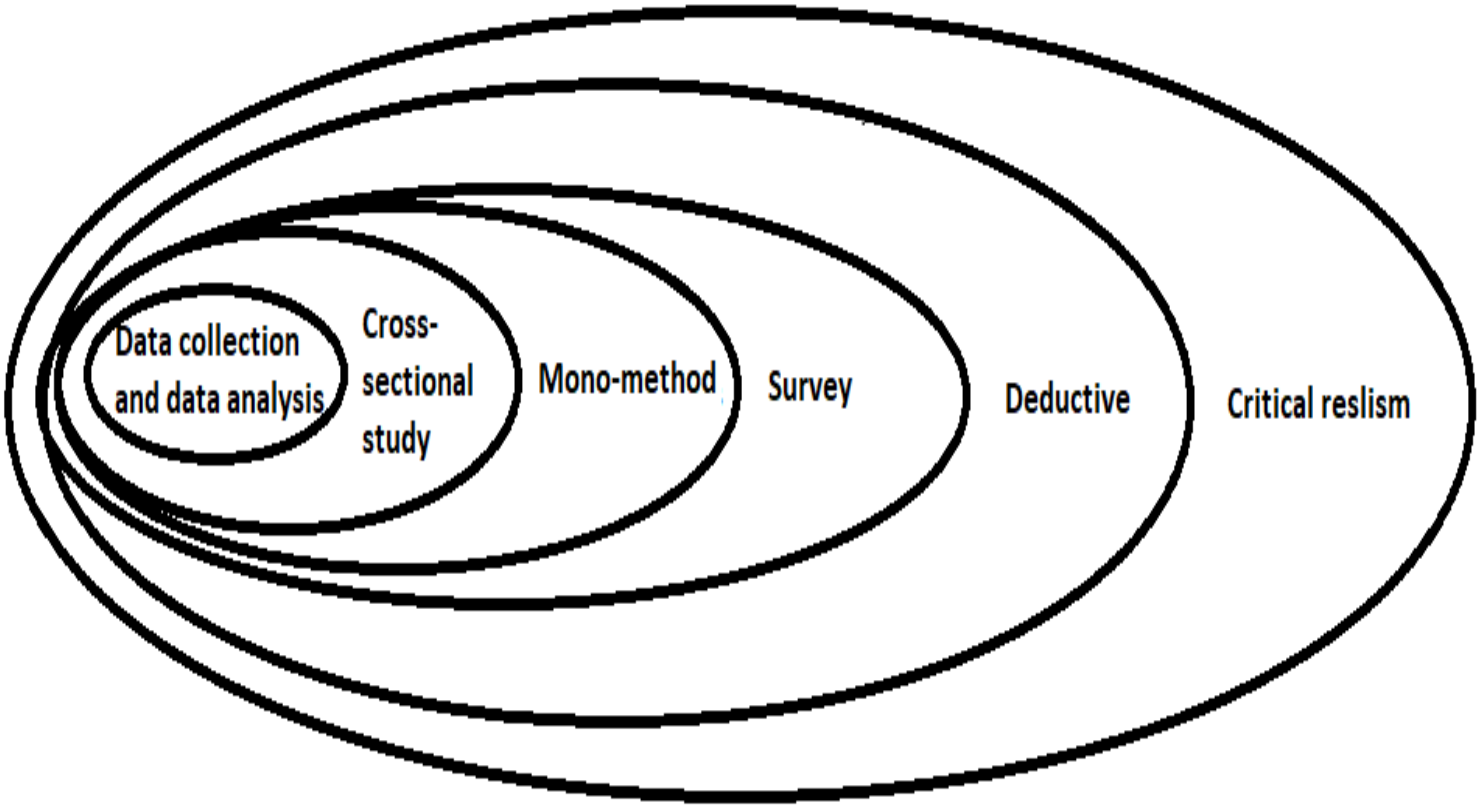
High prospector	Have high skills in social awareness and relationship management. Have minimal or no skill at all in self-awareness and self-regulation and must improve these
Medium prospector	Have high skills in social awareness and relationship management. Have small skills in self-awareness and self-regulation and must improve these.
Low prospector	Have skills in social awareness and relationship management. Have some skill in relationship management and social management but still must improve these.
High analyser	Mastered the EI skill.
Medium analyser	have right way and keep improving the same way. Very good EI skills.
Low analyser	have right way and keep improving the same way. Good EI skills.
High defender	Have high skills in self-awareness and self-regulation. Have minimal or no skill in relationship management and social awareness and must improve these.
Medium defender	Have high skills in self-awareness and self-regulation. Have small skills in relationship management and social awareness and must improve these.
Low defender	Have skills in self-awareness and self-regulation. Have some skills in relationship management and social awareness but still must improve those.

Figure 8. EI verbal measurement table

Here are shown the individual meanings for all different outcomes. The only thing missing is the numerical limits for each state to make this table fully scalable. But the table can be still used without the numerical limits. It gives easy interpretation and direction for improving/developing EI skills further.

5. Research methodology

The purpose of this paper is to study transformational leadership profiles and emotional intelligence measurement with AHP tool. This chapter shows the empirical research methodology. Josu Takala's data collection and researches introduced in the previous chapters are the base of this empirical study. The Figure below "research onion" illustrates the levels that must be taken when developing a research and its strategy. It is viewed from the outside to inside and each layer is describing more detailed level of the research process. Research onion offers an effective way to progress further and it helps to formulate research methodology. Its usefulness is based on its adaptability for nearly any kind of research methodologies and it is usable for different types of contexts. (Saun-



ders, Lewis and Thornhill 2012).

Figure 9. Research onion

Here are introduced philosophies (critical realism), approaches (deductive), strategies (survey), choices (mixed methods), time horizons (cross-sectional study), technique and procedures (data collection and analysis) (Saunders 2012).

5.1. Research Philosophy and Approach

A research philosophy introduces the collection of assumptions and beliefs concerning the world around or nature of the reality that is investigated (Saunders, Lewis & Thornhill 2012). The philosophical framework of research is including ontology, epistemology, logic and teleology. Teleology offers questions about the meaning like why this research have been executed and how it is increasing the existing knowledge in its field. Logic is all about proving and justifying. (Hirsjärvi, Remes & Sajavaara 2008).

Ontology is usually focusing on the questions about "What is reality?" or "What are the meanings of being?", and the goal is to explain the concepts related to being in the world as well as people and society. There are two ways to understand the reality: objectively or subjectively. Objective reality defines the set of things that we are existing independently of us, people, and our actions and activities. Subjective reality means that the experiences and perceptions are individual. So, every person has different perspective which can change over time. Epistemology means assumptions about the knowledge and the relationship between the subject/object that being researched and researcher. Epistemology has both objective and subjective sides. The objective side means the object being researched and researcher are not connected to each other's which means that researcher must seek the right way to find necessary information. Vies versa subjective side means that researcher assists the object being researched. (Hirsjärvi & Hurme 2001).

Critical realism can be seen to be lined with assumptions and views of the researcher in this paper, and realism is one direction of epistemology. Critical in this case are referring to transcendental realism which denies methodological individualism and supposed to claim the universal truth. Critical realists admit that all events in the world are independent from consciousness and it is observable. This path sees the knowledge as constructed socially which means that this world is formed of thinking, feelings, humans and their perceptions of the world should be investigated (Norman Denzin, Yvonna Lincoln 2005). Interpretive philosophy is connected to qualitative research because it involves researchers to understand the subjective and socially build studied phenomenon's relations with expressed meanings (Saunders 2012). All these philosophical aspects are associated to this research paper because the data is gathered by survey and some of them needed interview. The empirical part and its data try to study transformational leadership profiles and emotional intelligence measurement with AHP tool.

Now the research philosophy is explained, it is time to the approach. There are two kind of approach models inductive and deductive reasoning. Inductive reasoning moving from observation to idea, moving from more specific to more general. Deductive reasoning means moving from idea to observation, moving from more general to more specific. (Eriksson & Kovalainen 2008). In this research there are used abduction reasoning which is combination of both inductive and deductive reasoning.

5.2. Strategy

This paper uses survey as a strategy in order to get data for the TL and EI profiles. There are used qualitative survey which offers right information to generate these profiles. Survey is good way to gather data because it can be answer to questions who, what, where, when and how. Survey is usually connected to deductive approach. (Yin 2009). The survey was in digital form and only EI surveys had couple interviews with the survey. Both surveys are generated to make new theory, verify existing theory and some of them are giving good comparison to another research. The research strategy is relevant when the

goal of this research is to get larger understanding of TL and compare the results for already existing research, as well as form something new (EI measurement).

5.3. Choices and time horizons

In this research there are qualitative method used which means mono-method choice. The survey is in quantitative form and it is translated to numerical form with AHP tool's methods. In the interviews there were only discussed about the surveys and they did not give any extra data so, there are no quantitative methods used. The paper uses cross-sectional study because there is an individual perspective studied at one point of time.

5.4. Technique and procedures

Here are decided the questionnaire content and sample groups. The company x, which is operating in multiple countries, gave 35 sample answers to the TL questionnaire. University of Vaasa had done this data gathering and gave it to use. The questionnaires were sent by email and there were no interviews which can cause some misunderstandings in the answers. Furthermore, the reason for the TL research cannot be told here. The EI research data was gathered from random people that has worked in manager or managerial positions. The questionnaire was sent via email and couple of cases had interview included. However, the interview did not provide any new data like previously mentioned.

When you are using qualitative study, the purpose is not only defining the data but also analyse the data. This can be done in three different ways: discussion analysis, discourse analysis or content analysis. Discussion analysis is about to interpret and describe the sense of your findings considering what was already known about the research problem being investigated, and to represent new ideas that appeared as a result of your research. Discourse analysis is about the study of the ways that the language is used in texts and context, shortly examine the language. Content analysis is about studying and receiving

useful information from documents and other researches. (Hirsjärvi 2007). In this paper there are discussion analysis in the EI measurement results and overall mostly content analysing.

This figure below shows the analysis process. At first the gathered data are checked so there are not unfulfilled questionnaires. Second step was to create AHP questions to the internet AHP tool (https://bpmsg.com/ahp/) from the questionnaires. Third step was to transfer the data from the questionnaires to the internet AHP tool and run them. Forth step was transferring the internet AHP tool data to excel and use it to form personal profiles for everyone. Fifth step was interpreting the data to make leadership and EI profiles with arithmetic means. Sixth and last step was to make group and global profiles from the individual data (only in TL research).

