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PROGRAMS IN PELASTUSARMEIJA

Proposed approach for measuring impact

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ABSTRACT

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As companies, institutions and organisations strive to improve their products and services, it has become more important to have a way to measure different aspects of their activities. One of such is to measure how their product or service makes an impact in the lives of the beneficiaries. Understanding this helps stakeholders in these organisations to finetune products and services.

Pelastusarmeija in Finland is part of the international Salvation Army, which is a well-known international organisation that offers a wide range of high-quality services to people in over 133 countries around the world. In Finland, Pelastusarmeija started serving the local communities more than 134 years ago and has 23 branches called corps (or "osasto") and outposts. In recent years, thousands of people have been beneficiaries to the different services and programs offered by Pelastusarmeija.

Although data on the different services and programs are available, not much is understood about what impact these activities are making in the lives of the beneficiaries, because current data largely measures only program output. For this reason, there is a need to develop an approach that can help in understanding how people are impacted by these services. This research was meant to help address this need, by first examining existing approaches before proposing an approach suitable for measuring impact of Pelastusarmeija's programs especially at the corps, using quantitative methods. Such a measure helps with understanding and continuously monitoring the impact of a particular program on the beneficiaries.

The theoretical part of the thesis explored relevant concepts relating to impact measurement, analysing different theories and presenting different approaches of carrying out impact measurement. With that understanding, an impact measurement approach and process was developed. A demonstration of this approach was presented by using the social support program at Pelastusarmeija as a case study. Data was collected and analysed from the Satakunta region in Finland and a measure of the impact on the beneficiaries was calculated using three well defined metrics.

The results from the research showed that most of the beneficiaries were the unemployed and the retired people with very low income, which was expected. Overall, the impact of the social support program was much higher than expected, with an overall impact score of 7.6, where the highest possible impact score is 10. With this quantitative data available each time the measurement is made, it is possible to continuously monitor and compare the impacts from previous impact measurement exercises.

Keywords: impact measurement, impact evaluation, key indicators, program evaluation, result-based evaluation, impact measurement approaches, impact assessment

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1 INTRODUCTION

In 1878, The Salvation Army was born in London, the capital of the United Kingdom. Since then, it has grown into an international organisation operating in more than 130 countries around the world. One of these countries is Finland. The work of the international Salvation Army spans across different ethnicities and cultures. Their aim is to teach the Christian faith, and also serve suffering humanity without discrimination. “Without discrimination” in this context means regardless of religion, beliefs, race, gender or political views. People are served just as they are, as a person.

Over the years, The Salvation Army has been through different phases of change. This is also the case in the past few years, so that people can be served in a way that is relevant for the current world, while also considering the laws, regulations and culture of the country where the mission is carried out. One of such renewal elements is the “Accountability Movement”, which was launched by the then General (world-wide leader) of the Salvation Army. (Cox André, Journey of Renewal, The Salvation army Accountability movement, 2016).

In the book, “The journey of renewal”, the then General Adrei Cox presented a framework depicting different areas where the Salvation Army’s systems need to be strengthened, as part of the renewal journey. The Accountability movement consist of four pillars: Governance, Impact Measurement, Finance and Child Protection. The Salvation Army’s measurement framework is rooted in four contextual factors: protection/safety, well-being/health, formation/education and service/work (Cox A., Journey of Renewal, The Salvation army Accountability movement, 2016, 54). The work presented in this thesis focuses on the well-being/health factor.

In this thesis, the first part will discuss the work of The Salvation Army in Finland (registered as Pelastusarmeija). Different impact measurement concepts will then be explored through literature review, and then different approaches will be examined. After that, an impact measurement approach that is suitable for Pelastusarmeija’s mission, especially at the corps level, will be proposed. The research part will focus on demonstrating the proposed approach, using the social support program as a case study. Data will be collected from the program’s beneficiaries to perform detailed analysis. The impact method described will then be used to determine and quantitatively score the impact of the social support program.

2 ACTIVITIES AT PELASTUSARMEIJA

The Salvation Army's mission (registered and known as Pelastusarmeija in Finland) started in 1880, in Helsinki and this later spread to other cities in the country. Today, Pelastusarmeija, is present at least in 25 locations around Finland, and it has been serving people in different life situations all around the year, for more than 130 years. The work of Pelastusarmeija is broadly categorized (but not limited) into four components:

- Spiritual work
- Social support
- Work with children and youth
- Accommodation service

When examining the list, it is clear that the mission of Pelastusarmeija features quite a wide range of services, which are well known in Finland and around the world. Because of this, the main focus of this thesis will be on the programs happening at the corps level. This is where both social and spiritual work take place together, as an "integrated mission" concept. (Larsson J, Mission in community. The Salvation Army's Integrated Mission, 2006, 3).

2.1 Social institutions

Social institutions run by Pelastusarmeija in Finland include old people's homes, daycare centers in Pori and Porvoo, iCare second-hand shops, and accommodation centres in Helsinki. The daycare centres are operated in close coordination with the city authorities to cater for children under school age. In addition to daycare centers, Pelastusarmeija also arranges summer and winter camps for children of different ages. iCare second-hand shops is a recycling operation aimed at providing good quality items at very low prices. It is also one of the channels through which people are met and served. The accommodation centers at Alppinkatu and Kastreninkatu in Helsinki, caters for people in difficult situations. (Pelastusarmeija vuosi 2022 activities report, 12-18).

2.2 Corps (Osastot)

The corps is a local branch of Pelastusarmeija, where spiritual and social work is carried out together as an integrated mission. The corps is one of the many channels through which people with various kinds of needs, are offered support, according to available resources. Activities for different age groups are also organised around the year. For example, open doors, children's club, etc. Pelastusarmeija also offers social support all year round, which is meant to be a temporary help to people in different difficult life situations, and where support offered by the public sector is not enough. Examples of the beneficiaries include low-income families, retirees with very low income, unemployed people, and students. (Pelastusarmeija vuosi 2022 activities report, 7).

Pelastusarmeija runs 23 corps and outposts in Finland according to (Pelastusarmeija vuosi 2022 activities report, 5) which has a wide range of activities for different age groups, both spiritual and social. Each corps is different and applies the principle of "Integrated Mission" in a way that fits the dynamics of that city. In The Salvation Army's International Headquarters' booklet, Mission in Community – The Salvation Army's Integrated Mission, the then General John Larsson mentioned that *"There is no doubt that when everything we do as an Army is added together, The Salvation Army is the very embodiment of integrated mission"*. This means every corps and social institution of Pelastusarmeija is part of this integrated mission according to (John Larsson, Mission in community, The Salvation Army's Integrated Mission, 2006, 3).

The impact measurement approach proposed in this thesis will be done with the activities at the corps in mind, and using the social support program as a case study.

3 RESEARCH PROBLEM, METHODS AND GOALS

For years, Pelastusarmeija has been supporting people from different backgrounds and in different life situation. For example, in 2022, the number of households supported was about 110 thousand, out of which about 60 thousand people are from the Helsinki area. (Pelastusarmeija Vuosi 2022 activity report, 11).

While there has been good record of how many people received support, not much is known about how that support is impacting people's lives. Because of this, there is the need to develop an impact measuring approach that works for the kind of activities and programs carried out especially at the corps level at Pelastusarmeija. Hence the purpose of this research is to propose an appropriate approach for measuring the impact of Pelastusarmeija's activities and programs, using the social support program as a case study. The research will be conducted in two parts.

The first part will focus on some important concepts relating to impact assessment and measurement, that will help expand the understanding of what should be considered when planning for impact measurement. Different approaches to measuring impact will also be presented, and based on that, an approach suitable for Pelastusarmeija's work, will be proposed.

The second part of the research is to demonstrate the process of impact measurement by collecting data about the social support program and perform quantitative impact measurement. Data will be collected using a questionnaire which will be distributed to the beneficiaries by hand. The data will then be analysed using quantitative analysis methods, before finally presenting the findings. It is expected that the findings will help with understanding what impact the social support program is making, and help relevant stakeholders make better decisions regarding how the program can be even more impactful. The process proposed in this research can also be used as a reference for future development of an impact measurement system. An important deliverable of this research is a simple and easy-to-use Excel-based template that can be used by non-tech-savvy employees for small-scale impact measurements in their own branches, as well as for reporting it to relevant stakeholders.

3.1 Research questions

The main questions to be answered by this research are:

1. What tools can be used to perform impact measurement?
2. What ways can the measurement be reported?

Other questions to be answered based on the case study are:

1. How has Pelastusarmeija's social support program been impacting people's lives?
2. What level of impact does it make in the lives of the beneficiaries?

Answers to these questions could provide Pelastusarmeija with a tool that can be used in the future, to perform the impact of programs being organised especially at the corps.

3.2 Research methods

The research will be carried out using a quantitative analysis method. A paper questionnaire will be designed and distributed to respondents during the Christmas support days scheduled for the 4th, 5th and 8th of December 2023. The respondents will answer the questions by choosing an appropriate option that best describes what they think. Each answer will be assigned a specific number, which will then be used later during the analysis and impact measurement.

The questionnaires will be handed to the respondents, and they will be asked on the same day, to answer and return them. This is to ensure a high response rate and remove barriers to the use of technology (for example filling an online survey) which can arise when less technologically proficient people take part in the survey. The questionnaire will be designed based on the relevant information needed, especially those that point to indicators of the impact. The questionnaire will not include any respondents' personal information. Samples of the population will be from Pori and Rauma in the Satakunta region, and the aim is to get as many as 200-300 responses.

The data will then be extracted from paper into an excel sheet, followed by data validation process, before exporting to CVS format for further processing and analysis using Python programming.

Visualization will be done by using Python's Matplotlib library and Power BI. Reporting of the results will be done with Power BI and will be shared to stakeholders via Power BI app or by sharing a static pdf report generated from Power BI.

3.3 Project and research objectives

The objective of the research is to demonstrate the proposed approach for impact measurement which can then serve as a tool for future impact measurement exercise, and also serve as a reference point for further studies and development of an effective impact measuring system.

4 IMPACT MEASUREMENT: THE FOUR UNIVERSAL STEPS

The term impact measurement has been used in a lot of different ways and in different industries, for example in investment, banking, medical as well as social industries. Different researchers refer to it in a wide variety of terms, for example, social impact, performance measurement. According to Maas (Maas K., Social Impact Measurement – Towards a guideline for managers, 2), *“Language used by different researchers from business and society, management accounting and strategic management and from practitioners is confusing and by far consistent.”* This lack of consistency is mainly because of how the words “impact”, “output”, “effect” and “outcome” are interpreted. It is, therefore, important to understand what impact is, to understand how it can be measured.

Impact has been defined in different ways. Through the eyes of programs or activities at Pelasusarmeija corps, one of the most accurate definitions is given by Clark et al. (2004, 7). Clark defines impact as *“... the portion of the total outcome that happened as a result of the activity of a venture, above and beyond what would have happened anyway”*. Clark also illustrates this whole process of measuring impact using the Impact Value Chain concept. Impact Value Chain, which helps to clearly differentiate between the input and output, is a simplified model of how social value is created. The four main steps of impact measurement are inputs, activities, outputs and outcomes. Each of these steps should be aligned towards the goals of the program.