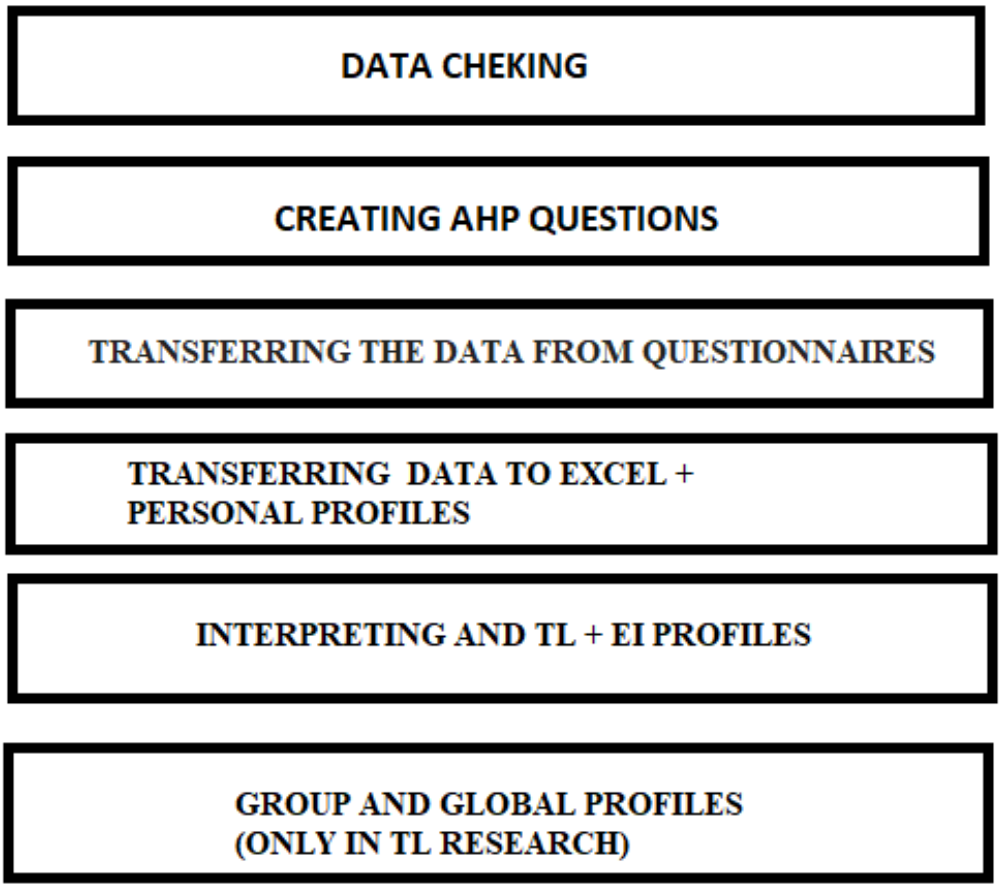
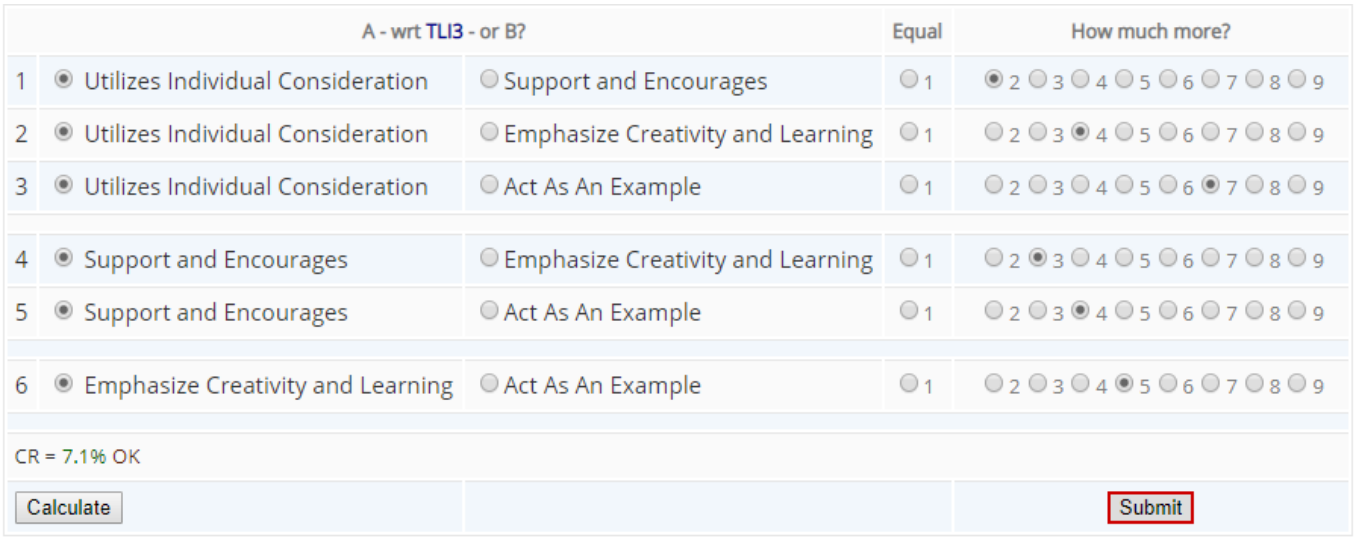


Figure 10. The data analyse process

6. Research results

6.1. Transformational leadership

TL research had 35 participants and after data checking there were 31 participants. The raw data has nine different question sets related to TL. So, there was made nine different questions to internet AHP tool and each has this kind of setting as figure below shows. All the figures used here are only examples with made up numbers to prevent leaking the company x's information.



	A - wrt TLI3 - or B?		Equal	How much more?
1	◉ Utilizes Individual Consideration	○ Support and Encourages	○ 1	◉ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
2	◉ Utilizes Individual Consideration	○ Emphasize Creativity and Learning	○ 1	○ 2 ○ 3 ◉ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
3	◉ Utilizes Individual Consideration	○ Act As An Example	○ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ◉ 7 ○ 8 ○ 9
4	◉ Support and Encourages	○ Emphasize Creativity and Learning	○ 1	○ 2 ◉ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
5	◉ Support and Encourages	○ Act As An Example	○ 1	○ 2 ○ 3 ◉ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
6	◉ Emphasize Creativity and Learning	○ Act As An Example	○ 1	○ 2 ○ 3 ○ 4 ◉ 5 ○ 6 ○ 7 ○ 8 ○ 9

CR = 7.1% OK

Calculate Submit

	A - wrt TLI4 - or B?		Equal	How much more?
1	◉ Utilizes Genuine Interest of Other People	○ Motivates and Rewards	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
2	◉ Utilizes Genuine Interest of Other People	○ Encourage and Challenges to Develop	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
3	◉ Utilizes Genuine Interest of Other People	○ Utilizes the Mutual Trust	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
4	◉ Motivates and Rewards	○ Encourage and Challenges to Develop	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
5	◉ Motivates and Rewards	○ Utilizes the Mutual Trust	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
6	◉ Encourage and Challenges to Develop	○ Utilizes the Mutual Trust	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9

CR = 0% Please start pairwise comparison

Calculate

	A - wrt TLI5 - or B?		Equal	How much more?
1	◉ Operational Business Process and Work Flow	○ Utilize the Know-how	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
2	◉ Operational Business Process and Work Flow	○ Utilizes the Information Systems	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
3	◉ Operational Business Process and Work Flow	○ Utilizes different organizing practices such	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
4	◉ Utilize the Know-how	○ Utilizes the Information Systems	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
5	◉ Utilize the Know-how	○ Utilizes different organizing practices such	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
6	◉ Utilizes the Information Systems	○ Utilizes different organizing practices such	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9

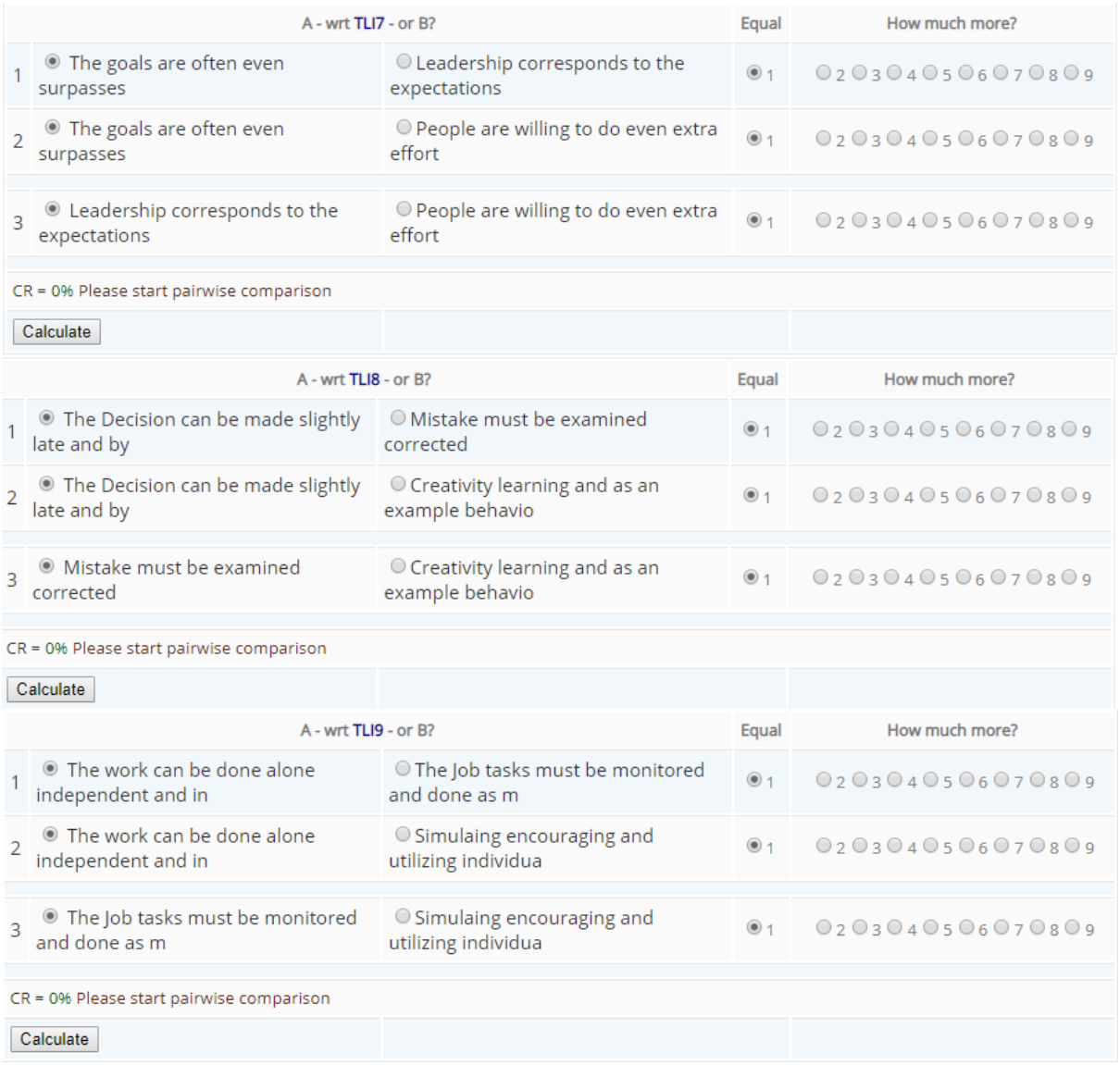
CR = 0% Please start pairwise comparison

Calculate

	A - wrt TLI6 - or B?		Equal	How much more?
1	◉ Achieves the Settled Goals	○ Succeeds as a leader	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
2	◉ Achieves the Settled Goals	○ Create Entrepreneurship to the Team	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
3	◉ Succeeds as a leader	○ Create Entrepreneurship to the Team	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9

CR = 0% Please start pairwise comparison

Calculate



	A - wrt TLI7 - or B?		Equal	How much more?
1	The goals are often even surpasses	Leadership corresponds to the expectations	1	2 3 4 5 6 7 8 9
2	The goals are often even surpasses	People are willing to do even extra effort	1	2 3 4 5 6 7 8 9
3	Leadership corresponds to the expectations	People are willing to do even extra effort	1	2 3 4 5 6 7 8 9

CR = 0% Please start pairwise comparison

Calculate

	A - wrt TLI8 - or B?		Equal	How much more?
1	The Decision can be made slightly late and by	Mistake must be examined corrected	1	2 3 4 5 6 7 8 9
2	The Decision can be made slightly late and by	Creativity learning and as an example behavio	1	2 3 4 5 6 7 8 9
3	Mistake must be examined corrected	Creativity learning and as an example behavio	1	2 3 4 5 6 7 8 9

CR = 0% Please start pairwise comparison

Calculate

	A - wrt TLI9 - or B?		Equal	How much more?
1	The work can be done alone independent and in	The Job tasks must be monitored and done as m	1	2 3 4 5 6 7 8 9
2	The work can be done alone independent and in	Simulaing encouraging and utilizing individua	1	2 3 4 5 6 7 8 9
3	The Job tasks must be monitored and done as m	Simulaing encouraging and utilizing individua	1	2 3 4 5 6 7 8 9

CR = 0% Please start pairwise comparison

Calculate

Figure 11. Transformational leadership questions in AHP tool

There is example of how the AHP tool works. You have four different attributes which are compared together in a scale two to nine and number one means the two attributes are equal. Consistency ratio (CR)/In consistency ratio (ICR) ratio tells how good your answers are balanced to each other. Here it is OK 7.1% and, in this research, we did not use CR/ICR over 40% or 0.4.

Resulting Priorities

Cat		Priority	Rank
1	Utilizes Individual Consideration	49.8%	1
2	Support and Encourages	29.2%	2
3	Emphasize Creativity and Learning	15.5%	3
4	Act As An Example	5.5%	4

Decision Hierarchy

Level 0	Level 1	Glb Prio.
TLI4	Utilizes Genuine Interest of Other People 0.198	19.8%
	Motivates and Rewards 0.198	19.8%
	Encourage and Challenges to Develop 0.346	34.6%
	Utilizes the Mutual Trust 0.258	25.8%
		1.0

Decision Hierarchy

Level 0	Level 1	Glb Prio.
TLI5	Operational Business Process and Work Flow 0.215	21.5%
	Utilize the Know-how 0.337	33.7%
	Utilizes the Information Systems 0.158	15.8%
	Utilizes different organizing practices such 0.290	29.0%
		1.0

Decision Hierarchy

Level 0	Level 1	Glb Prio.
TLI6	Achieves the Settled Goals 0.442	44.2%
	Succeeds as a leader 0.247	24.7%
	Create Entrepreneurship to the Team 0.311	31.1%
		1.0

Figure 12. Example of resulting individual priorities in AHP tool questions

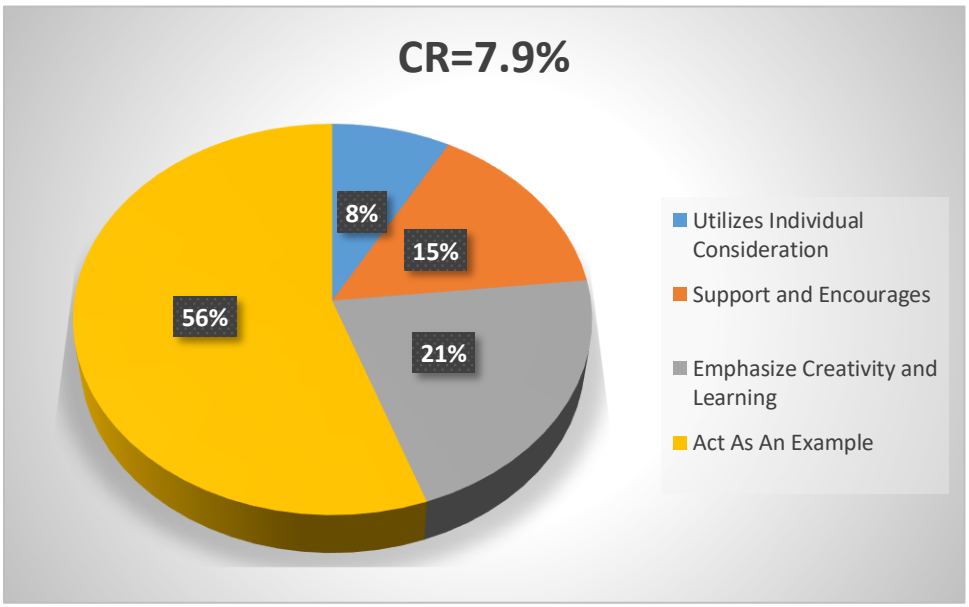
This figure x shows how you prioritized your attributes and with what percent. Here the example calculations have given to all questions. Some of the questions have four attributes and some of them three.

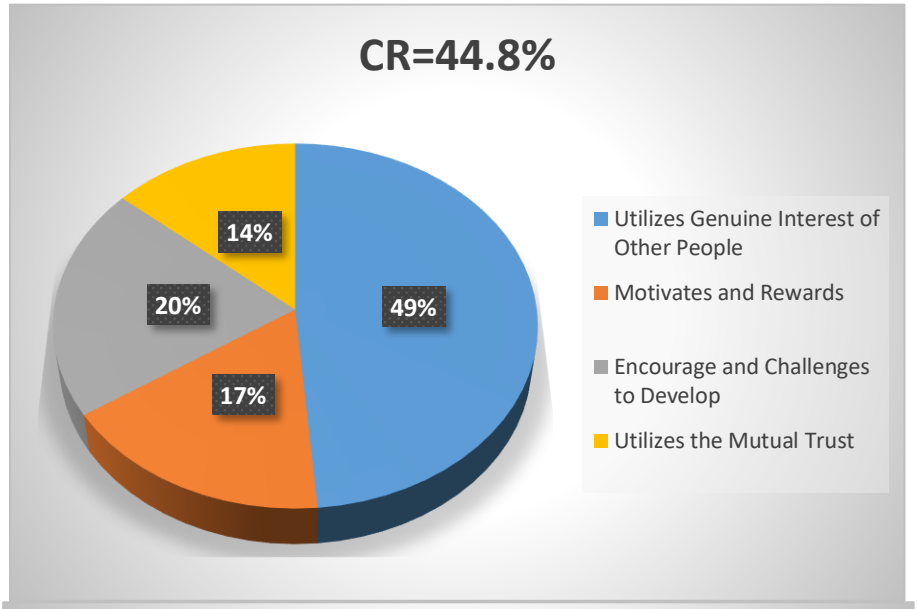
Example 1	8.1%	15.2%	21.3%	55.4%	7.9%
Example 2	4.1%	59.7%	25.1%	11.0%	12.6%
Example 3	61.8%	13.3%	11.6%	13.3%	1.4%
Example 4	53.3%	6.7%	13.3%	26.7%	18.3%

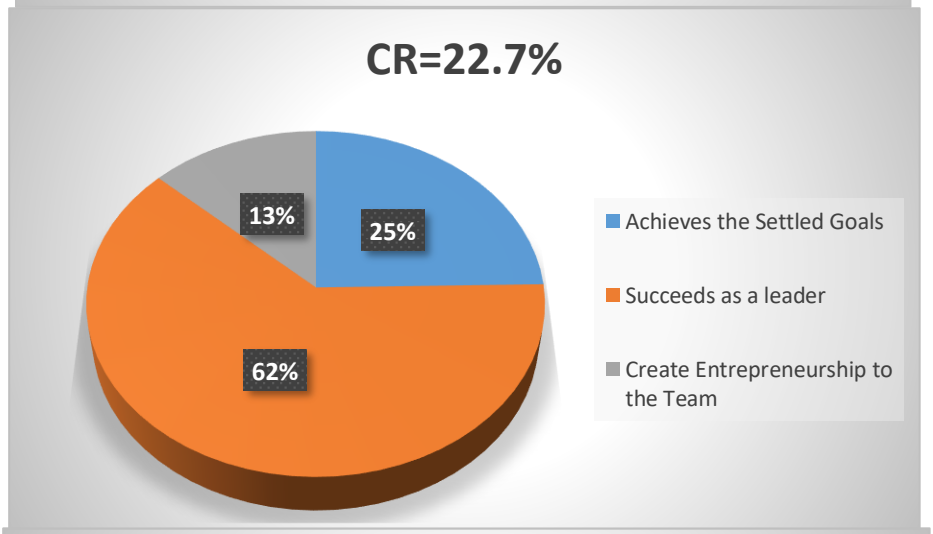
Figure 13. Individual prioritise window

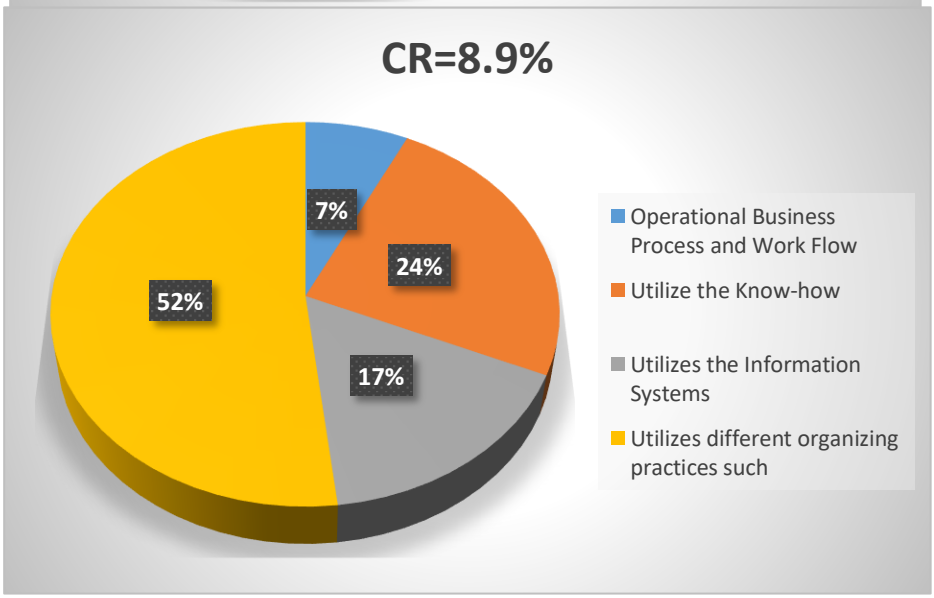
In this Figure x you can see how every individuals' answers, all the 31 participants in one question, are showing like this in the view. So, nine times 31 participants' data was moved to excel for further calculations.

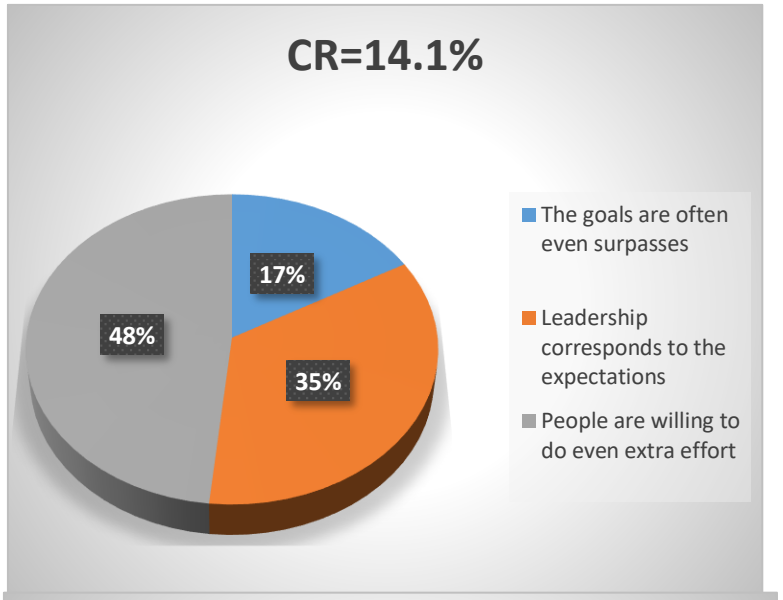
Every questions' data was changed to the form like pictures below. Pie diagrams which has every priorities' specific percent rate, and the CR/ICR are marked in the top to make easier and faster to pick the under 0.4/40% rated pies to further analyse.