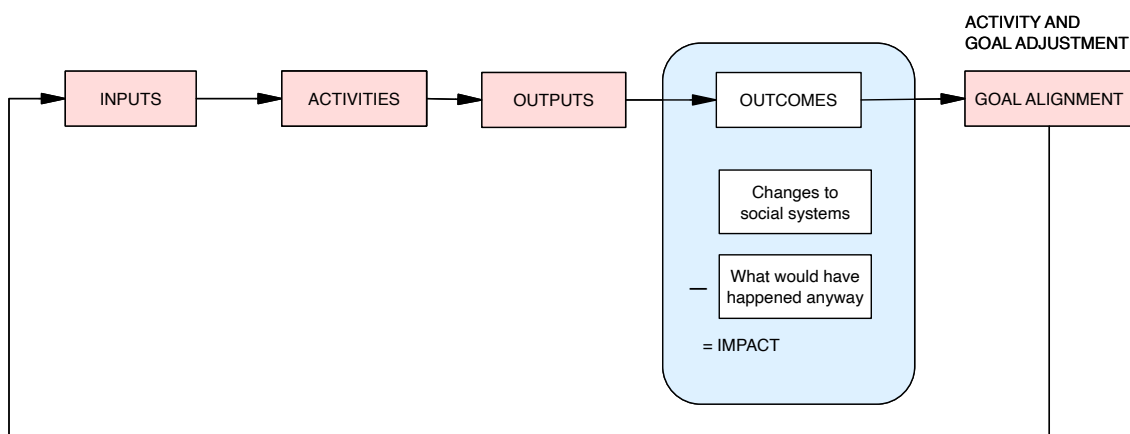


FIGURE 1. IMPACT VALUE CHAIN (Clark C, et. al., 2004)

Inputs are the resources that are used to make the activity or program happen. These resources can be people (volunteers, employee, their skills, etc.) or material resources (capital, a place for the activity, etc.). Other legal entities that contribute to the activity or program can also be an input. (Hehenberger L, et. al., European Ventures Philanthropy Association, A Practical Guide to Measuring and Managing Impact, 2015, 17).

Activities are the actions that are carried out to allow the program or activity to take place. It is the work that is undertaken when resources identified at the input level, are used for the purpose of producing an outcome (Hehenberger L, et. al., 2023, European Ventures Philanthropy Association, A Practical Guide to Measuring and Managing Impact, 2015, 34).

Outputs are what the activity produces. When a program or an activity is organized, people will attend and benefit from it. The number of participants is one example of the program’s output, since it answers the question, “how many benefited from the program or activity?” (Hehenberger L, et. al., European Ventures Philanthropy Association, A Practical Guide to Measuring and Managing Impact, 2015, 34).

Outcome is the change that occurred to the program beneficiaries because of their participation. These changes can be short-term, long-term, positive, or negative and can also be as a result of delivering a service, a product, or from involving people as inputs when delivering such services or products. (European Commission, Proposed Approaches to Social Impact, 2014, 32).

Another depiction of the Impact Value Chain made by EVPA Foundation replaces the “Goal Alignment” in Clark’s diagram above with “Impact” and gives a short explanation of what each stage entails.

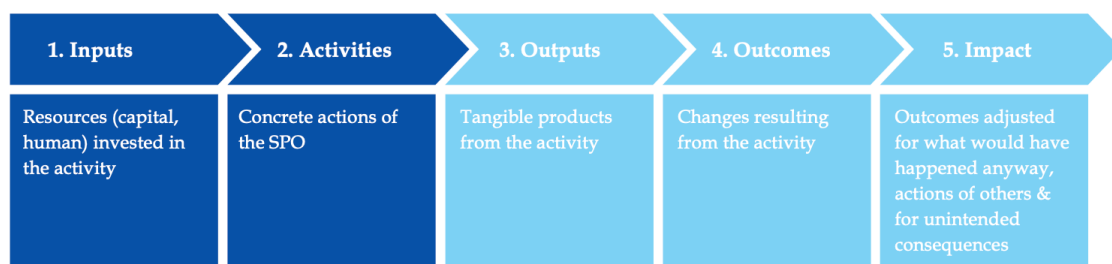


FIGURE 2. IMPACT VALUE CHAIN (Elaborated by EVPA from Rockefeller Foundation Double Bottom Line Project)

Impact measurement needs to be done in accordance with the purpose of the activity whose impact is to be measured, and also from what perspective the answers should be. For example, will the answers be from the firm's perspective, the customer's perspective or the societal perspective? However, for any measurement to be effective, it should have some characteristics:

- The measurement should relate to and be relevant to the outcomes being measured.
- The measurement should meet the needs of both internal and external stakeholders.
- Performing the measurement and presenting the results should be simple.
- The measurement needs to flow from activity to outcome.
- How the measurement is derived should be certain.
- The measurement should also be understood and accepted by stakeholders.
- The measurement should be based on evidence, so that it can be tested, validated, and continuously improved.

5 ISSUES OF PROGRAM EVALUATION

Evaluating a program or an activity can be done in different ways. One of such ways is by monitoring key indicators of progress through the period when the program is carried out. The results are then used as the basis for evaluating the outcomes. (Khandker S.R., et. al., Handbook on impact evaluation, 2010, 7).

Another way to evaluate a program or an activity is by operational evaluation. This examines how effectively the program or activity was implemented, to discover possible gaps between what was planned and what was realised. What was realised, in this context, is the outcome. Impact evaluation is yet another way to evaluate a program or an activity. This evaluates, for example, whether *“changes in well-being are indeed due to the program intervention and not to other factors”* (Khandker S.R., et. al., Handbook on impact evaluation, 2010, 18).

All the afore mentioned ways of evaluating impact can be done using quantitative methods, either by survey data collections or by running simulations before or after a program or an activity is introduced. If the simulations are run, then data generated before the program begins is used to perform an “ex ante evaluation” and “ex post evaluation”. The “ex ante evaluation” is used to predict a possible impact of an activity, while the “ex post evaluation” is used to examine the outcomes after a program implementation is completed. There is also a type of ex post evaluation called the “reflexive comparisons”, which examines a program’s impact by measuring the difference in beneficiaries’ outcome before and after the program is implemented. (Khandker S.R., et. al., Handbook on impact evaluation, 2010, 18-21).

According to (Khandker S.R., et. al., 2010, 22), the challenge with these evaluations is to find a good “counterfactual”, which refers to producing evidence of what a program or activity’s beneficiary would have experienced if they had not taken part in the program. This can be a very challenging task to accomplish.

6 RESULT-BASED MONITORING

Monitoring the progress of an activity or a program can have some challenges. One of them is to identify the goals that the program aims to achieve. Another challenge is to identify key indicators. These key indicators can then be used to monitor the progress of the activity and check it against the goals. A third challenge in monitoring the progress of an activity is about setting targets. Setting targets help to set numbers for what is to be achieved by a specific date. Another challenge is to establish a monitoring system that will be used to track the progress of the program and continuously checking how specific targets are achieved and to inform relevant stakeholders. This will foster better management and accountability (Khandker S.R., et. al., Handbook on impact evaluation, 2010, 8).

Because impact measurement also involves monitoring of activities or programs, it is important to further define what the result-based monitoring includes. Result-based monitoring happens when the monitoring system used in an impact measurement exercise is executed, and there are ten steps to monitor it (Kusek J.Z. & Rist R.C., Ten Steps to a Results-based Monitoring and Evaluation System, 31-151). The figure below summarizes these steps.

TABLE 1. Ten steps to a results-based monitoring and evaluation system (Kusek and Rist, 2004).

	Steps	Description
1.	Assess readiness	Understand the characteristics and needs of the area or region where the evaluation will take place. Understand the key players, for example the donors, that will be responsible for ensuring the program's implementation.
2.	Define outcomes	Define agreed outcomes and key performance indicators, which will serve as the basis for what will be monitored and evaluated.
3.	Select key performance indicator	Choose what the key performance indicators are, taking current trends into consideration.
		(continues)

4.	Plan data collection	Determine on how to collect data. A Baseline or pre-programmed data can be useful for predicting program outcomes, or for making before-and-after comparison, and identifying data sources.
5.	Establish targets	Set periodic targets for example, annually or every two years.
6.	Monitor the targets	Check if targets are reached.
7.	Evaluate the results	Ensure that the timing of the monitoring is adequate.
8.	Report the results	Prepare and report the findings to the relevant audience and stakeholders.
9.	Act	Take relevant data-driven decisions based on the reported findings.
10.	Sustain the monitoring system	Ensure that roles and responsibilities are clear., and that the data being collected continues to be trustworthy and credible.

7 SOME IMPACT MEASUREMENT APPROACHES

Different frameworks have emerged over the years, for the purpose of measuring impact. In this section, four of them will be presented.

7.1 Investment Impact Index guidelines short guide

This guideline presents a 5-step approach to impact measurement. Although this approach generally targets the finance and investments industry, the aspects of the guideline relevant for impact evaluation and measurement as a whole, is presented in the following steps.

7.1.1 Step one: Develop your theory of change

There are four essential steps to developing an impact measurement framework. The first step is to develop your theory of change. The purpose of developing your theory of change is to define or identify what the achievement goals are and how the goals will be met. This can help clarify what changes are expected, or what should occur because of the activities carried out. This ensures that the important outcomes of the specified goals are clearly defined in a way that what needs to be measured is connected to the defined strategy. Doing so will help reduce the risk of spending time and resources measuring less relevant things. It also ensures that there is a clear understanding of what the target outcomes are, how these outcomes are connected, and how it can help with tracking progress towards the final goal (Investment Impact Index guidelines, Developing an Impact Measurement Framework, 3-4).

Developing a theory of change according to (Investment Impact Index, Developing an Impact Measurement Framework, 5) involves the following steps.

1. Identify the goal. The goal needs to be realistic, and clearly defined, to avoid any ambiguity. However, the goal should be ambitious enough.
2. Think holistically about what outcomes is desired and map them to the goal. In finding answers to the question of desired outcomes, it is important to ask the question, “What has to happen for this goal to be achieved?” The desired outcome can be either an intermediate

or a final outcome, and the outcomes should be organized according to how one leads to the other.

3. Establish links between the desired outcomes by identifying causes and effects. Doing this will be an important part of the impact story telling later. Hence it is important to ensure that the links between causes and effects are logically connected.
4. Identify and link which activities lead to specified outcomes. In doing this, it is important that the links are logical and based on evidence, and “leaps of faith” should be avoided.
5. Identify what factors could derail or accelerate the plan towards achieving the desired impact.

In developing the theory of change using the above-mentioned steps, it is also important to avoid certain pitfalls. One of them is to avoid including elements that are not identified or classified as activities or outcomes. Another pitfall to avoid is making the theory of change overly complex. The theory of change should be kept as simple as possible; desired outcomes should not be unnecessarily over-claimed. They should be specific enough and not defined more than once.

(Investment Impact Index guidelines, Developing an Impact Measurement Framework, 6)

7.1.2 Step two: Prioritize what to measure

When deciding what to measure, the options can sometimes be overwhelming, as different stakeholders may have interests in different aspects of the defined theory of change. Hence when deciding what outcomes to measure, the following are some useful questions to ask, according to (Investment Impact Index guidelines, Developing an Impact Measurement Framework, 7).

1. Has it been proven that there is a causal link between outcomes and the defined theory of change? If there is, then using desk research to gather evidence will be a more viable option than collecting new data from scratch.
2. How important is it to have data on this outcome? Priority needs to be given to the most important outcomes identified as top priorities by the stakeholders. These outcomes need to be important and relevant to the mission of the organisation; they should not be too expensive to measure; data collected will be credible; and can be directly influenced by those participating in the activities leading to such outcomes.

The answers to the above questions will help in deciding the list of outcomes that need to be measured; decide on the indicators for those outcomes; and decide on the sources of data for those indicators. When deciding on what to measure, it is also important to think about what measurement tool to use, the method for performing analysis on the data collected, how often the data will be collected, as well as the limitations of the data. (Investment Impact Index guidelines, Developing an Impact Measurement Framework, 7)

7.1.3 Step three: Choose your level of evidence.

This step describes how rigorous the collected evidence should be. When data has been collected, it is then analysed to find evidence which points to an impact, whether positive, negative or no impact. The analysis method chosen will be dependent on how rigorous it needs to be. Evidence collection can be done on different levels. For example, a statistical approach can be used where looking for patterns in quantitative data is the main focus. This approach includes comparing the “before” and “after” data, performing regression analysis, and correlation. (Investment Impact Index guidelines, Developing an Impact Measurement Framework, 8).

Another approach that can be used is case based. Here, different cases between individuals, places or people, which are within a program/activity, are first compared. The differences or similarities between them are then observed and used to draw conclusions regarding what is the cause of the recorded impact. The downside of this approach is that there is usually not a single cause of any social outcome. (Investment Impact Index guidelines, Developing an Impact Measurement Framework, 8-10).

Experimental approach is yet another approach to be used when collecting evidence regarding cause of an impact. Difference in outcomes between different service benefactors and non-benefactors are compared. This approach is considered more rigorous compared to the others because if those chosen to be in either the “benefactors” or “non-benefactors” groups are randomly selected, it helps distinguish between the impact of a program from other possible factors.

However, the downside of this approach is the cost as well as ethical issues about denying people a service just for the purpose of conducting an experiment. (Investment Impact Index guidelines, Developing an Impact Measurement Framework, 10).

A fourth approach that can be used when choosing your level of evidence is the theory-based approach. This describes how a program, service or an activity have influenced different people at different times as well as places, by documenting observations by staff and other stakeholders. This approach removes the need to analyse lots of cases to determine cause of effects. However, one downside of this method is that it can be susceptible to biased interpretation. (Investment Impact Index guidelines, Developing an Impact Measurement Framework, 8-9).

Choosing a correct approach is not easy, because different stakeholders may have their own preferred method. Also, these approaches are usually not mutually exclusive. Therefore, it is recommended to combine more than one approach that will help give an accurate result regarding cause of effects of an impact, instead of settling for the easiest option. (Investment Impact Index guidelines, Developing an Impact Measurement Framework, 8).

7.1.4 Step four: Choose your tools and sources

This step focuses on how data for impact measurement will be collected. Instead of collecting fresh data, it may be useful to use data already collected by other organizations, or academics. In this step, it is important to ask questions like, from whom will data be collected? When should the data be collected and what type of data (quantitative or qualitative) should be collected. (Investment Impact Index guidelines, Developing an Impact Measurement Framework, 12).

7.1.5 Step five: Decide how to collect the data

This final stage of developing an impact measurement framework is to identify how data will be collected. The final decision will be largely influenced by what sources is chosen in step four above. Some common sources of data include primary data, which is usually provided by those who are directly working on the program or activity), or secondary data which is usually gathered by someone else for example in academic literature, government research, or research institutes. (Investment Impact Index guidelines, Developing an Impact Measurement Framework, 14).

Below is a summary of the possible strengths and weaknesses of the different approaches according to (Investment Impact Index guidelines, Developing an Impact Measurement Framework, 9).

Table 2. Potential strength and weakness of different ways to show causality. (Investment Impact Index Short Guide, www.nextgeneration.co.za)

APPROACH	STRENGTHS	WEAKNESSES
Statistical	Simple to collect, analyze and easy to identify patterns to further investigate.	It requires a lot of cases and cannot be used to check the effect of an entity like a company or charity. It also does not explain the cause of a change.
Experimental	Bias is avoided and can strongly support the question of whether a program makes a difference or not.	Not always appropriate, especially when context and underlying conditions are important. It also does not explain how and why a particular change happened.
Case-based	It can help uncover the causes of effects.	May not work in situation where there are too many possible causes of effects to consider.
Theory-based	It can give evidence as to why change happens or does not happen, by taking underlying conditions and complexity into account.	It may not be able to measure how large or small an effect is. It is also prone to bias or self-serving interpretations of the data.

7.2 Social Impact Investment Taskforce’s Impact Measurement Approach

Another approach for impact measurement is one presented by the Social Impact Investment Taskforce. This framework describes the Impact Value Chain concept and the four phases of impact measurement as Plan, Do, Assess, and Review. These four phases were further broken down into seven sub-tasks.

In the planning phase, goals are set. These goals are dependent on the organization's needs and should be based on the Theory of Value Creation. The necessary metrics to be used for assessing how well goals are achieved are chosen, and how data will be collected and used, will also be defined. (Social Impact Investment Taskforce, 2014, Measuring impact – Subject paper of the Impact Measurement Working Group, 7-8).

In the “Do” stage, two main sub parts are included. The first sub-part is about determining how data can be collected and stored in a timely and organized manner; determine what resources will be needed to carry out this data collection, for example what technologies to use, what tools, methods, and human resources are needed (Social Impact Investment Taskforce, 2014, Measuring impact – Subject paper of the Impact Measurement Working Group, 8).

The second sub-part is to perform data validation to ensure sufficient data quality. It is important to ensure that the collected data is complete. Where applicable, it is also good practice to cross-check assumptions and calculations against known data sources (Social Impact Investment Taskforce, 2014, Measuring impact – Subject paper of the Impact Measurement Working Group, 8).

Under the “Assess” phase, this is where the importance of data analysis is visible. Here, data collected in the “Do” phase is reviewed and analysed to draw out relevant insights that can aid in decision-making. The insights can be valuable in understanding how current activities are performing against set impact goals. Assessment also helps in establishing a good understanding of how farther or nearer we are to the goals, or if the goals have been reached or surpassed (Social Impact Investment Taskforce, 2014, Measuring impact – Subject paper of the Impact Measurement Working Group, 8).

In the Review phase, a report of the data collected and analysed is shared. Here, progress, as revealed in the assess phase, is shared with relevant stakeholders in a coherent and reliable way. Sharing the data analysis results in a narrative way is vital in this phase. After all relevant insights and progress report have been shared, stakeholders are expected to use that information in the decision-making process. In this stage, it is also important to take note of stakeholders' feedback about the reported data. With this feedback, work can then be made to address the recommendations or concerns mentioned, as well as to make relevant changes to the ToVC (Theory of Value Creation). (Social Impact Investment Taskforce, 2014, Measuring impact – Subject paper of the Impact Measurement Working Group, 7-8).

Table 3. The four phases of Impact Measurement and their respective guidelines. (Measuring Impact. Subject paper of the Impact Measurement Working Group.)

PLAN	Set goals	Articulate the desired impact, by creating your theory of Value Creation to form the basis for strategic planning.
	Develop Framework and select Metrics	Determine metrics to use for assessing performance.
DO	Collect and store data	Capture and store data in an organized and timely manner.
	Validate data	Validate the data to ensure quality is sufficient.
ASSESS	Analyze data	Extract insights from the collected data.
REVIEW	Report data	Share findings and insights with stakeholders.
	Make data-driven decisions	Take stakeholder's feedback and recommendations into account as required changes are made to strengthen processes and outcomes.

7.3 Skopos Bridges impact+

The Skopos Impact Fund, a global private investment fund, together with the Bridges ventures, a specialist fund manager, developed a six-step approach to measuring impact. These steps were named as "Impact Management" which, although written with investors and investments on social enterprises in mind, is still relevant and worth mentioning as a general impact measurement approach.

In their document, *More than measurement – A Practitioner's Journey to Impact Management*, the three steps presented are first, to define what success looks like, and second, to choose strategies that will help achieve the definition of success adopted by stakeholders. The third step is to understand whether adopted definition of success is met and then responding as necessary. These three steps are further broken into six different parts: establish goals, then identify key indicators. Next is to set targets and then select strategies, measure and finally, analyse the results.

(Skopos Impact Fund & Bridges Ventures LLP, 2016, 5-7).

Establishing goals is about defining criteria for success. When establishing goals, these questions should be considered by stakeholders: What outcomes are desired? Who should be affected by these outcomes? What matters most to the persons being affected by the desired outcome? How will it be known that the desired outcomes are being successfully met? Stakeholders then identify performance indicators that can be used to measure how outcomes are being met (Skopos Impact Fund & Bridges Ventures LLP, 2016, 5-7).

7.4 Kingston Smith's Impact measurement toolkit

In the impact measurement toolkit developed by Kingston Smith organisation, which is designed to help to aid the development of a custom impact measurement practices, five steps are presented. Before embarking on an impact measurement journey, it is important to understand why measurement is important. One of such reasons is that it helps an organisation “*determine how it is performing against its set vision, mission and objectives*” (Kingston Smith, Impact measurement toolkit for the charity sector, 4).

Another reason is that it helps the organisation understand which parts of their activities are working well and which parts are not, so that key areas of improvement can be identified. Identifying key areas of improvement can help with determining how these activities can be improved and to work out how resources can be used more effectively. (Kingston Smith, Impact measurement toolkit for the charity sector, 4).

The first step towards impact measurement is to define what the motivation is, by defining why the measurement exercise is important, what the risks are and what the benefits are. It is important to determine the drivers of this measurement exercise. Are they external or internal? (Kingston Smith, Impact measurement toolkit for the charity sector, 7).

The next step is to plan. This is where the decision is made on what to measure and how to measure it. Who will execute this measurement exercise, how data will be analysed, as well as how the final product (analysis) should look like, will be decided during this step (Kingston Smith, Impact measurement toolkit for the charity sector, 7).

The third step is to execute the plan that has been defined. At this stage, the process is delivered according to the agreed plan. During the entire execution process, constant monitoring and management is required to ensure that roadblocks are caught in time and the entire process goes as planned (Kingston Smith, Impact measurement toolkit for the charity sector, 7).

After the “execute” step, the next step is to analyse. This is where all data collected are categorized into outputs and outcomes, and analysis of the entire exercise is made to identify lessons learnt from success or failures (Kingston Smith, Impact measurement toolkit for the charity sector, 7).

The fifth and final step in this approach is to review the report. This is where a thorough review of the findings is made. It is also important to review the implication of the findings to the organisation’s work and decide how the review will be reported to relevant stakeholders. The report should also include details on learnings that arise from the review (Kingston Smith, Impact measurement toolkit for the charity sector, 7).

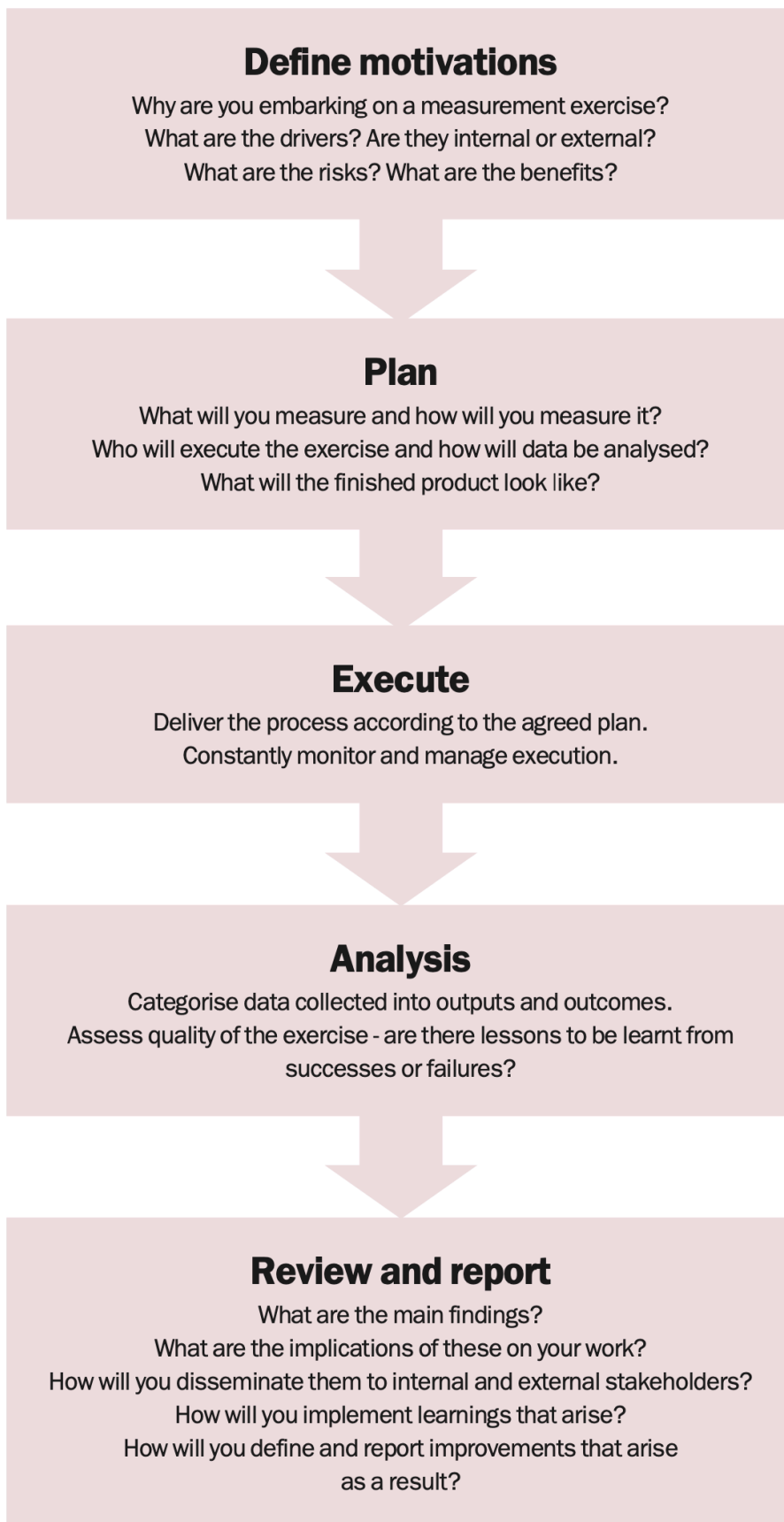


FIGURE 3. Five Steps to Impact Measurement. (Kingston Smith, *Impact measurement toolkit - For the charity sector*)

8 SUMMARY OF DESCRIBED IMPACT MEASUREMENT APPROACHES

The diversity of steps mentioned in the Impact measurement approaches described in this thesis underline the wide range of interpretation that can be given to some elements of the value chain definition. For example, the impact measurement toolkit from Kingston Smith describes output as “the problem and your solution” while in the Investment Impact Index’s guide, it is described as “the direct result and outputs of an investment”.