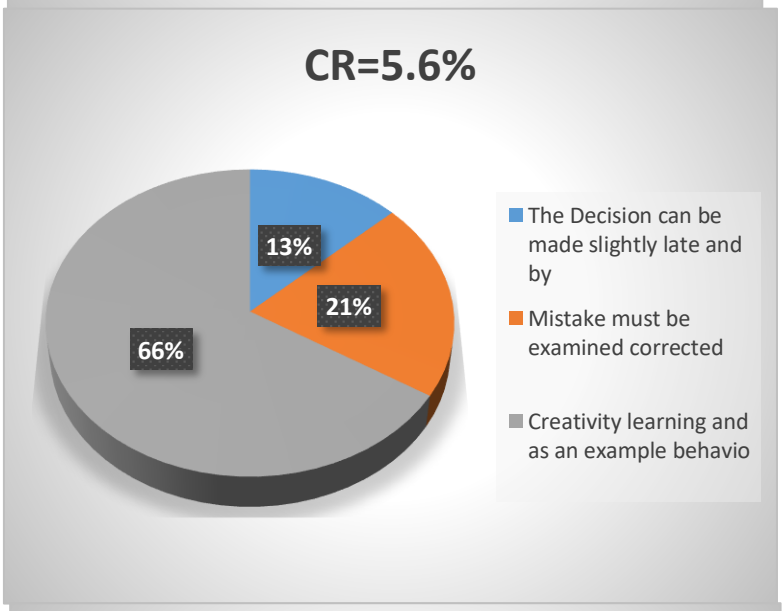



CR=44.8%
14%
20%
49%
17%
Utilizes Genuine Interest of Other People
Motivates and Rewards
Encourage and Challenges to Develop
Utilizes the Mutual Trust


CR=22.7%
13%
25%
62%
Achieves the Settled Goals
Succeeds as a leader
Create Entrepreneurship to the Team


CR=8.9%
7%
24%
52%
17%
Operational Business Process and Work Flow
Utilize the Know-how
Utilizes the Information Systems
Utilizes different organizing practices such


CR=14.1%
17%
35%
48%
The goals are often even surpasses
Leadership corresponds to the expectations
People are willing to do even extra effort


CR=5.6%
13%
21%
66%
The Decision can be made slightly late and by
Mistake must be examined corrected
Creativity learning and as an example behavio

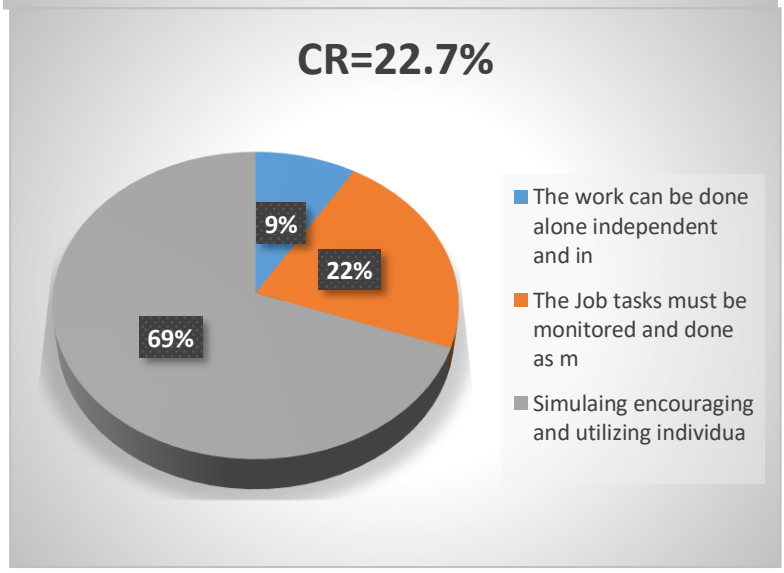

CR=22.7%
9%
22%
69%
The work can be done alone independent and in
The Job tasks must be monitored and done as m
Simulaing encouraging and utilizing individua

Figure 14. Pie diagrams from the AHP data

After the pie diagrams there were instructions where the questions have categorized to four different parts which are the same as in the SCM. The categories are TLI leadership styles (the heart) 1-12 questions and the only ones that give the values are 1,2,3,6,11 because of redundancy. In this section there was need for new question set which includes only those five questions because there were not comparisons between these four attributes. That was the only way to get right values out of the questions as figure x below shows. There are used first letters and abbreviations. ICandIofOP = Individual Consideration and Genuine Interest of Other People, MandRSandE = Motivate and Rewards; Support and Encourage, ECandLEandCtoD = Emphasize Creativity and Learning; Encourage and Challenge to Develop and UMTandAaE = Utilizes Mutual Trust and Act as Example.

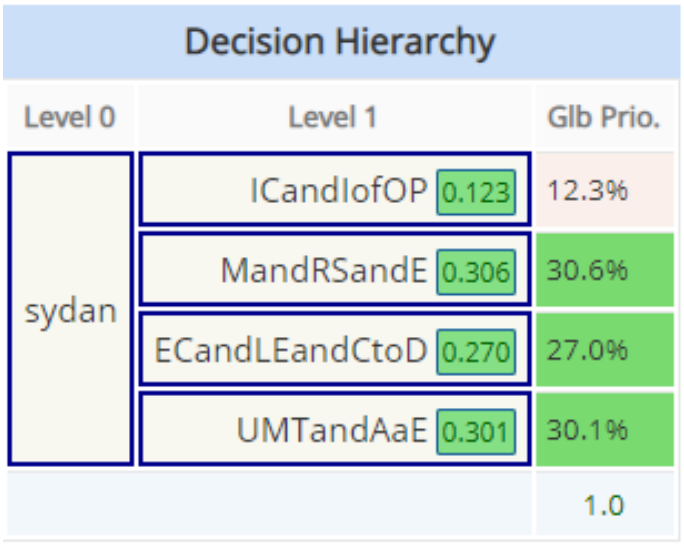


Figure 15. New question set for calculating TL profiles cornerstones “heart”

Resource allocations (know-how, information systems, processes and way of working) are formed from the questions 13-18. These questions have not redundancy and can be picked from the values in the pies directly. Directing outcome/outputs are from the

questions 19-24 and have no redundancy. Final questions 25-32 are forming the passive/controlling/dynamic leadership section. There are only 25-27 questions in use because of redundancy and these can be picked straight from the pie. Then measure data limits were already set but they can be set by having big enough sample size and use that data to create measurement board by seeing the optimal values. In this research data limits were like this:

Colour codes

red = bad

yellow= warning

green = good

Direct of outputs; optimal 33%

50-100

40-49

20-39

10-19

0-9

Dynamic leadership; optimal 82%

70-100

50-69

0-49

Resource; optimal 25%

40-100

30-39

20-29

10-19

0-9

Controlling/Passive leadership; optimal 9%

25-100

15-24

0-14

Cornerstones; optimal 25%

40-100

30-39

20-29

10-19

0-9

After this work the individual profile could be formed with arithmetic means, and they look like the figure below. The underlined letter shows the participants' leadership outcome that are affecting the most.

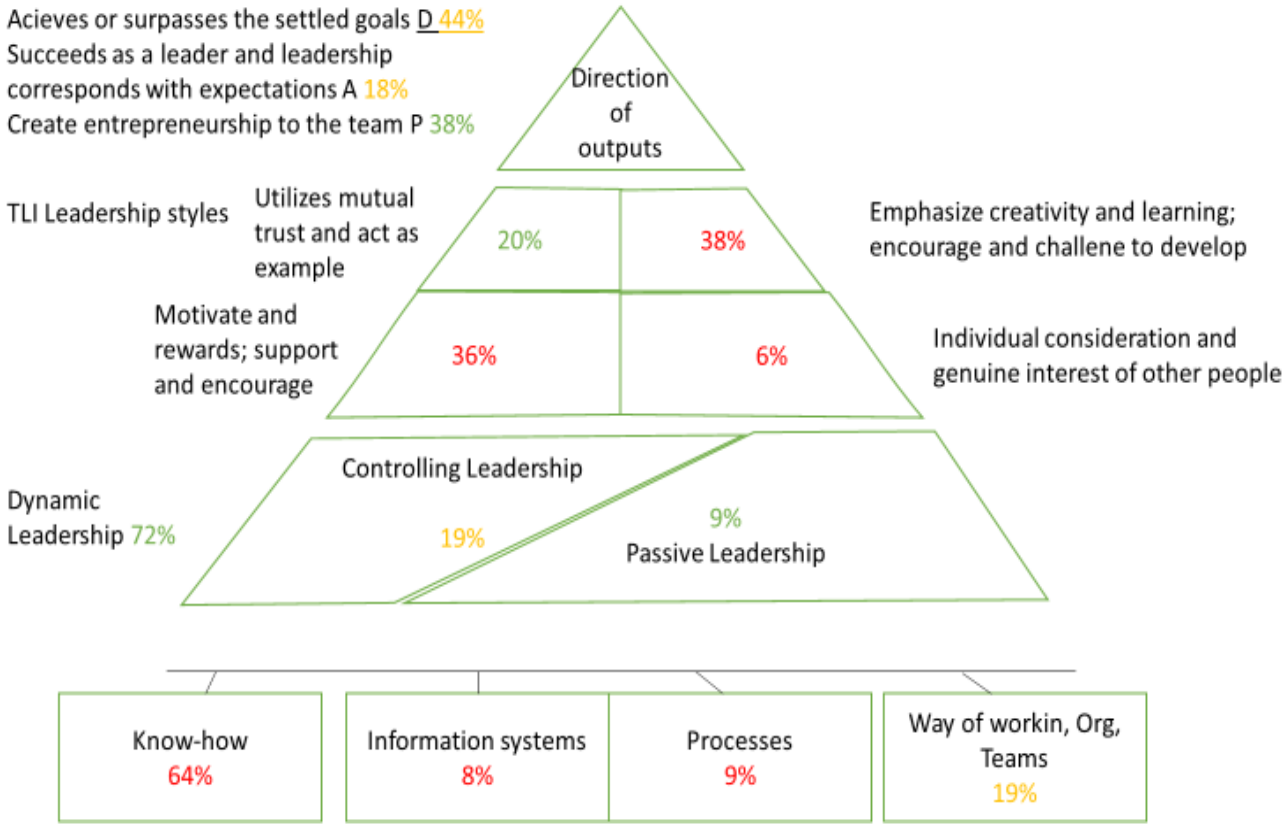


Figure 16. Transformational leadership profile

After these individual profiles there were used root means square and geometric means to see if there are huge differences. Turn out that the biggest differences were maximum 5%. When this was checked, the group profiles were formed with arithmetic means. Because of the research type this paper does not include the group profiles. The group profiles were compared to previous research which was done with the Josu Takala's and his colleagues TL measure platform.

6.2. Emotional intelligence

EI questionnaire has 30 questions and it was sent to 10 participants. The questions were made to AHP tool and they looked like figure x below shows. Numbers that are used in this research are real, but the participants' names are left out. These questions are in right order 1 to 30.