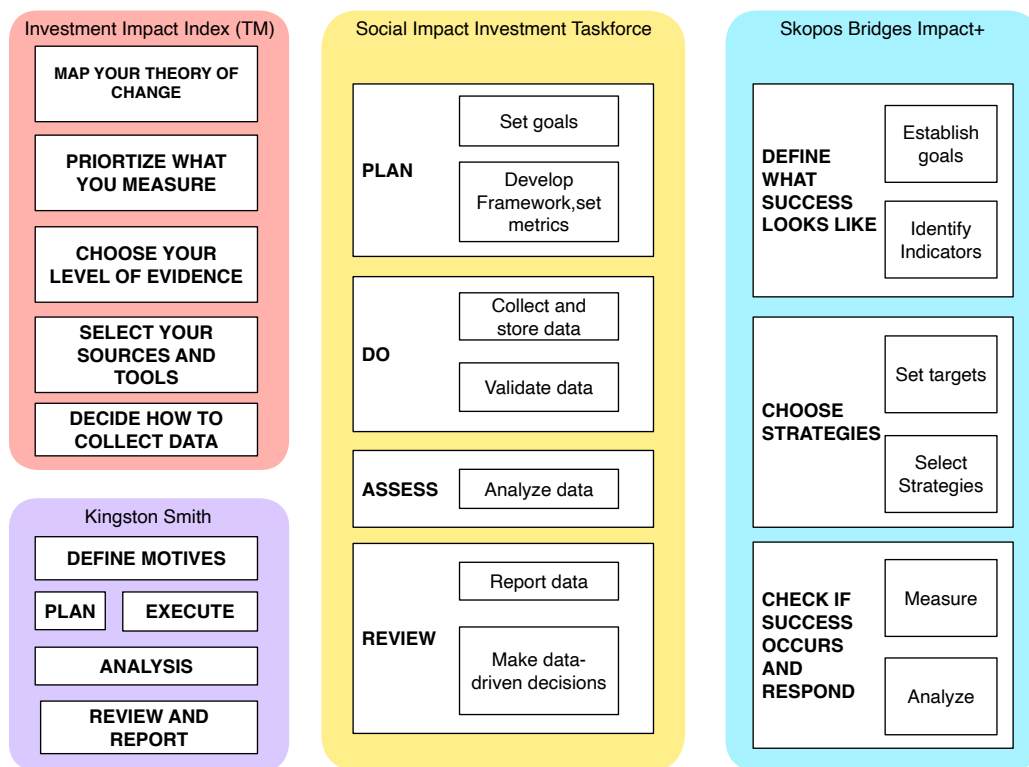


FIGURE 4. Visual summary of the impact measurement approaches described.

Despite the noticed variation in the different approaches presented, there are aspects that are somewhat similar but grouped slightly differently. For example, “mapping your theory of change” under the Investment Impact Index’s approach, includes defining motives (Kingston Smith), setting goals (Social Impact Investment Taskforce) or establishing the goals (Skopos Bridge Impact+).

Based on the approaches presented, a proposed impact measurement approach for Pelas-tusarmeija, considering the programs carried out at the corps level is described next.

The approach comprises five main steps or stages, with each stage having specific issues to consider. The first stage called “Define your theory of change” forms the basis for the impact measurement exercise. The objectives of the program or activity, as well as the goals are defined. It is also important to consider what outcomes are desired from the program and decide on what the key indicators for such outcomes will be. These key indicators will be useful later in designing the survey questions. If there will be deliverables after the program is completed, they should be identified in this phase.

The second stage will be to plan for impact. This is where decision about what to measure or monitor will be made. It is also important to ask the following questions during this phase:

1. What analysis method will be used?
2. What will be the survey questions?
3. What data is needed or how will data be collected?
4. What metrics should be used?
5. How frequently will the measurement be done?
6. How will the results be reported?
7. Who will be the responsible person for the impact measurement exercise?

The third stage will be to execute the impact measurement activity. This is where all the practical aspects planned already, come together. Relevant data will be collected according to how it is specified in the planning stage, validated, and processed so that it is ready for analysis.

In the fourth stage, the impact measurement data is analysed and reported. Here various statistical techniques are used to perform basic exploratory analysis. Impact scoring can also be applied here, to help generate an overall assessment of the impact measurement. The results are then presented to relevant stakeholders. How the results are reported depends on what was defined in the planning phase.

The fifth and final stage is where the previous four stages are assessed and a possible action plan for further improvement is made. Based on this, the previous stages can be updated.

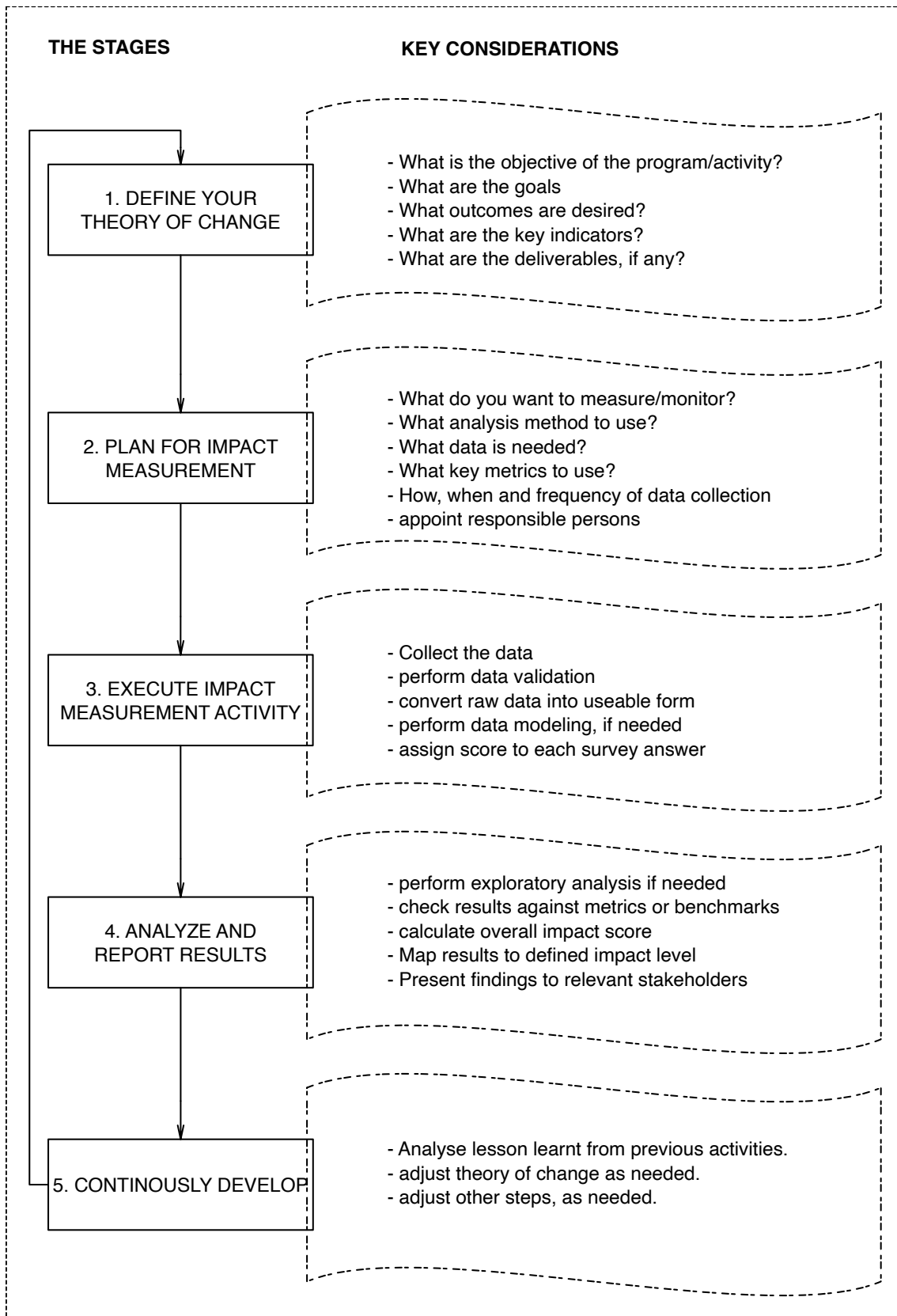


FIGURE 5. Proposed impact measurement approach.

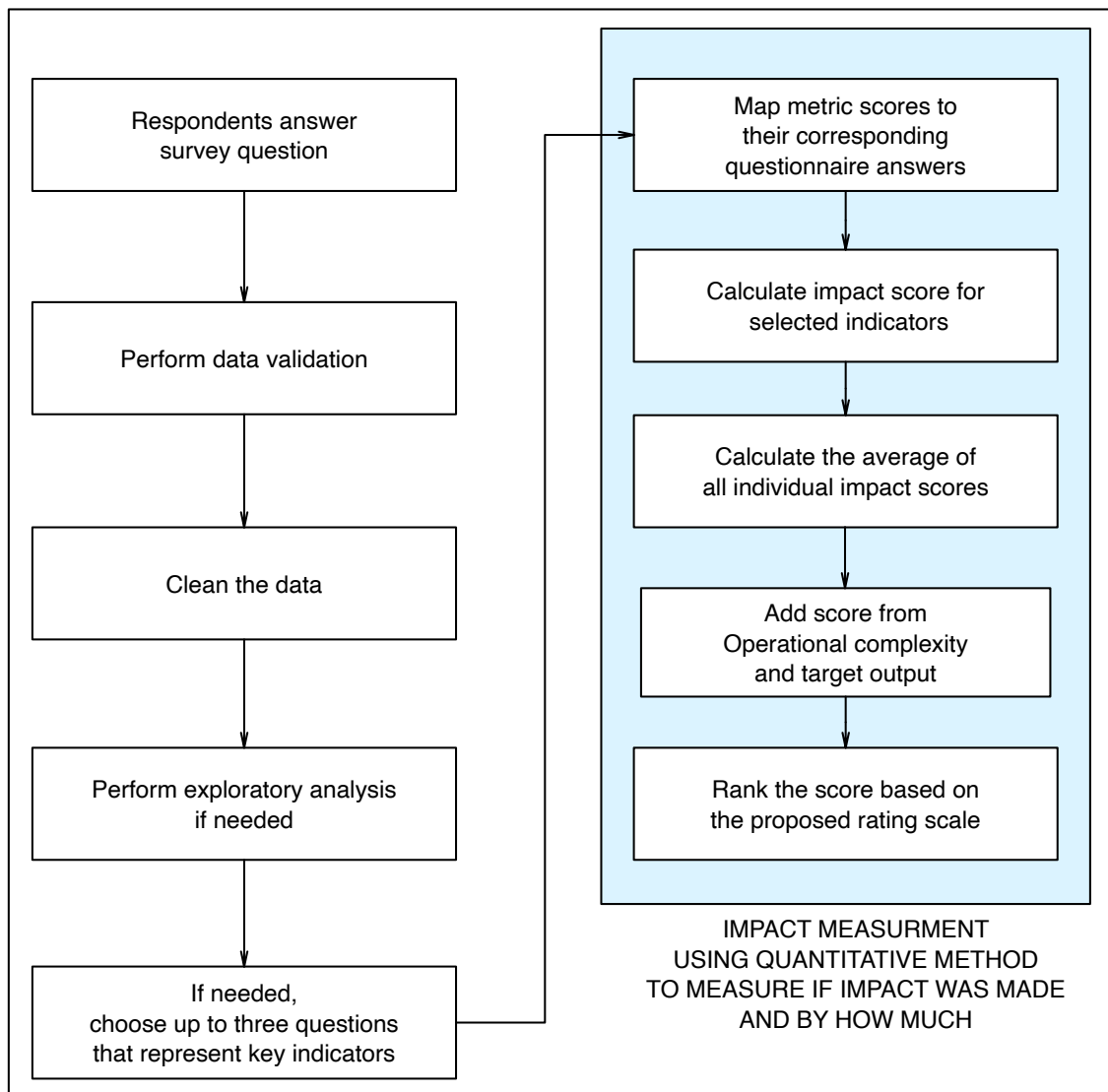


FIGURE 6. Basic process workflow from collecting data to scoring and ranking measured impact.