	A - wrt **EI1** - or B?		Equal	How much more?
1	◉ Recognizes own feelings	○ Controls own emotions	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
2	◉ Recognizes own feelings	○ Sees others' moods	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
3	◉ Recognizes own feelings	○ Changes others' moods to positive	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
4	◉ Controls own emotions	○ Sees others' moods	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
5	◉ Controls own emotions	○ Changes others' moods to positive	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
6	◉ Sees others' moods	○ Changes others' moods to positive	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9

CR = 0% Please start pairwise comparison

Calculate

	A - wrt **EI2** - or B?		Equal	How much more?
1	◉ Skills to motivate yourself and set goals	○ Taking responsibility for speaking and action	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
2	◉ Skills to motivate yourself and set goals	○ Ability to empathy and listen to others	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
3	◉ Skills to motivate yourself and set goals	○ Skills to guide others and make lasting relat	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
4	◉ Taking responsibility for speaking and action	○ Ability to empathy and listen to others	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
5	◉ Taking responsibility for speaking and action	○ Skills to guide others and make lasting relat	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9
6	◉ Ability to empathy and listen to others	○ Skills to guide others and make lasting relat	◉ 1	○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9

CR = 0% Please start pairwise comparison

Calculate

	A - wrt EI3 - or B?		Equal	How much more?
1	Individual personality and behaviour	Analysing yourself in different ways	1	2 3 4 5 6 7 8 9
2	Individual personality and behaviour	Improving yourself	1	2 3 4 5 6 7 8 9
3	Individual personality and behaviour	Taking advantage of your previous experience	1	2 3 4 5 6 7 8 9
4	Analysing yourself in different ways	Improving yourself	1	2 3 4 5 6 7 8 9
5	Analysing yourself in different ways	Taking advantage of your previous experience	1	2 3 4 5 6 7 8 9
6	Improving yourself	Taking advantage of your previous experience	1	2 3 4 5 6 7 8 9

CR = 0% Please start pairwise comparison

Calculate

	A - wrt EI4 - or B?		Equal	How much more?
1	Succeeded by yourself	Knows how to end up with a consensus	1	2 3 4 5 6 7 8 9
2	Succeeded by yourself	Helps the team to succeed	1	2 3 4 5 6 7 8 9
3	Knows how to end up with a consensus	Helps the team to succeed	1	2 3 4 5 6 7 8 9

CR = 0% Please start pairwise comparison

Calculate

	A - wrt EI5 - or B?		Equal	How much more?
1	Makes decisions to help own interest	Everyone is satisfied	1	2 3 4 5 6 7 8 9
2	Makes decisions to help own interest	Thinks the teams interests first	1	2 3 4 5 6 7 8 9
3	Everyone is satisfied	Thinks the teams interests first	1	2 3 4 5 6 7 8 9

CR = 0% Please start pairwise comparison

Calculate

	A - wrt EI6 - or B?		Equal	How much more?
1	Improving yourself	Focuses on guiding others	1	2 3 4 5 6 7 8 9
2	Improving yourself	Analyse the situation to make the best decisi	1	2 3 4 5 6 7 8 9
3	Focuses on guiding others	Analyse the situation to make the best decisi	1	2 3 4 5 6 7 8 9

CR = 0% Please start pairwise comparison

Calculate

	A - wrt EI7 - or B?		Equal	How much more?
1	Own interests	Helping others	1	2 3 4 5 6 7 8 9
2	Own interests	Trying to make the best solution for both tea	1	2 3 4 5 6 7 8 9
3	Helping others	Trying to make the best solution for both tea	1	2 3 4 5 6 7 8 9

CR = 0% Please start pairwise comparison

Calculate

Figure 17. Emotional intelligence questions in AHP tool

The questions' results are shown in the figure x. These percentages are from all ten participants in each result. To get the cornerstones/ the "heart" there were made new question set for that. Because, there are redundancy in questions 1-12 and 25-30.

Decision Hierarchy

Level 0	Level 1	Glb Prio.
EI1	Recognizes own feelings 0.163	16.3%
	Controls own emotions 0.209	20.9%
	Sees others' moods 0.307	30.7%
	Changes others' moods to positive 0.322	32.2%

Decision Hierarchy

Level 0	Level 1	Glb Prio.
EI2	Skills to motivate yourself and set goals 0.249	24.9%
	Taking responsibility for speaking and action 0.213	21.3%
	Ability to empathy and listen to others 0.241	24.1%
	Skills to guide others and make lasting relat 0.297	29.7%

Decision Hierarchy

Level 0	Level 1	Glb Prio.
EI3	Individual personality and behaviour 0.117	11.7%
	Analysing yourself in different ways 0.128	12.8%
	Improving yourself 0.434	43.4%
	Taking advantage of your previous experience 0.321	32.1%

Decision Hierarchy

Level 0	Level 1	Glb Prio.
EI4	Succeeded by yourself 0.133	13.3%
	Knows how to end up with a consensus 0.348	34.8%
	Helps the team to succeed 0.520	52.0%

Decision Hierarchy

Level 0	Level 1	Glb Prio.
EI5	Makes decisions to help own interest 0.157	15.7%
	Everyone is satisfied 0.351	35.1%
	Thinks the teams interests first 0.492	49.2%

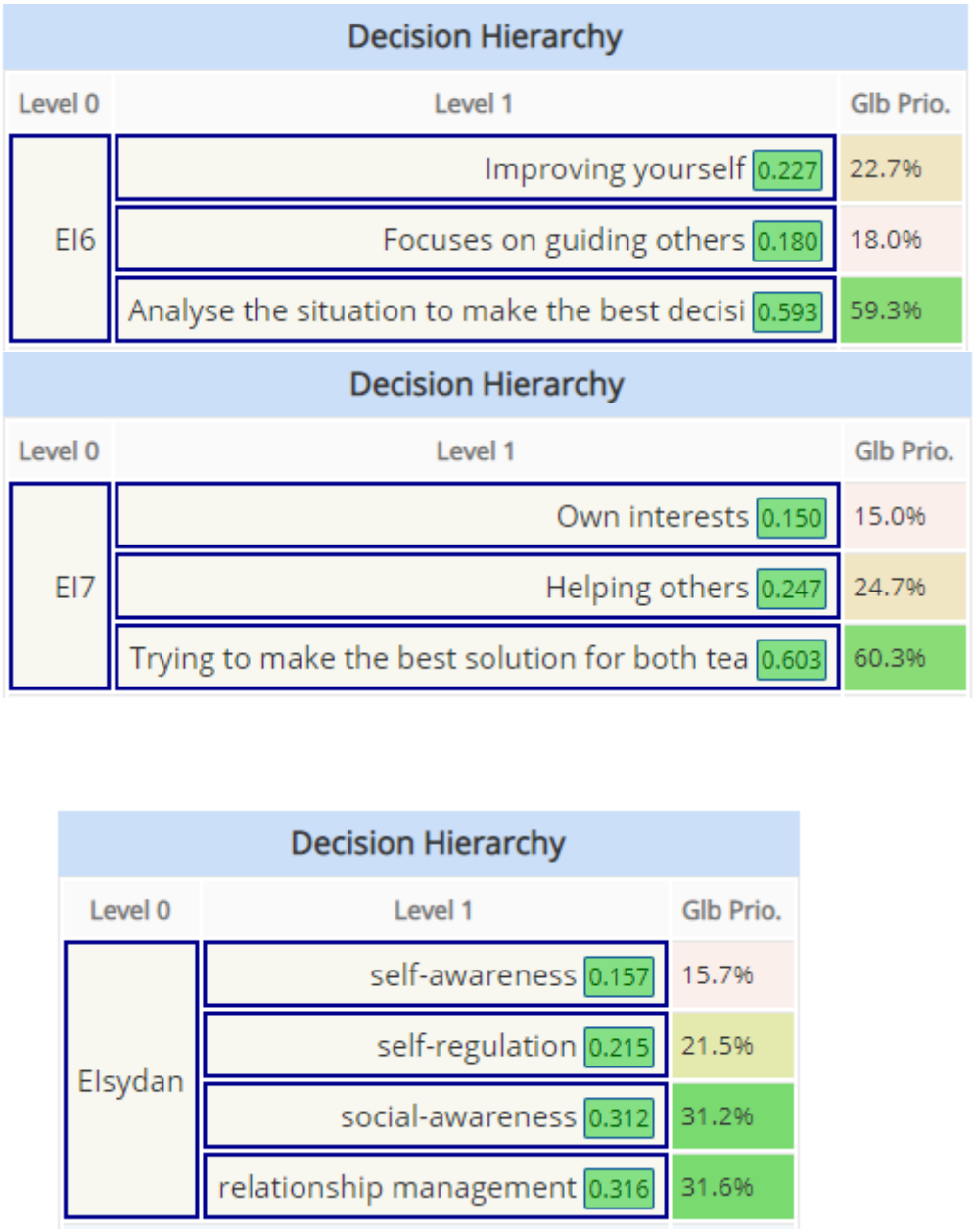


Figure 17. Emotional intelligence AHP tool questions' results

After putting equations to AHP questions the results were checked and transferred to excel. In excel everybody got individual profiles like in TL research. Data sets looked like the figure below shows. They are in same order as the EI results 1 to 7.

16.30%	**20.90%**	**30.70%**	**32.20%**	**1.70%**
4.40%	11.00%	42.30%	42.30%	10.10%
13.70%	8.60%	56.30%	21.40%	41.30%
4.80%	21.20%	18.90%	55.10%	4.90%
24.20%	19.10%	24.90%	31.70%	61.80%
14.10%	26.40%	53.00%	6.60%	2.60%
15.10%	59.60%	5.40%	20.00%	20.70%
50.80%	4.80%	28.10%	16.30%	21.90%
9.40%	41.50%	7.70%	41.50%	0.80%
19.10%	23.30%	28.70%	28.90%	93.50%
17.30%	7.30%	37.70%	37.70%	5.70%

24.90%	**21.30%**	**24.10%**	**29.70%**	**3.20%**
5.60%	22.60%	36.60%	35.20%	4.30%
38.00%	42.60%	12.40%	7.00%	5.90%
7.70%	39.20%	8.40%	44.70%	8.50%
31.30%	7.50%	4.50%	56.70%	29.80%
61.40%	21.60%	8.50%	8.50%	2.20%
38.10%	28.80%	4.20%	28.80%	107.10%
32.10%	4.80%	32.10%	30.90%	0.10%
12.50%	12.50%	62.50%	12.50%	0.00%
16.50%	5.70%	47.00%	30.70%	13.60%
7.80%	18.20%	52.90%	21.10%	6.00%

11.70%	**12.80%**	**43.40%**	**32.10%**	**4.00%**
14.30%	41.30%	22.20%	22.20%	18.60%
5.50%	8.00%	59.90%	26.50%	22.40%
8.30%	3.20%	56.40%	32.10%	19.70%

7.50%	11.40%	59.30%	21.80%	11.40%
14.30%	9.00%	36.20%	40.60%	1.80%
6.20%	14.20%	56.70%	22.90%	22.50%
19.90%	14.60%	10.10%	55.40%	11.60%
21.50%	15.80%	30.10%	32.70%	13.90%
6.50%	18.40%	56.70%	18.40%	6.40%
15.60%	7.80%	46.60%	29.90%	4.80%

13.30%	**34.80%**	**52.00%**	**1.80%**
5.80%	20.70%	73.50%	12.20%
7.60%	15.80%	76.60%	14.10%
5.30%	47.40%	47.40%	0.00%
25.70%	7.00%	67.20%	45.50%
25.00%	9.50%	65.50%	1.90%
7.60%	72.60%	19.80%	45.50%
21.00%	24.00%	55.00%	1.90%
16.70%	66.70%	16.70%	0.00%
6.20%	72.60%	21.20%	15.20%
10.00%	43.30%	46.60%	0.60%

15.70%	**35.10%**	**49.20%**	**2.70%**
5.30%	25.70%	69.00%	41.50%
22.50%	16.60%	61.00%	9.80%
4.80%	19.10%	76.20%	52.30%
33.30%	33.30%	33.30%	333.90%
26.30%	7.90%	65.90%	3.40%
26.30%	19.00%	54.70%	128.50%
7.80%	48.70%	43.50%	1.30%

10.00%	80.00%	10.00%	0.00%
10.60%	70.10%	19.30%	26.80%
14.30%	42.90%	42.90%	0.00%

22.70%	**18.00%**	**59.30%**	**0.10%**
20.00%	20.00%	60.00%	0.00%
65.10%	12.70%	22.30%	30.80%
5.60%	14.10%	80.20%	22.60%
6.60%	21.70%	71.70%	3.90%
23.00%	12.20%	64.80%	0.40%
21.00%	6.00%	73.00%	31.90%
8.40%	47.20%	44.40%	0.40%
20.70%	5.80%	73.50%	12.20%
71.00%	15.50%	13.50%	1.90%
21.00%	24.00%	55.00%	1.90%

15.00%	**24.70%**	**60.30%**	**0.30%**
5.60%	46.30%	48.10%	0.20%
38.80%	51.50%	9.70%	8.40%
4.50%	18.50%	77.00%	46.30%
16.20%	6.80%	77.00%	5.60%
25.00%	25.00%	50.00%	0.00%
7.10%	20.90%	72.00%	54.90%
10.40%	12.70%	76.90%	4.00%
9.10%	9.10%	81.80%	0.00%
33.30%	33.30%	33.30%	0.00%
12.80%	27.60%	59.50%	0.60%

15.70%	**21.50%**	**31.20%**	**31.60%**	**3.40%**
5.10%	30.00%	32.50%	32.50%	0.50%
19.50%	22.00%	40.60%	18.00%	114.20%
4.80%	29.60%	20.30%	45.30%	7.30%
21.90%	10.10%	30.10%	37.90%	54.10%
14.80%	31.00%	46.90%	7.30%	6.10%
20.00%	24.40%	10.30%	45.30%	42.50%
52.80%	8.30%	19.90%	19.00%	37.90%
8.20%	30.80%	24.20%	36.80%	1.70%
16.80%	13.20%	39.10%	31.00%	39.20%
19.70%	12.20%	30.10%	38.00%	23.30%

Horizontally there are each participants' results and the top row is the group result. The last row is the CR/ICR percentage. Furthermore, EI1 decision hierarchy's result "recognise own feelings" are in the data sets' first data section and rows 2 to 11 in the first vertical row (4.40%, 13.70%, 4.80% etc.), EI1 result "controls own emotions" are in the first data section and rows 2 to 11 in the second vertical row (11.00%, 8.60%, 21.20%), etc. In every data set the second horizontal row is participant 1, the third horizontal row is participant 2 and so on. After this the EI profiles were made to PowerPoint. These ten profiles below are formed by using arithmetic means and using the same colour codes as in the TL research.

Colour codes	Resource; optimal 25%
red = bad	40-100
yellow= warning	30-39

green = good

Direct of outputs; optimal 33%

50-100

40-49

20-39

10-19

0-9

balanced; optimal 82%

70-100

50-69

0-49

20-29

10-19

0-9

Extrovert/introvert; optimal 9%

25-100

15-24

0-14

EI Cornerstones; optimal 25%

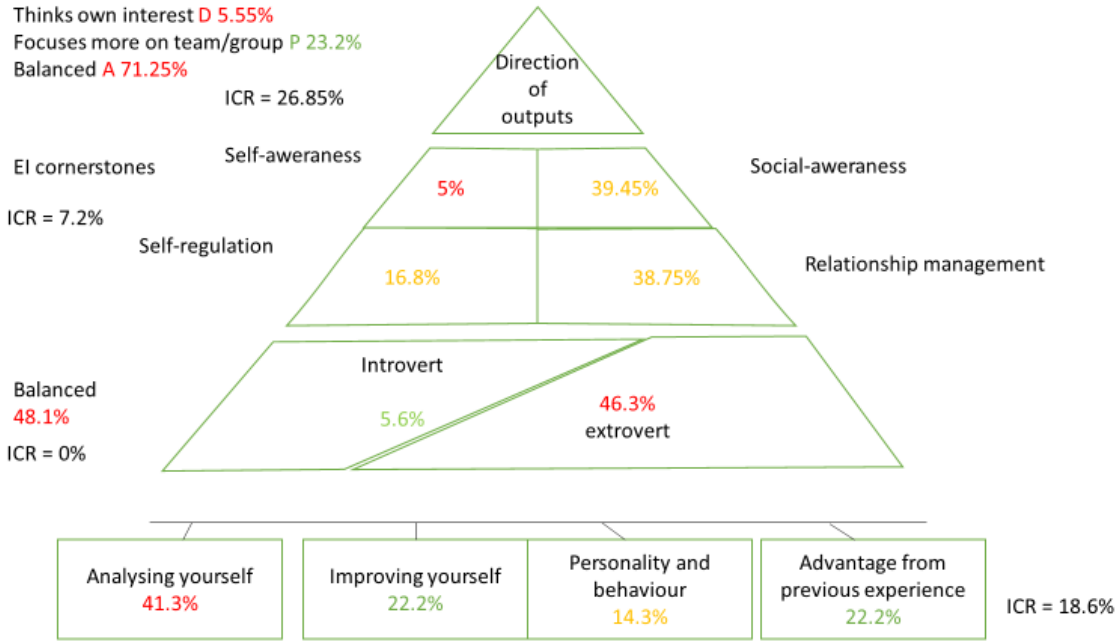
40-100

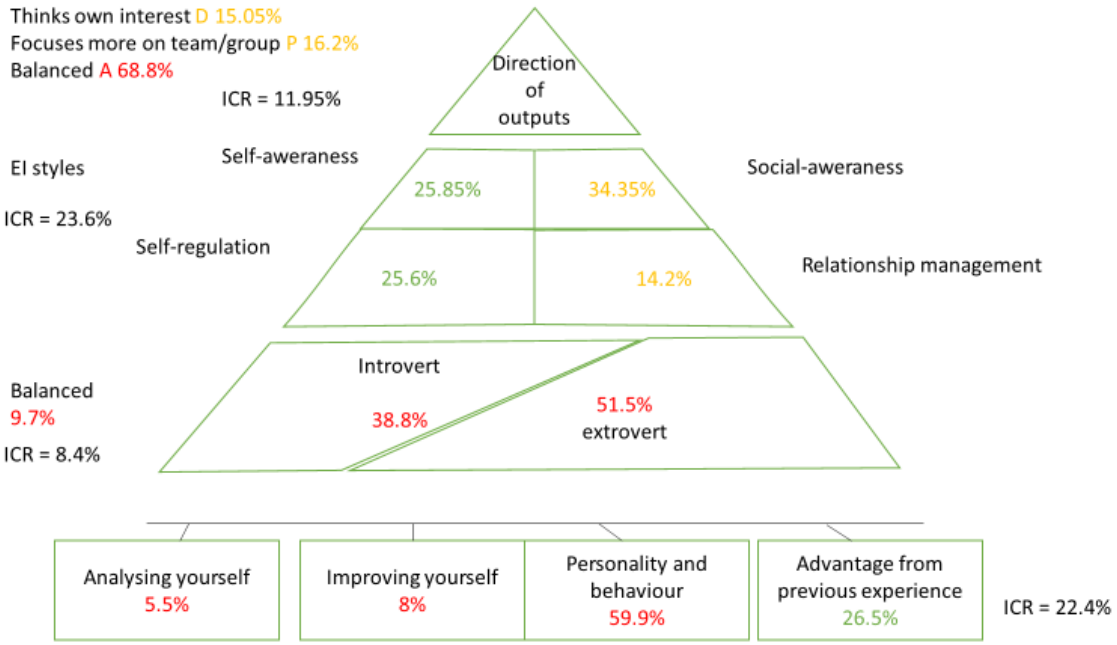
30-39

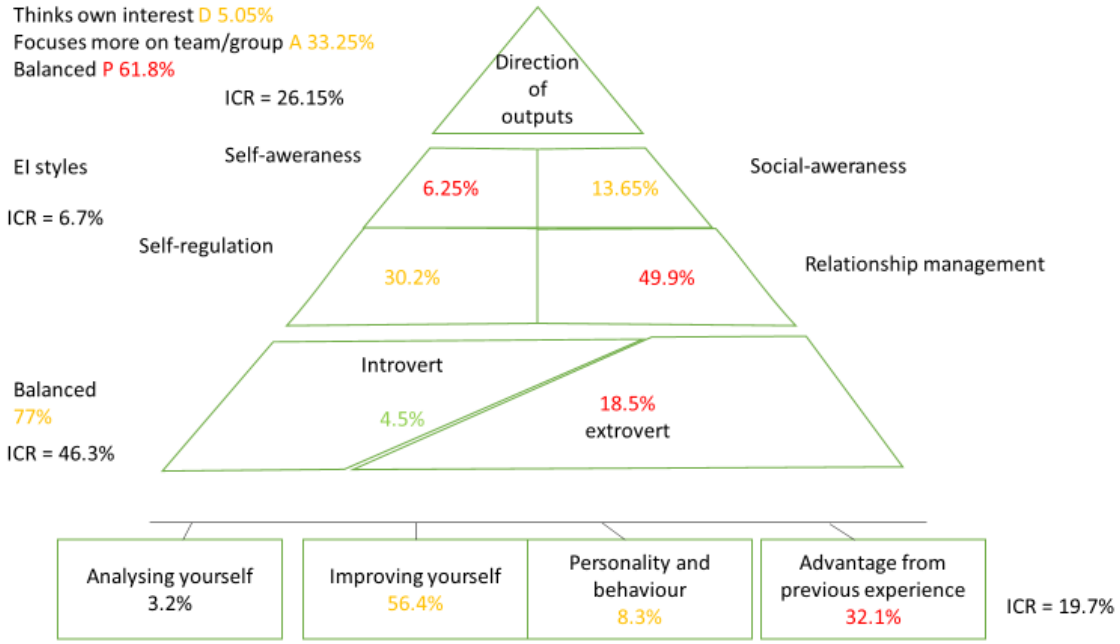
20-29

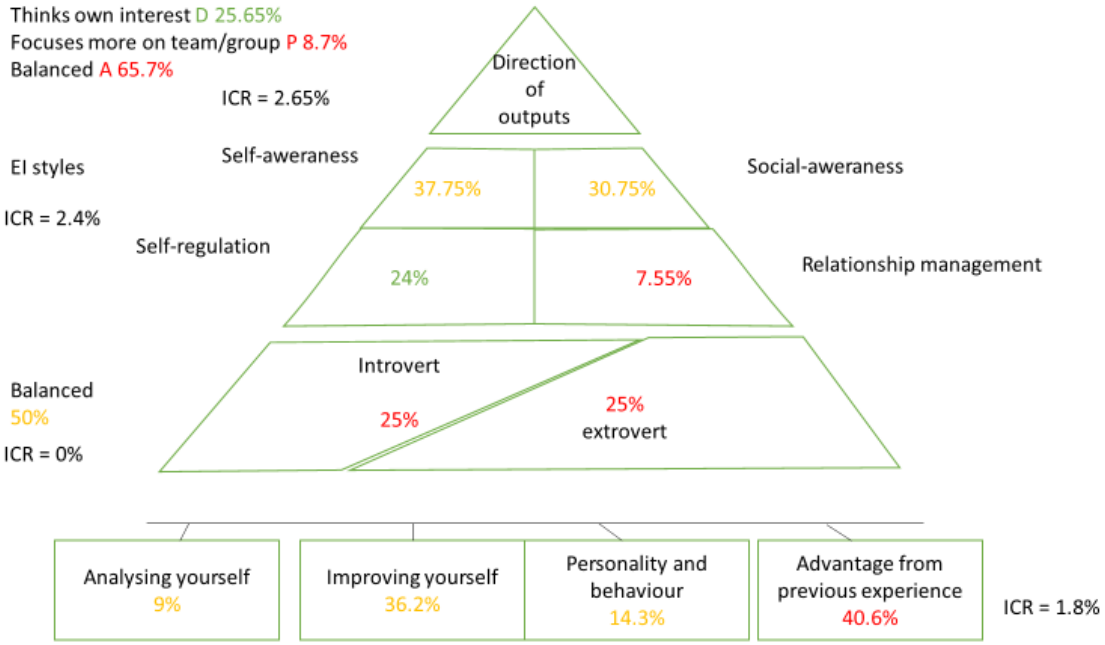
10-19

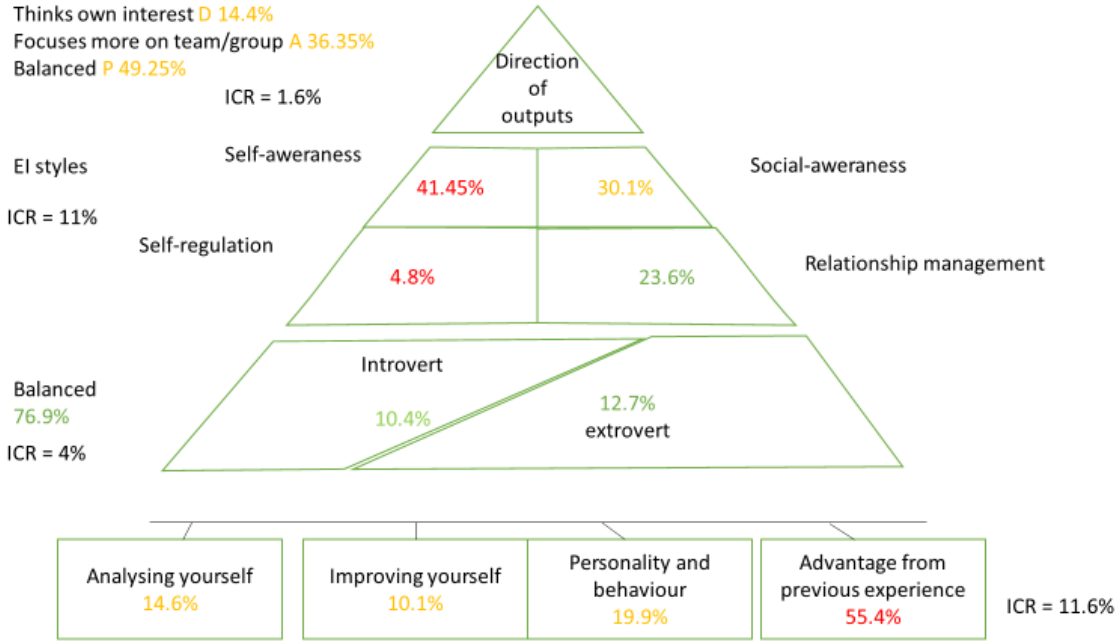
0-9

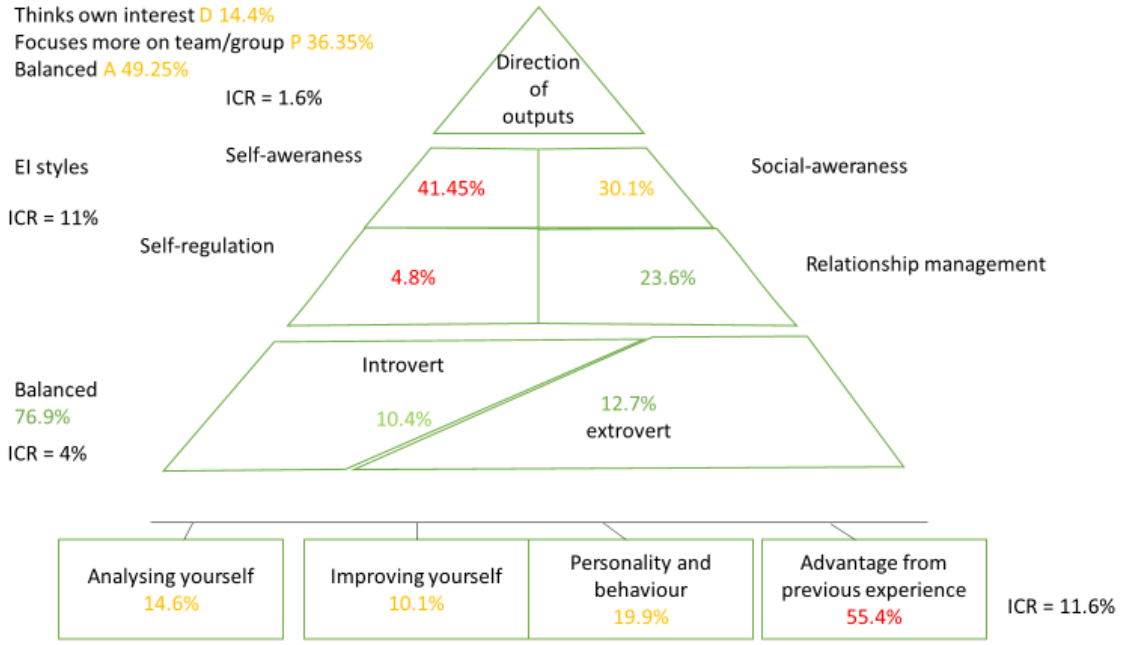


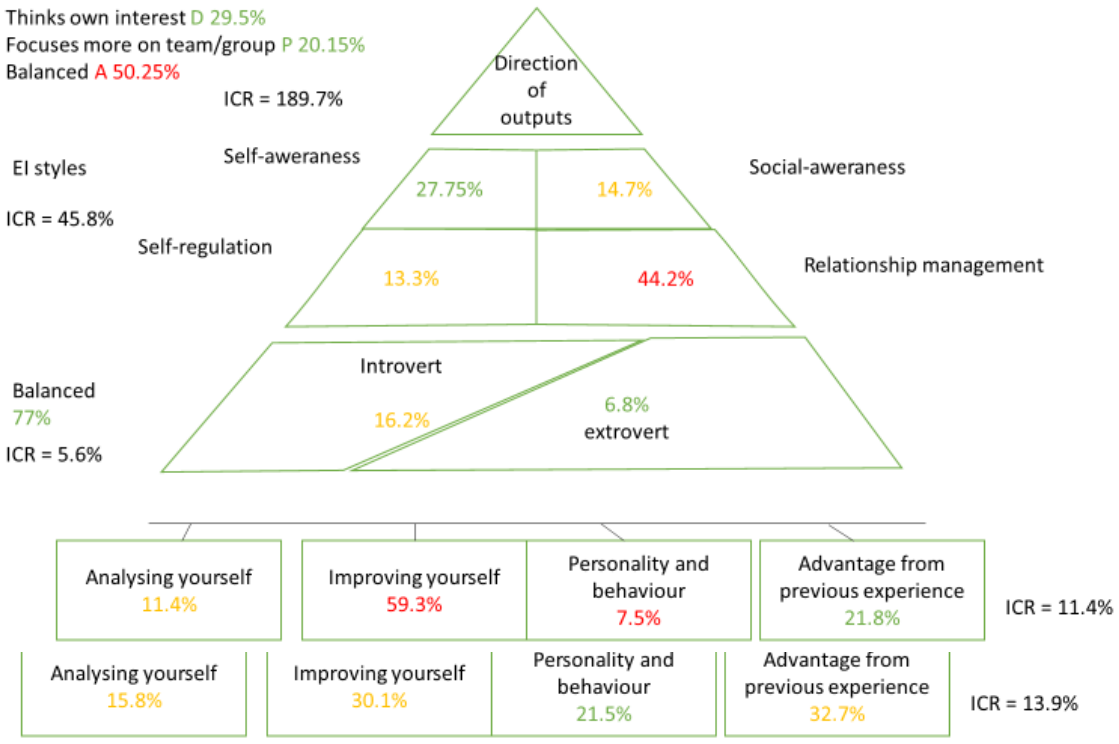

Thinks own interest D 15.05%
Focuses more on team/group P 16.2%
Balanced A 68.8%
ICR = 11.95%
EI styles
ICR = 23.6%
Direction of outputs
Self-awareness
Social-awareness
25.85%
34.35%
Self-regulation
Relationship management
25.6%
14.2%
Introvert
Balanced
9.7%
ICR = 8.4%
38.8%
51.5%
extrovert
Analysing yourself
5.5%
Improving yourself
8%
Personality and behaviour