Despite the well documented approaches used for measuring impact, the question of how to carry out the actual measurement still lingers. Questions like what metrics to use, how to calculate or evaluate the data, quantify the impact being measured and use that data to, for example, rate the impact level as either none, low, medium or high, may arise. It is assumed that this issue exists because different programs have different requirements and needs, making the use of a standard method for every measurement almost impossible.

In the next section some possible solutions for measuring impact using quantitative method are introduced, considering the programs offered at the corps at Pelastusarmeija. The hypothesis is that by mapping metrics scores to the answers selected by survey respondents, it becomes possible to derive, quantify and rank the level of impact a program has had on the beneficiaries.

9 IMPACT SCORING METHODS

9.1 Impact measurement using CVSS-adapted method

This measurement method is adapted from a method widely used in the cybersecurity industry. This method is used for rating the severity of a security vulnerability by using specific Common Vulnerability Scoring System (CVSS) metrics. Each vulnerability is scored according to set criteria and the scoring is then used to generate an overall security assessment, including impact, of a vulnerability on a system. Applying this concept to measuring the impact of a program on beneficiaries makes it possible to have a summary or overall impact assessment of the program. It provides a means to assign a numerical score that reflects the level of impact being registered for a program and allows that score to be translated into a qualitative representation, for example low impact, medium impact, high impact and very high/excellent impact.

The process begins first with calculating the impact sub-score (ISS) using specific metric scoring system, from which an impact score is subsequently derived. In the case of cybersecurity, the exploitability score is then calculated and added to the ISS score to determine a final score that fits the CVSS rating. The equivalence of this in the impact measurement of Pelastusarmeija's programs can be the metrics from the activities and output steps of the Impact Value Chain described in page 12-13. In this thesis this CVSS metrics have been streamlined and adjusted to the impact measurement needs of Pelastusarmeija's programs and activities. The CVSS metrics chosen and adapted for this thesis is one that is best suited for the 5-point Likert scale matrix or survey questions with 5 options to choose from. This will be described next.

9.1.1 Proposed impact measurement metrics adapted from the CVSS

As mentioned earlier, this metric is designed to be used with the survey questions based on the 5-point Likert matrix or survey questions with 5 options to choose from. The minimum score will be 0 and the maximum score for the impact measurement part is 0,56. This metric is described in the Table 4 below:

Table 4. An example survey's 5-point Likert metrics

Score	Description
0,00	1. Completely disagrees
0,11	2. Partly disagrees
0,22	3. Neither agrees nor disagrees/ I am not sure/ I don't know
0,39	4. Somewhat/partly agrees.
0,56	5. Completely agrees.

The first step to deriving the impact score, is to compute the impact sub-score (ISS), using the metrics chosen during the planning phase of the proposed impact measurement approach described in page 30.

Assuming that three questions A, B, and C are identified as the impact indicators, and a respondent selects options 3, 4 and 1 respectively. Using the metric values described above, these options are then mapped to a corresponding score. Assuming A is assigned a metric score of 0,22, B a score of 0,39 and C a score of 0,0. The impact score will be derived as follows, according to (Chapple M. & Seidl D., *Comptia Security Plus Study Guide*, 8th edition, 2021, 192-193):

First calculate the impact sub-score (ISS) for all the impact indicators:

$$ISS = 1 - [(1 - A) \times (1 - B) \times (1 - C)]$$

$$ISS = 1 - [(1 - 0,22) \times (1 - 0,39) \times (1 - 0,0)]$$

$$ISS = 1 - [0,78 \times 0,61 \times 1]$$

$$ISS = 1 - 0,48$$

$$ISS = 0,52$$

The impact score adapted from CVSS, can then be calculated as:

$$\text{Impact score} = ISS \times 9,1$$

$$\text{Impact score} = 0,52 \times 9,1 = 4,7$$

This is the impact score for one respondent. The total impact score will be the mean of all respondents' impact score. For example, if a survey had 7 respondents and each had an impact score as follows:

Table 5. Example impact score for each respondent

Example respondent	Example impact score per respondent
Respondent 1	4,7
Respondent 2	8,4
Respondent 3	7,6
Respondent 4	5,5
Respondent 5	3,2
Respondent 6	2,8
Respondent 7	4,9

The impact score for all 7 respondents will be the mean of all the scores:

$$\text{Impact score} = (4,7 + 8,4 + 7,6 + 5,5 + 3,2 + 2,8 + 4,9) / 7 = 5,3$$

9.1.2 Performance measurement metrics for CVSS-adapted method

There may be programs or activities where the effectiveness of the processes or other specific actions or tasks carried out in the activity need to be considered. These are the aspects that the program's beneficiaries usually do not have influence on during the program's execution. For example, the beneficiary can affect how long the support they get is beneficial to them, but they usually do not influence how the activity is executed. This means that those involved in the program's actual activities and tasks will typically be providing the scores for the performance measurement.

The first of such parameters relating to performance measurement is the "operational complexity", which is relevant in the "activities" step of the impact value chain described in page 12-13. This takes into account whether the operational requirements for carrying out the program or activity is

very complex, moderately complex, or not complex. Typically, the more complex the program is, the more likely it is to affect the impact of the program.

Table 6. Example operational complexity metric (OC)

Score	Description
0,10	The execution of the activities is not complex.
0,39	The execution of the activities is moderately complex.
0,56	The execution of the activities is very complex.

The second metric on performance measurement relates to the output step of the impact value chain, which could be called the “target output metric”. This metric provides scoring for how the program or activity’s target output is met. The target can be for example, the target number of meals to serve.

Table 7: Example Target output metric

Score	Description
0,10	No output target was needed or up to 30% of target was met.
0,20	31%-50% of target was met.
0,39	51%-79% of target was met
0,56	More than 80% of target was met.

Putting all these metrics together, supposing the performance measurement metric score, which is made up of the operational complexity metric and the target output metric, are as follows:

Table 8. Example metric scores used for performance measurement

Metric	Score	Description
Operational complexity	0,10	The execution of the activities is not complex.
Target output	0,56	More than 80% of target output was met.

The performance measurement score is then derived as follows:

$$4,7 \times \text{PerformanceMeasurementMetrics1} \times \text{PerformanceMeasurementMetrics2}$$

$$\text{Performance measurement score (PMS)} = 4,7 \times \text{OperationalComplexity} \times \text{TargetOutput}$$

$$\text{Performance measurement score (PMS)} = 4,7 \times 0,10 \times 0,56 = 0,3$$

$$\text{Performance measurement score (PMS)} = 0,3$$

Now that we have the PMS score, the overall impact score of the program can finally be derived:

$$\text{Overall impact score} = \text{Impact measurement} + \text{Performance measurement score.}$$

$$\text{Overall impact score} = 5,3 + 0,3 = 5,6$$

The above overall impact number can then be put on a scale of 1-10, to determine its corresponding ranking. The scale is explained as follows:

1. An overall impact score of 0 is ranked as “no impact”.
2. An overall impact score from 0,1 to 3,9 is ranked as “low impact”.
3. An overall impact score from 4,0 to 6,9 is ranked as “medium impact”.
4. An overall impact score from 7 to 8,9 is ranked as “high impact”.
5. An overall impact score from 9 to 10 is ranked as “very high or excellent impact”.

Table 9. Impact score rating.

Impact score scale	Rating/ranking
0,0	No impact
0,1 – 3,9	Low impact
4,0 - 6,9	Medium impact
7,0 – 8,9	High impact
9,0 – 10,0	Very High /Excellent impact

The example overall score of 5,6 will finally put the program’s impact score to “medium impact”. As explained earlier, this overall score is based on the results from the survey data collected from program beneficiaries, and the operational measurement data which is provided by those who perform the tasks needed for the program to run smoothly. The example metrics used, and their explanations are summarized below:

Table 10. Example metrics for Pelastusarmeija’s social support impact measurement

	Metric	Data source	Description
Impact score measurement	Support depth	From survey data	How long the support helps the beneficiary.
	Support purpose	From survey data	How well the support meets its purpose of short-term support.
	Support need	From survey data	How well the support meets the need of the beneficiary
Performance score measurement	Operational complexity	From activities assessment	This assesses the level of impact the tasks performed during the program’s execution affected the outcome. It comes from the activities part of the value chain, and should be evaluated by those doing the tasks for that program.
	Target output	From output data	This comes from the statistics, for example, about the number of people served.

It should be noted that the impact metric scores have been derived with the following assumptions in mind:

1. The main focus is the result is the questionnaire answers which made up 85% of the overall impact score.
2. The operational complexity and output contribute 15% of the overall impact.

These can be adjusted and the scoring recalibrated according to stakeholder’s needs. For example, if stakeholders find that the impact metrics scores should be weighed at 70% and the performance metrics weighted at 30% of the overall impact, the scoring will need to be recalibrated accordingly.

9.2 Impact score based on mean of all metric scores

This is an alternative method for providing a summary of an impact measurement and provide both quantitative and qualitative values that give a summary of the impact of that activity or program. This method uses a different five-metric scoring system, which can hypothetically be easier to use when compared with the CVSS-adapted method described earlier. Three of the metrics are from the survey, which represents the indicators identified during the impact measurement planning phase. One metric is from the “activities” step of the impact value chain, and one metric from the “output” step of the impact value chain (Figure 1). Each of these metrics is then assigned a range of values from 0 – 10, depending on pre-defined conditions.

Using the Pelastusarmeija’s social support program as an example, the first metric can be the “support depth” metric. This measures how much the support was helpful to the program’s beneficiaries. If the support was helpful for a day, the score can be 0. If it was helpful for two days, the score is 2. If the support helped the beneficiary for about a week, two weeks and more than two weeks, the score will be 5, 8 and 10 respectively.

Table 11. Example Support depth metrics

Score	Description
0	1. One day
2	2. Two days
5	3. About one week
8	4. About two weeks
10	5. More than two weeks

The next metric is suitable for the “support purpose” and “support need” metrics as described in table 12. The “support purpose” measures to what extent the respondent agrees that support helped them in the short term, and the “support need” measures to what extent the respondent agrees that support meets their most urgent needs. If the respondent completely disagrees with

the question asked, the score will be 0. When the respondent partly disagrees, the score will be 2. If the respondent neither agrees or disagrees (or is not sure), the score will be 5. When the respondent partly agrees, the score will be 8, and if the respondent completely agrees, the score is 10. This scoring system can be the same for all questions where the options are according to the 5-point Likert survey matrix.

Table 12. Example scoring for “Support purpose” and “Support need” metrics”

Score	Description
0	1. Completely disagree
2	2. Somewhat/partly disagree
5	3. Neither agree nor disagree/I am not sure/I don't know
8	4. Somewhat/partly agree
10	5. Completely agree

The metrics for Operational complexity is as follows: If the implementation of the program is not complex, the score is 6. If the implementation of the activity is moderately complex, a score of 8 is awarded. But if the score is very complex, the score of 9 is awarded. Operational complexity in the context of program activities refers to how much effort goes into planning and executing the program in such a way that it can have profound impact on the outcome for beneficiaries.

Table 13. Example scoring for the operational complexity metric.