59.9%
Advantage from previous experience
26.5%
ICR = 22.4%

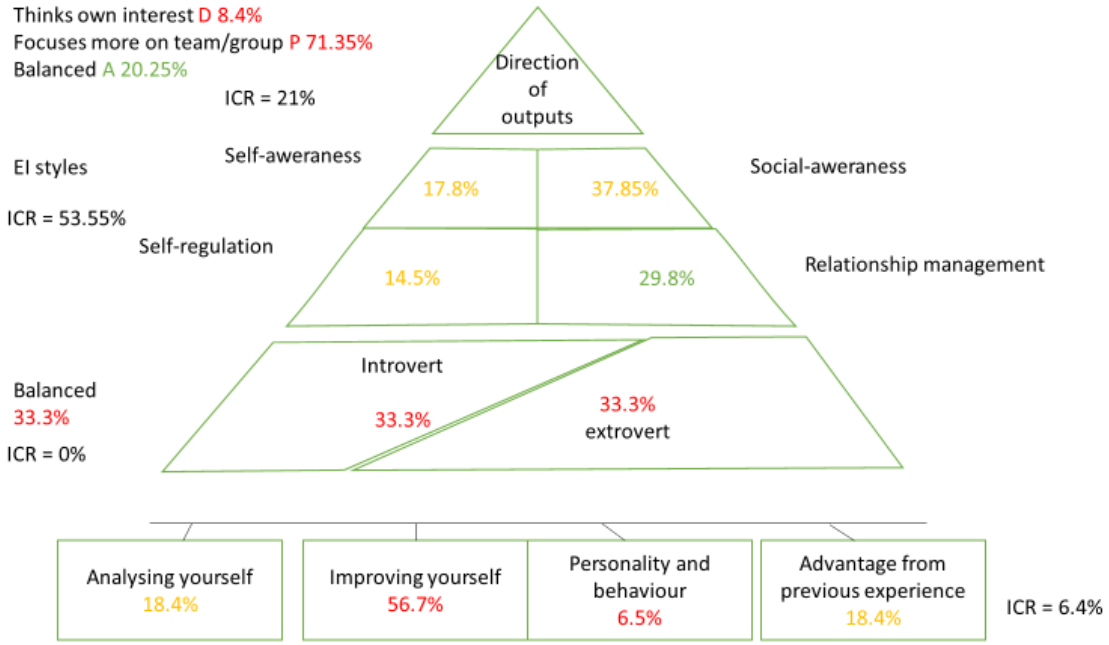

Thinks own interest D 5.05%
Focuses more on team/group A 33.25%
Balanced P 61.8%
ICR = 26.15%
EI styles
ICR = 6.7%
Direction of outputs
Self-awareness
Social-awareness
6.25%
13.65%
Self-regulation
Relationship management
30.2%
49.9%
Introvert
Balanced
77%
ICR = 46.3%
4.5%
18.5%
extrovert
Analysing yourself
3.2%
Improving yourself
56.4%
Personality and behaviour
8.3%
Advantage from previous experience
32.1%
ICR = 19.7%

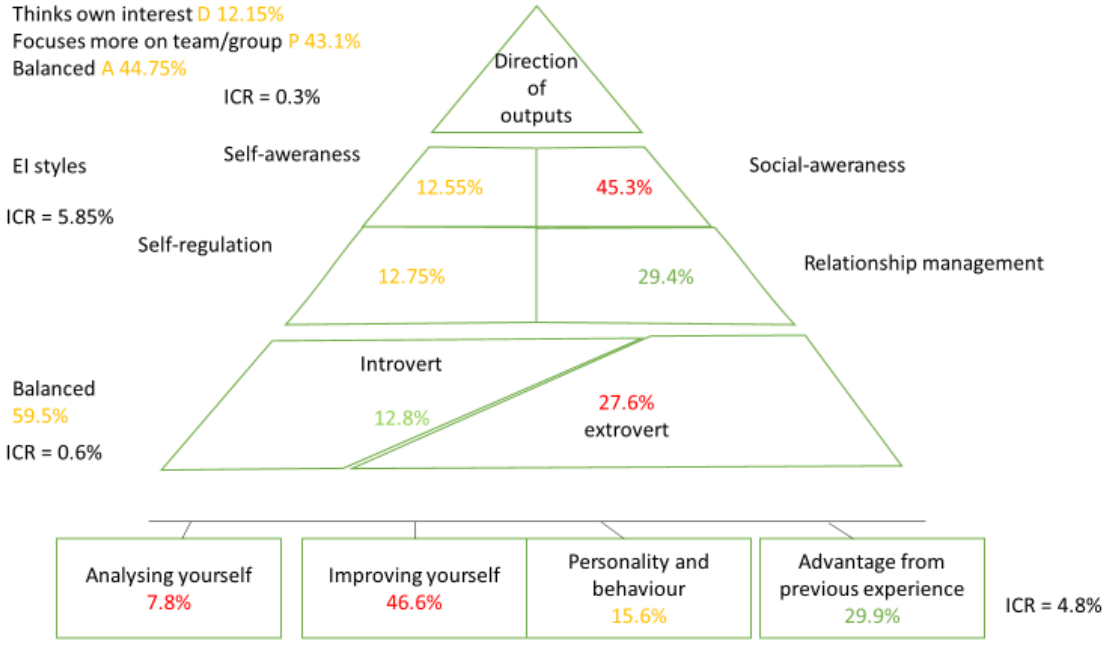

Thinks own interest D 25.65%
Focuses more on team/group P 8.7%
Balanced A 65.7%
ICR = 2.65%
Direction of outputs
EI styles
Self-aweraness
Social-aweraness
ICR = 2.4%
37.75%
30.75%
Self-regulation
Relationship management
24%
7.55%
Introvert
Balanced
50%
25%
25%
extrovert
ICR = 0%
Analysing yourself
9%
Improving yourself
36.2%
Personality and behaviour
14.3%
Advantage from previous experience
40.6%
ICR = 1.8%


Thinks own interest D 14.4%
Focuses more on team/group A 36.35%
Balanced P 49.25%
ICR = 1.6%
Direction of outputs
EI styles
Self-aweraness
Social-aweraness
ICR = 11%
41.45%
30.1%
Self-regulation
Relationship management
4.8%
23.6%
Introvert
Balanced
76.9%
10.4%
12.7%
extrovert
ICR = 4%
Analysing yourself
14.6%
Improving yourself
10.1%
Personality and behaviour
19.9%
Advantage from previous experience
55.4%
ICR = 11.6%


Thinks own interest D 14.4%
Focuses more on team/group P 36.35%
Balanced A 49.25%
ICR = 1.6%
Direction of outputs
EI styles
ICR = 11%
Self-awareness
Social-awareness
41.45%
30.1%
Self-regulation
Relationship management
4.8%
23.6%
Introvert
Balanced
76.9%
ICR = 4%
10.4%
12.7%
extrovert
Analysing yourself
14.6%
Improving yourself
10.1%
Personality and behaviour
19.9%
Advantage from previous experience
55.4%
ICR = 11.6%


Thinks own interest D 29.5%
Focuses more on team/group P 20.15%
Balanced A 50.25%
ICR = 189.7%
Direction of outputs
EI styles
ICR = 45.8%
Self-awareness
Social-awareness
27.75%
14.7%
Self-regulation
Relationship management
13.3%
44.2%
Introvert
Balanced
77%
ICR = 5.6%
16.2%
6.8%
extrovert
Analysing yourself
11.4%
Improving yourself
59.3%
Personality and behaviour
7.5%
Advantage from previous experience
21.8%
ICR = 11.4%
Analysing yourself
15.8%
Improving yourself
30.1%
Personality and behaviour
21.5%
Advantage from previous experience
32.7%
ICR = 13.9%


Thinks own interest D 8.4%
Focuses more on team/group P 71.35%
Balanced A 20.25%
ICR = 21%
EI styles
ICR = 53.55%
Self-awareness
Self-regulation
Direction of outputs
Social-awareness
Relationship management
17.8%
37.85%
14.5%
29.8%
Introvert
33.3%
33.3% extrovert
Balanced 33.3%
ICR = 0%
Analysing yourself 18.4%
Improving yourself 56.7%
Personality and behaviour 6.5%
Advantage from previous experience 18.4%
ICR = 6.4%


Thinks own interest D 12.15%
Focuses more on team/group P 43.1%
Balanced A 44.75%
ICR = 0.3%
EI styles
ICR = 5.85%
Self-awareness
Self-regulation
Direction of outputs
Social-awareness
Relationship management
12.55%
45.3%
12.75%
29.4%
Introvert
12.8%
27.6% extrovert
Balanced 59.5%
ICR = 0.6%
Analysing yourself 7.8%
Improving yourself 46.6%
Personality and behaviour 15.6%
Advantage from previous experience 29.9%
ICR = 4.8%

The direction of outputs was formed from questions 19-24. EI styles/cornerstones were formed from questions 1-3, 6, 11. Introvert/extrovert/balanced were formed from questions 25-27. Resources were formed from questions 13-18.

7. Analysis

Figures are the best way to explain and analyse a research where you must interpret this kind of tool's usage. Research methodology and logical step-by-step progress gives others the best possible way to understand the research and its results. AHP tool itself are giving good opportunity to change verbal answers to numerical values which helps people to from models like TL and EI measurement models. In the TL model the theoretic part is stable and well-formed because the TL skills are adopted to SCM with strong theoretical background. Another empirical test with TL model shows that it gives same values every time when retesting. Theoretically this EI model is mimicking TL model which makes the EI measurement possible. In the empirical part, there can be seen that the EI SCM is showing peoples current state in all four levels.

The TL results in this research was compared the previous TL research results, and the research was completed successfully. The biggest things here to be noticed are that these TL calculations can be done with this method precisely. Arithmetic means gives right answers and root means square or geometric means are not needed even they were calculated. Overall the AHP-OS worked well, was simple to use and easy to learn.

The EI questionnaire was clear when looking CR/ICR values because only couple of the answers has high (over 0.5 CR/ICR values. The questions could be formed to be better or change for different kind questions to get better results. When looking the EI profiles' colour limits are not matching right. In the outputs the balanced are the best opinion which means it should be green when it is over 40 or 50. And, other two outputs should be green when 15-29. EI styles/cornerstones can be the same colour. In the final version it could be that the self-regulation and the relationship management is valued more important than the self-awareness and the social-awareness, then the values could be green in the self-regulation and in the relationship management is 30-39, and the self-awareness and the social-awareness is 10-19. Balanced/introvert/extrovert section can

be the same limits but it needs to be changed to other attributes. (Maria Neimark, Marĭia¯ Solomonovna Neĭmark 1976). The new limits are below.

Colour codes

red = bad

yellow= warning

green = good

Direct of outputs; optimal 70%

40-100

25-49

0-24

balanced; optimal 82%

70-100

50-69

0-49

Resource; optimal 25%

40-100

30-39

20-29

10-19

0-9

Extrovert/introvert; optimal 9%

25-100

15-24

0-14

EI Cornerstones self-awareness + social awareness; optimal 15%

40-100

20-39

10-19

0-9

Direct of outputs (no balanced); optimal 12.5%

40-100

20.39

5-19.

0-5

EI Cornerstones self-regulation + relationship management; optimal 35%

60-100

40-59

30-39

20-29

0-19

When looking the profiles' balanced/introvert/extrovert section it does not give so much information and seems little bit unnecessary. It could be change to something else like self-actualizing which could give more information about individual motives and needs (Maria Neimark, Mariĭa Solomonovna Neĭmark 1976). One way is to move the current outcomes to replace the balanced/introvert/extrovert section, which is preferable to do, and then generate other outcomes like figure 18 below shows.

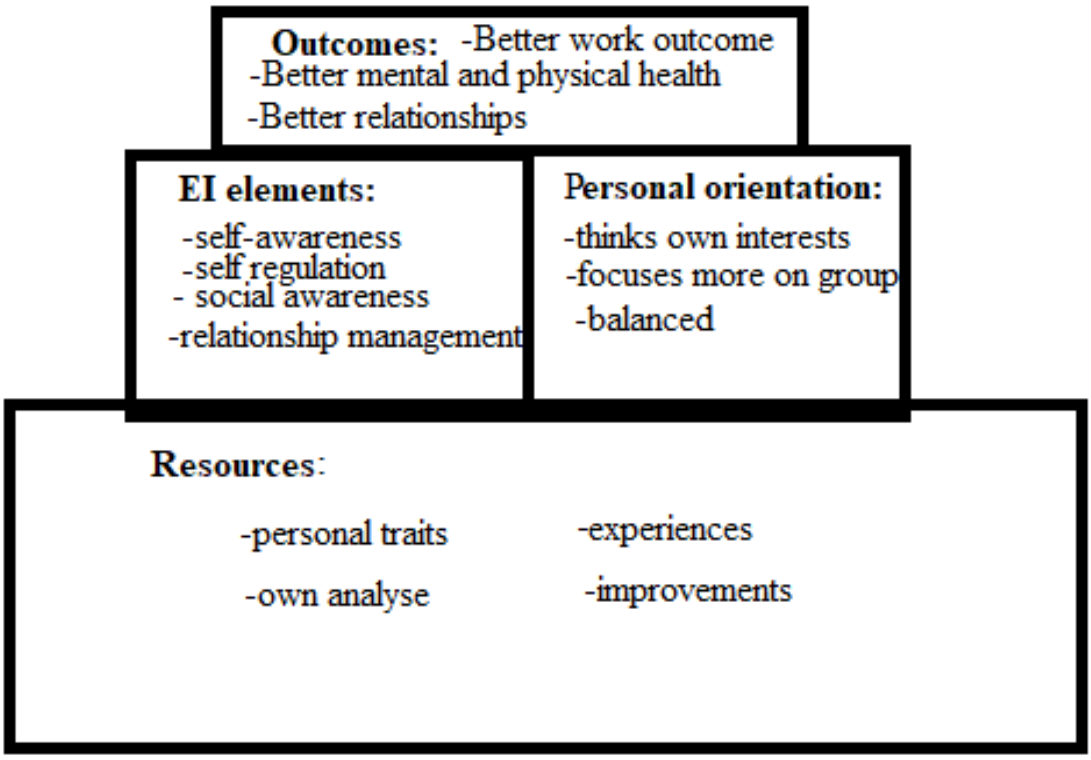


Figure 18. New SCM for EI model

Validity, the accuracy of a measure, and reliability, the consistency of a measure, for EI SCM is necessary to confirm when thinking about the success of the research. In this

research, there were qualitative survey which were turned to numbers. In this kind of research, validity comes from successful explanation, interpretation and prediction of the empirical phenomena. Furthermore, there are expectation that the new findings are connected to the theoretical framework. Reliability comes from the thing that the research is possible to reproduce in the same conditions. Usually when research is valid it is also reliable. (Lee, Deborah 2004).

When interpreting the EI SCM there can be seen that ICR values are mostly lower than 0.4 and the numbers are measuring what they are supposed to. This analyse means that the survey's questionnaire was easy to understand. This research was based on previous researches and theory which are were successfully adopted to EI model. This EI measurement were executed first time and needs more testing with bigger sample size but it can be reproduced easily. The previous researches are valid and reliable that this research is based on. Considering all this the research is valid and reliable.

8. Conclusions

This TL research shows almost the same values as the previous research that these results were compared. It means that AHP tool can be use precisely in the process of forming TL SCMs. This will help individuals to interpret their own skills and make improvements. The thing to consider is that different management positions have different leadership skills required. For example, R&D leaders needs more passive leadership and production leaders more controlling to keep things in order. Furthermore, the TL SCM can be used to improve companies' operations by combining individual values as a group and then use it to improve the operation. For example, every leader included in a product production can be analysed and improve to solve current problems, like making better control of the production.

In the EI research the theory matched with the empirical part when interpreting results. EI SCMs gives individuals a chance to analyse themselves with it. It could help the participants to realise or make them think about something deeper about themselves, what they have not understood or thought about yet. It turned out that the personal orientation section must be changed to the new one which are shown in the figure 18. This change was based on the analyse of the usefulness of each level in SCM. When using this EI model properly it can improve individual's leadership skills and life quality. For example, when a leader has good social awareness, he/she can manage the group better. In addition, with good relationship management you can keep lifelong friendships. The EI model needs more testing with bigger sample size so it will be honed to the best. Interviews, which include mirroring the participant's skills to results, should be done after results to maximize the improvement of the EI measurement tool. Both models need a professional to explain the analogy so individuals and groups can use these the best possible ways. When taking all this in the consideration, there can be said that the research can answer the research question: it is possible to measure emotional intelligence with AHP tool accurately.'

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