Score	Description
6	The operation of the activities is not complex.
8	The operation of the activities is moderately complex.
9	The operation of the activities is very complex.

For the Target output metrics, if no target output was defined/was not needed or up to 30% of the target was met, as score of 6 is awarded. If 31-50% of target output was met, a score of 7 is awarded. If 51-79% of the target was reached, a score of 8 is awarded. When more than 80% of the target was reached, the score can be 9.

Table 14. Example “Target output” metric

Score	Description
6	Target was not defined, or up to 30% of target met
7	31-50% of target met
8	51%-79% of target met
9	More than 80% of target met

Assuming that three questions A, B, and C from the questionnaire are identified as the impact indicators, and a respondent selects options 3, 4 and 1 respectively. Using the metric values described for this second method, scores will be mapped as follows:

Table 15. Example of how parts of the impact data source are mapped to corresponding score

Data source	Respondent’s choice	Score
Survey question A	3	5
Survey question B	4	8
Survey question C	1	0
Operational complexity	Not applicable	6
Target output	Not applicable	8

The impact score will then be derived as:

$$\text{Impact score for the respondent} = (5 + 8 + 0 + 6 + 8)/5 = 5,4.$$

This score of 5,4 will be the impact score for one respondent. The overall impact score will then be the average of all respondent’s individual impact score. For example, if a survey had 7 respondents and each had an impact score as follows:

Table 16. Example impact score for each respondent

Example respondent	Example impact score
Respondent 1	5,4
Respondent 2	8,4
Respondent 3	7,6
Respondent 4	5,5
Respondent 5	3,2
Respondent 6	2,8
Respondent 7	4,9

The overall impact score will be the mean of all respondents:

$$\text{Overall impact score} = (5,4 + 8,4 + 7,6 + 5,5 + 3,2 + 2,8 + 4,9) / 7 = 5,4$$

Based on the impact rating described in Table 9, the overall impact level will be “medium impact”.

9.3 Summarizing CVSS-adapted method and the mean of metric score method

Using test data and applying the metrics described in both methods described above, the results suggest that either method could be used for providing a summary view of an entire impact measurement exercise. However, there are pros and cons for each.

The CVSS-adapted method is derived from a method that has been in use in the cybersecurity industry for a long time, and therefore could have had a track record of reliability. However, because it involves using decimal numbers and a formula that may require careful implementation, it might be more prone to errors when this method is used manually. One of the ways this can be countered, is by ensuring thorough data validation, and automating parts of the calculation.

The method that uses the mean of all the metric scores appears to be simpler and straight-forward to use, and the result can be quite as accurate as the CVSS-adapted method. One downside in using the method is that it can be difficult to spot mistakes in the scoring, because part of the same digits used to mark respondent’s choices (numbers 1-5), are also used in the scoring. Again, if this

is done manually, thorough validation of the score values will be crucial in ensuring the scoring have been applied correctly.

Table 17. Pros and cons of CVSS-adapted impact score and the mean of metric scores method.

Impact scoring method	Pros	Cons
<ul style="list-style-type: none"> • Impact score (adapted from CVSS) 	<ul style="list-style-type: none"> • Trusted and used method in another industry. • Provides quite accurate assessment of the impact level. • Clear separation between the integers used when respondents mark their choices in the questionnaire, and the decimal numbers used in the scoring. 	<ul style="list-style-type: none"> • May not meet the simplicity criterium for impact evaluation system. • Errors are more likely when using this method manually, because of the use of only decimal numbers in the scores.
<ul style="list-style-type: none"> • Impact score using the mean of metric scores. 	<ul style="list-style-type: none"> • Easier and more straightforward to use. • Provides quite accurate impact assessment. 	<ul style="list-style-type: none"> • Deriving an appropriate score to measure metrics for operational complexity and target output can be tricky. • Can be suitable for most sizes of programs or activities. • Because the numbers are similar to the initial values chosen by respondent in the survey, it can be more difficult to spot wrongly entered numbers.

In the research part of this thesis, both methods will be used on the data collected from Pelastusarmeija's social support beneficiaries. The results will then be compared, before one of the methods will be proposed.

10 RESEARCH PREPARATION

The purpose of this research is to investigate and propose impact measurement approach for Pelastusarmeija's programs and activities, especially at the corps level, and also propose a way of reporting it. The initial preparation was according to the proposed approach described in Figure 5 (page 30), using the social support program at Pelastusarmeija as a case study. The first stage was to prepare an example theory of change, which also included setting the program's objectives and defining what kind of changes the program wants to have on the participants or beneficiaries.

In the second stage, plans for collecting data were made. First, permission from the management was approved, and then what to be measured was decided. The analysis method was also defined, and the quantitative analysis was chosen. During this planning phase, it was also important to decide how the data will be collected. To ensure that there is little obstacle concerning the use of technology, the traditional paper questionnaire method was chosen. This involved more preplanning on how to get the questionnaires to respondents in one of the cities. However, this was the best option because it was most convenient to the beneficiaries, and it also ensured that there were no technological obstacles to participating in the research. The decision on where to select the sample from was also chosen. It was decided that the sample will be from the Satakunta area, focusing on Pori and Rauma.

After the above details were decided, questionnaire design was implemented. Ten questions were formulated but only seven of them were necessary for this thesis research. Three of the questions were formulated to collect data on key performance indicators, which was later used in calculating the impact measurement score. Each of these questions had options 1-5 to choose from, while others varied from 3-4 options. Having equal number of options especially on the questions relating to key indicators was crucial, to allow for similar weighting of the responses. A copy of the questionnaires was then sent to relevant Pelastusarmeija stakeholders before it was distributed to respondents. Answering the questions did not require entering personally identifiable information (PII).

The target group were people who have or were going to receive the yearly Christmas support from Pelastusarmeija, most of whom have received social support earlier. They were given the questionnaires in person upon their arrival and were encouraged to fill them and hand them over on the

same day. Altogether there were 114 respondents from Pori, and 36 respondents from Rauma, marking a response rate of about 90%. Data from the questionnaire paper was extracted into excel spreadsheet, after which data validation was performed, before carrying out data cleaning, analysis and preliminary visualization with Python.

One very important step was to write a python script to test the impact scoring methods described earlier and use that data to rank the measured impact to either none, low, average, high or very high. This method, which may not have been previously used in this kind of study, involved adapting the CVSS method for measuring and scoring impact of cybersecurity threat and creating a base score. Hence a big part of the preparation was to write a python script that can run the process automatically, to test the methods and check the accuracy of results. Different scenarios were created from generated sample datasets which represent different possible options that can be chosen by a survey respondent.

The respondents chose from a list of 5 options, where number 1 was the least, and number 5 was the best. To apply the impact scoring method, these initial numbers representing the respondent's choices had to be mapped to a pre-defined metric score, as described in chapters 9.1 and 9.2. After these numbers were assigned to the corresponding initial values marked in the questionnaire by the respondent, the methods described in pages 33-36 were applied. Other relevant statistics data like the data concerning the correlation between the different answers provided in the questionnaire, and the summary description of the data, were generated. The data further helped in performing validation and checking for correlation as well as the p-values. The corresponding questions for Q1 – Q7, are in the Appendices 1.

	Q1	Q2	Q3	Q4	Q5	Q6	Q7
Q1	1.0	0.26514664465477455	-0.4697314783275133	-0.15194141407346978	-0.00801184450996918	-0.08023891848674855	-0.02532743869023661
Q2	0.26514664465477455	1.0	-0.2956650129447671	-0.054096001948205026	0.04255435694531461	-0.040732578047832854	0.01919658925783694
Q3	-0.4697314783275133	-0.2956650129447671	1.0	0.1491783630177243	1.5036837968745884e-16	0.06341771938507931	-0.0389235430651824
Q4	-0.15194141407346978	-0.054096001948205026	0.1491783630177243	1.0	0.20335983467790364	0.2106549481624861	0.14391489175148708
Q5	-0.00801184450996918	0.04255435694531461	1.5036837968745884e-16	0.20335983467790364	1.0	0.35601524350375974	0.41959633100897303
Q6	-0.08023891848674855	-0.040732578047832854	0.06341771938507931	0.2106549481624861	0.35601524350375974	1.0	0.37296988181456553
Q7	-0.02532743869023661	0.01919658925783694	-0.0389235430651824	0.14391489175148708	0.41959633100897303	0.37296988181456553	1.0

FIGURE 7. Correlation data before CVSS score mapping.

	Q1	Q2	Q3	Q4	Q5	Q6	Q7
Q1	1.0	0.2710126927411517	-0.41539699292020754	-0.025396140608907495	-0.0033442820663856575	-0.0774837021405642	0.00195416731300903
Q2	0.2710126927411517	1.0	-0.3651574481570892	-0.14261539581462454	0.030598385926270573	-0.023187441636654992	0.0028200436025597607
Q3	-0.41539699292020754	-0.3651574481570892	1.0	0.08189840180207696	-0.029345345357147445	0.006540377383994738	-0.045888899447218835
Q4	-0.025396140608907495	-0.14261539581462454	0.08189840180207696	1.0	-0.06578338952577192	0.1309117080600946	0.07471345607886803
Q5	-0.0033442820663856575	0.030598385926270573	-0.029345345357147445	-0.06578338952577192	1.0	0.34378952697433457	0.3787908737719959
Q6	-0.0774837021405642	-0.023187441636654992	0.006540377383994738	0.1309117080600946	0.34378952697433457	1.0	0.3948280910189368
Q7	0.00195416731300903	0.0028200436025597607	-0.045888899447218835	0.07471345607886803	0.3787908737719959	0.3948280910189368	1.0

FIGURE 8. Correlation data, after mapping score adapted from CVSS metrics.

10.1 RESEARCH GOALS

Pelastusarmeija has, for many years, been supporting people in different life situations, but current data only measures the output of such programs. For this reason, the main goal of this research is to propose an approach and a way to measure impact of the programs, using the social support program organised in the Satakunta area as a case study. To meet this goal, the following questions are to be answered:

1. What tools can be used for performing impact measurement?
2. What ways can the measurement be reported?

Other questions to be answered based on the case study are:

1. How has Pelastusarmeija's social support program been impacting the lives of people?
2. What level of impact is it making in the lives of the beneficiaries?

11 THE PROPOSED IMPACT MEASUREMENT APPROACH

Using the social support activity or program at Pelastusarmeija as a case study, this section discusses the entire process of performing impact measurement, as proposed in FIGURE 5.

11.1 Defining the theory of change

The objective of the social support program at Pelastusarmeija is to give short-term support to people who are in difficult life situation, so that beneficiaries have the means to support themselves in a short-term, while they find a long-term solution to the challenges they face.

The desired outcome is that at 70% of beneficiaries are able to sustain themselves for about one week, after receiving social support. To measure this outcome, the key indicators will be:

1. How long did the social support helped beneficiaries (depth of the program's outcome).
2. How do the beneficiaries feel about the support? Was it enough for their most urgent needs?
3. The expectations of the beneficiaries. Did the support help them in the short-term?

For this case study, there are no deliverables from beneficiaries. An impact measurement report will be delivered to stakeholders, using Power BI's reporting capabilities.

11.2 Plan for impact measurement

The following will be monitored:

1. How long the social support beneficiaries received lasted.
2. How beneficiaries feel about the support they received. That is, if it meets their most urgent needs.
3. If beneficiaries felt the support met their needs in the short term.
4. Other data to help understand the demographics of the beneficiaries, for example their family situation or age distribution.

For the actual impact measurement, only three indicators (the first three mentioned above) will be monitored.

To monitor the above-mentioned items, data will be collected from beneficiaries from two cities in the Satakunta area of Finland through paper questionnaire distributed to the program beneficiaries. Quantitative analysis methods will then be used to process and analyse the answers, and scoring of questionnaire answers will be done using one of the methods described in sections 9,1 and 9,2. For this case study, this monitoring is a one-time activity, to demonstrate the impact measurement stages. Else, it should be an on-going process, where the frequency can be at least once a year. The metrics to be used will be those described in pages 33-40.

11.3 Execute impact measurement activity

In executing the activity, the main tool to be used will be Python, together with relevant libraries like Numpy, Pandas and Matplotlib, for processing preparing the data for visualization and reporting tasks in Power BI.

11.4 Analyse and report results

The “RESULTS AND ANALYSIS” phase concentrates on this. Full report of the impact measurement exercise will be presented as a static report or an interactive Power BI app, to Pelastusarmeija leadership to aid decision-making.

11.5 Continuously develop the stages

In this stage, lessons learnt from previous stages are analysed and the recommendations are used to further develop and enhance the impact measurement process. The discussion part of this thesis highlights some important recommendations which can be under this topic.

12 RESULTS AND ANALYSIS

The first step was to perform a basic exploratory analysis on the collected data to understand key aspects of the social support beneficiaries such as the demography. This understanding will help relevant stakeholders understand the context on which the social support program's impact is based. The first task was to examine the sample size.

The sample size for this research was 150 from the Satakunta area. 114 or 76% was from Pori and 36 or 24% was from Rauma. This number, when combined, is considered enough to produce a good quality result for this research.

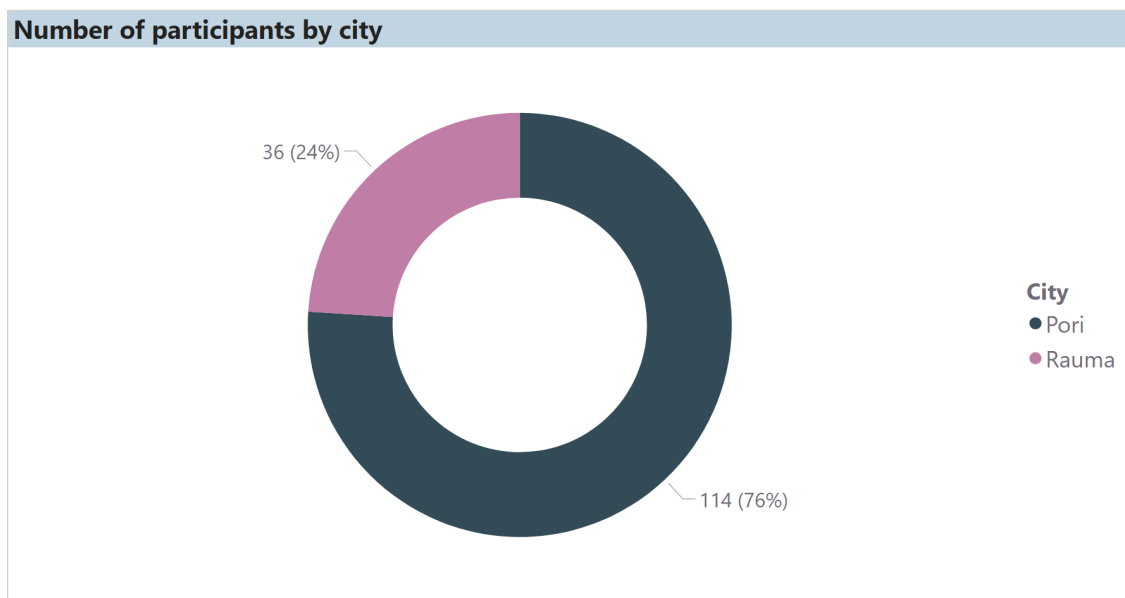


FIGURE 9. Distribution of respondents per city where questionnaires were distributed.

The first questionnaire question, "What is your work-life situation?", was designed to understand the working situation of the social support beneficiaries. Understanding this can help with planning, for example, when choosing appropriate items in a support package, that are most beneficial to that age group. This in turn can improve the impact of the activity to that group, because the support will be more targeted and relevant to the beneficiaries. The results show that the two biggest groups of beneficiaries are the retired (60 respondents or 40% of total respondents) and the unemployed (76 respondents or 50,67% of total respondents). The number of respondents who are employed were 4 (or 2,67% of total respondents), and students accounted for only 2 respondents (or 1,33%

of total respondents). Others who did not belong to any of the earlier mentioned groups were 8, or 5,33% from the total survey respondents. This means that most of the beneficiaries of the social support are either retired or unemployed people. This fits comfortably with the main target groups for this program, the unemployed or the retired people with very low income.

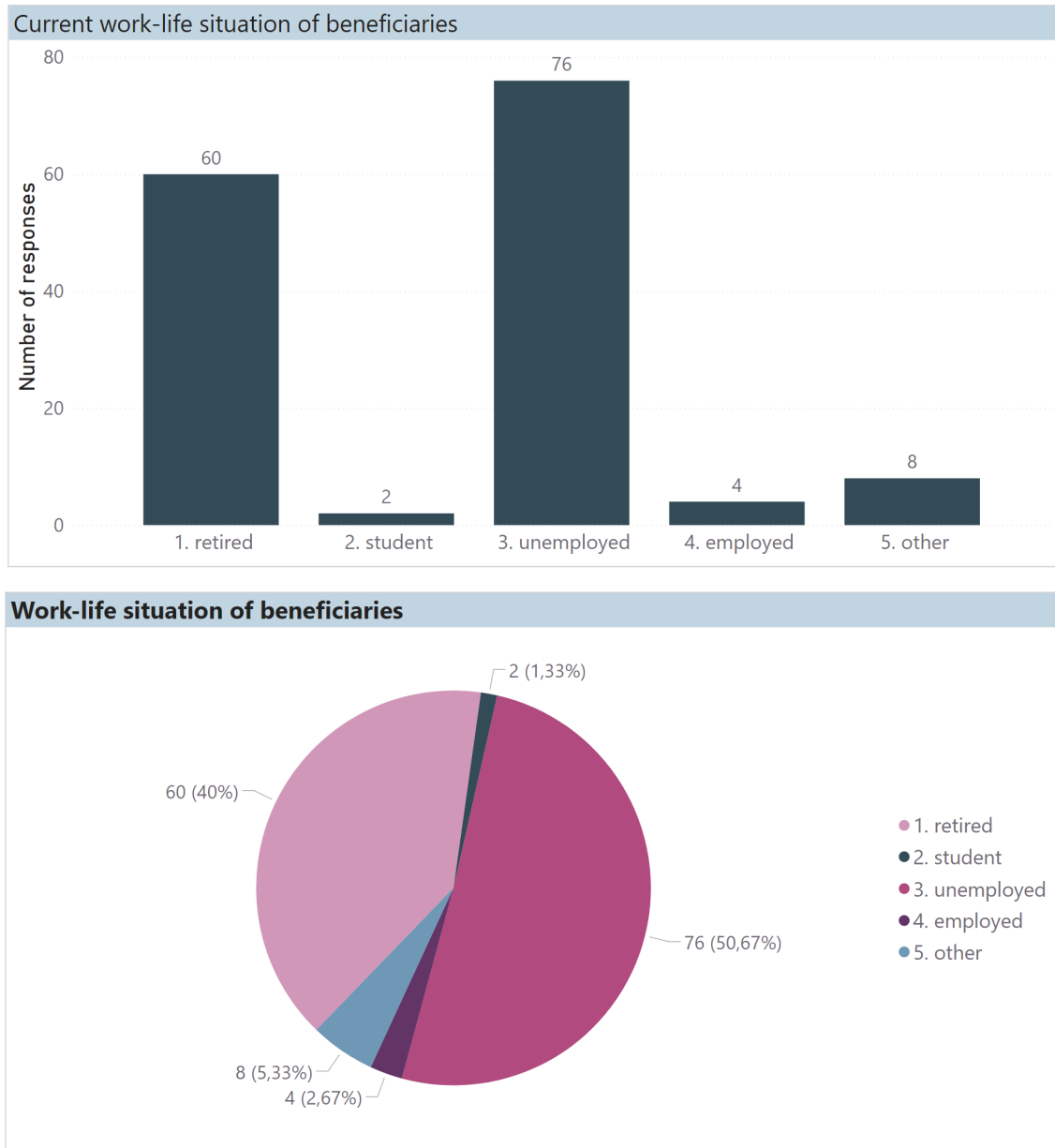


FIGURE 10. Work-life situation of beneficiaries.

The next question in the questionnaire was, “What word best describes your living situation?”. Understanding this also helps to improve the quality of the support activity or program. For example, when making decisions on what items to include in a support package, understanding this can help in deciding what relevant items to include in the Christmas support package. It can also help when

thinking about diversifying the types of support given during the Christmas support season by considering the needs of families with children. The results show that most of the beneficiaries, which was 87 or 58% of the total respondents, live alone. The next biggest group in this category were single-parent families, which was 27 or 18% of the total respondents. The next group are couples living together, making up 19 or 12,67% of the total respondents. The last two groups, those living separately but have joint custody of their children and others not classified, both made up 7 or 4,67% and 10 or 6,67% respectively. Awareness of this can again, enable the program managers plan the use of resources better, especially in cases where living situation of beneficiaries is considered a key indicator of the impact of the program.

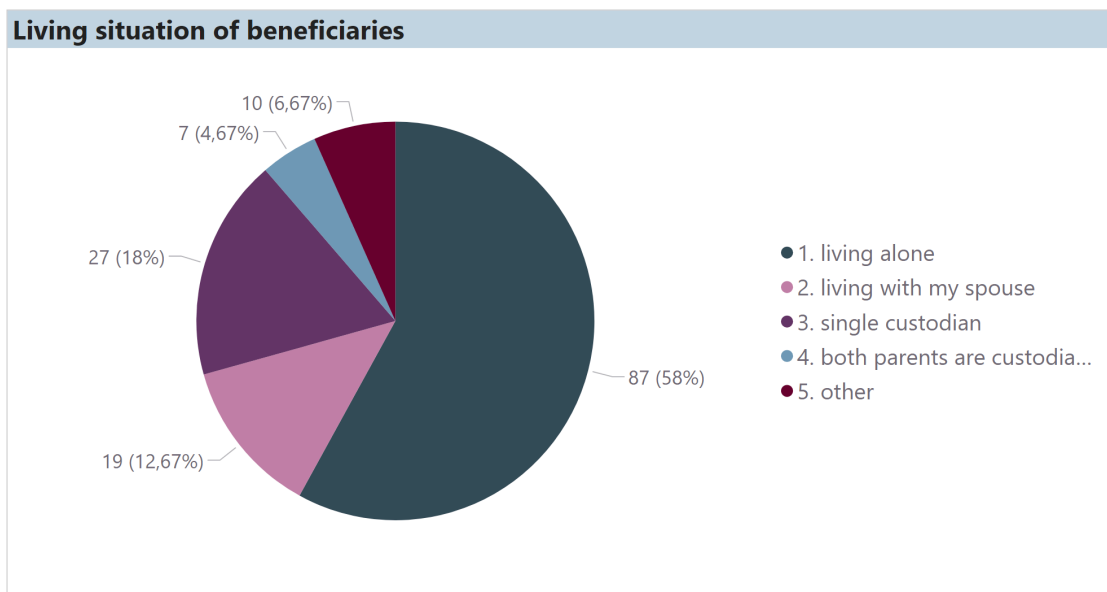
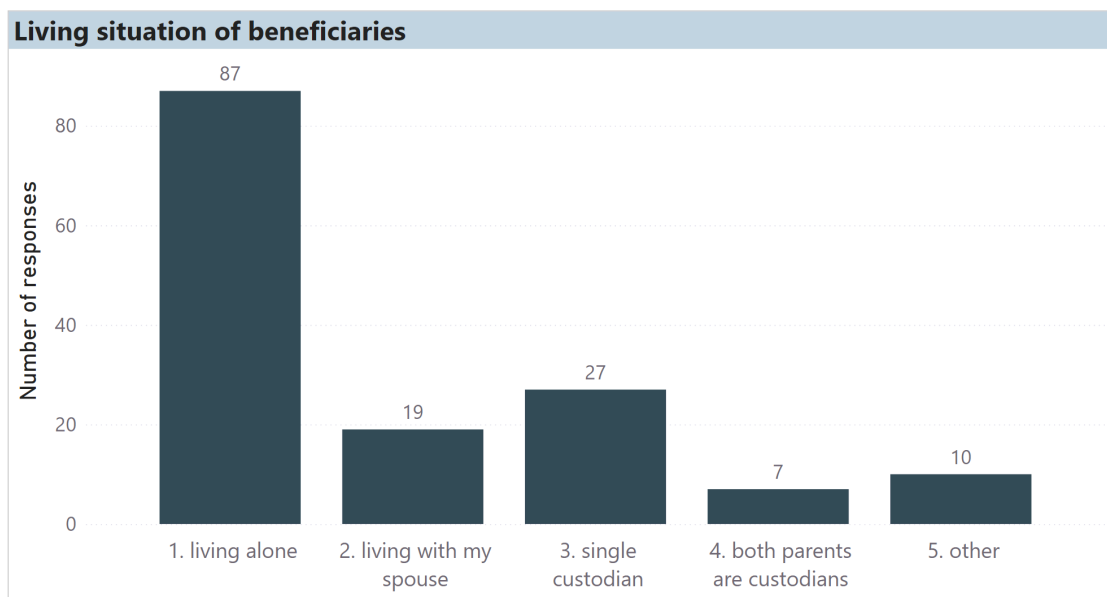


FIGURE 11. Living situation of beneficiaries

Question 3 was, “*What is your age?*”. The findings revealed that most of the beneficiaries were between the ages of 30 and 69. People between 30-49 were 65 (or 43,33% of total respondents) and people from ages 50-69 made up 62 (or 41,33% of the total respondents). Respondents who are aged from 18-29 accounted for only 12 (or 8% of total respondents) and those who are 70 or older, accounted for only 11 (or 7,33% of total respondents).

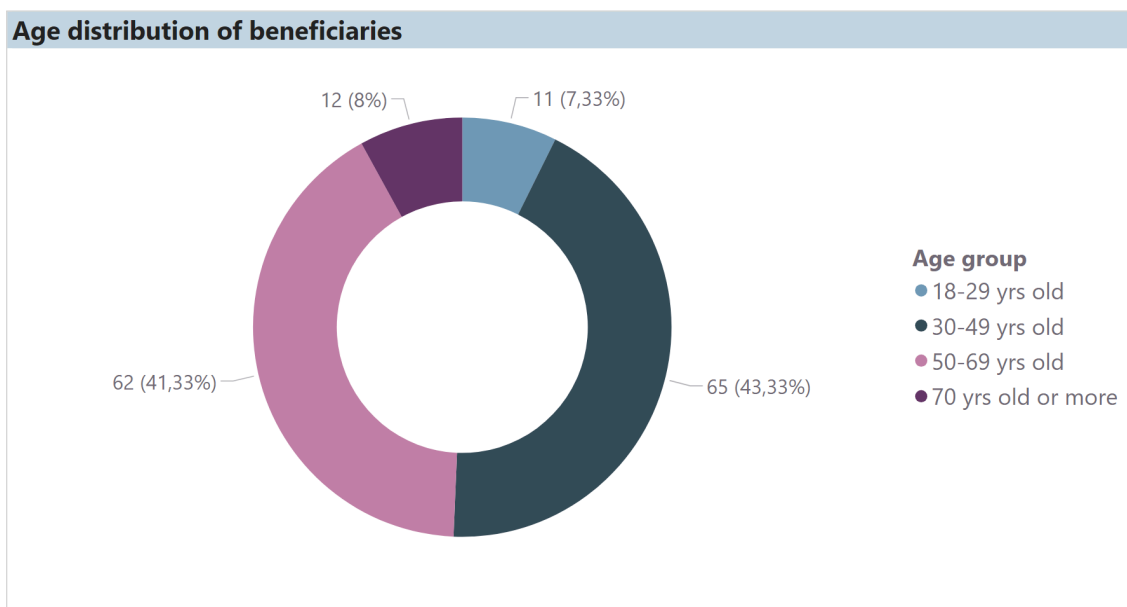


FIGURE 12: Age distribution of beneficiaries

Comparing this with the demography of Satakunta area confirms that most of Pelastusarmeija’s social support beneficiaries do represent the most of Satakunta area’s age group. This understanding can be helpful when making future plans regarding how the programs or activities can be developed for even greater impact, or in designing new programs to cater for the age groups currently being underserved.

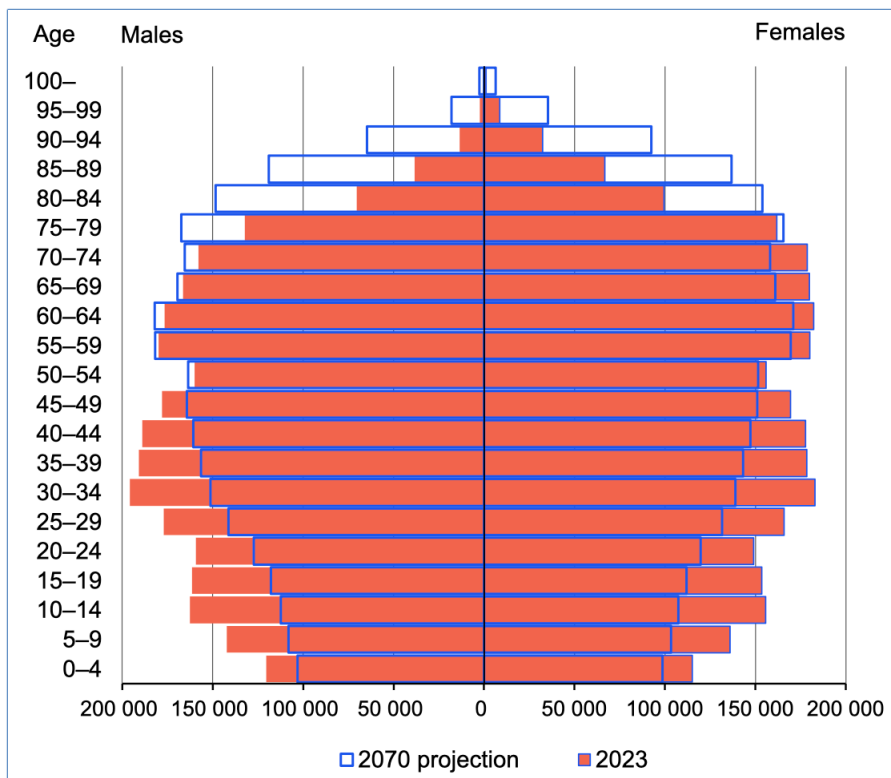


FIGURE 13. Age distribution of Satakunta population as of 31 December 2023. (https://stat.fi/tup/suoluk/suoluk_vaesto_en.html)

12.1 Results from measuring the impact

The task of measuring the impact began with first identifying the questions from the questionnaire that represent key indicators, as defined in the first stage of the impact measurement (Define your theory of change. Those questions were:

1. Q5. The support I received helped me in a short-term.
2. Q6. For how long was the support beneficial?
3. Q7. The support I received met my urgent needs.

The first-indicator statement, “The support I received helped me in a short-term”, was meant to measure how the beneficiary feels about the support they received, with respect to their short-term needs. 74,67% of the respondents (or 112 people) strongly agreed that the support they received has helped them in the short-term. Although this result was expected, it does verify that the goal of the support, which is to help people on the short-term, as they navigate through difficult life situations, was being met. The number of those who somewhat agree was 26 (or 17,33%). Those who were not sure and those who strongly disagreed were 8 (or 5,33%) and 2 (or 1,33%) respectively. This again, shows that the program is making very strong impact. The results can also provide the

basis for asking further questions to understand, for example, why did the few 6,66% feel that the support did not help them in the short-term?

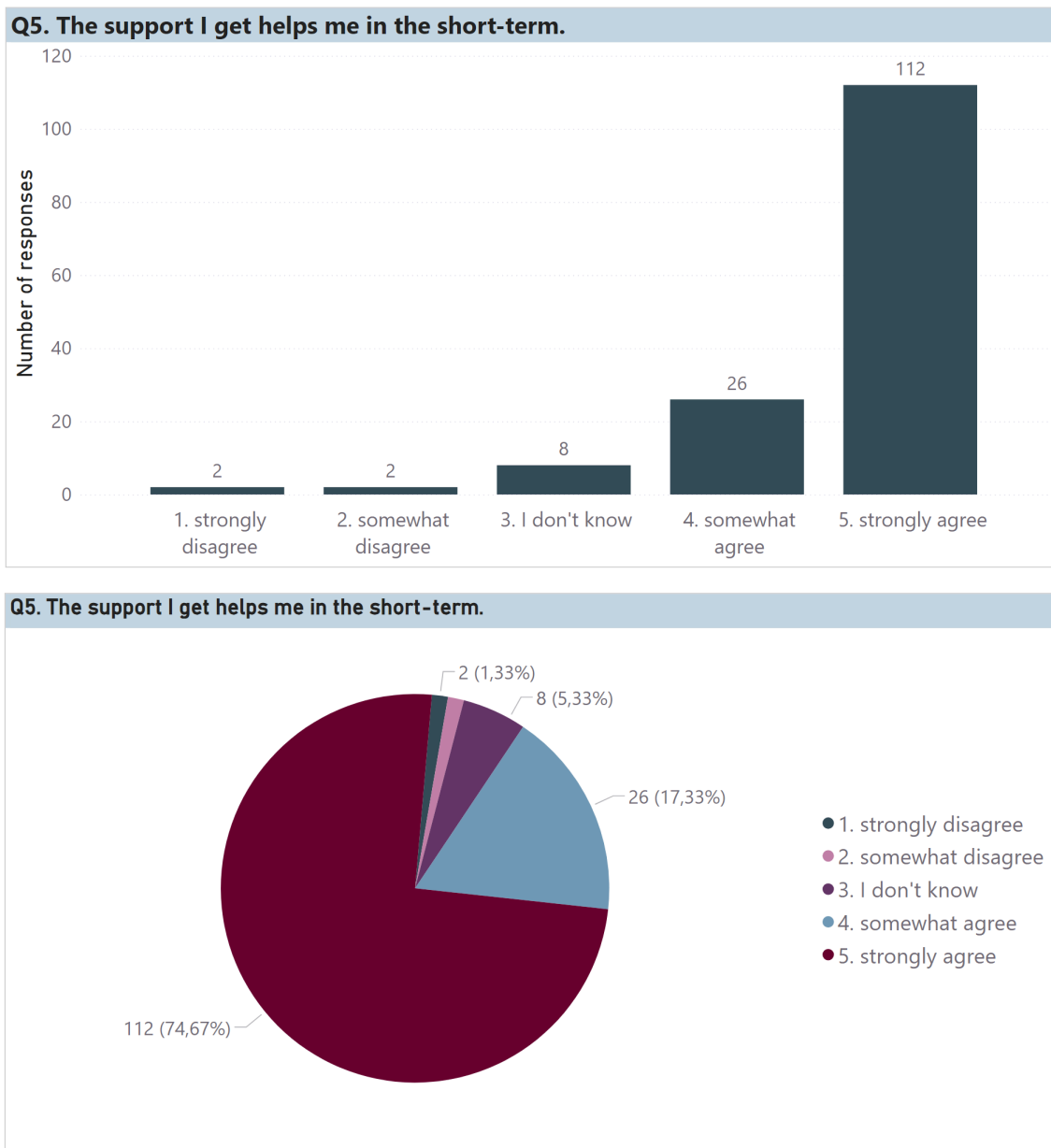


FIGURE 14. Result for the question: The support I get helps me in a short term.

The next question which represented one of the key indicators defined during the planning stage was Question 6, “For how long was the support beneficial?”. This question was to measure the depth of the support being given, i.e. to what extent the support given helped the beneficiary. During the impact measurement’s planning phase, the hypothesis was that for most of the beneficiaries, the social support will be beneficial for at most one week. However, the result was unexpectedly better.

The number of respondents who found the support they received beneficial for one week was 56 (or 37,33% of total respondents). That number was 39 (or 26% of total respondents) for those who found the support beneficial for two weeks, and 32 (or 21,33%) for those who found the support helpful for more than two weeks. This shows that for more than half of the respondents (71 respondents or 63,33% of total respondents), the support was beneficial for two weeks or more. These results show that the social support provided to beneficiaries has had a high impact, considering the purpose for which the social support program exists. It also means that the current value of the support handed to the beneficiaries is in most cases sufficient for at least one week, which was more than the expected result. This understanding can help in reassessing the financial value of the support being handed out, for even greater impact.

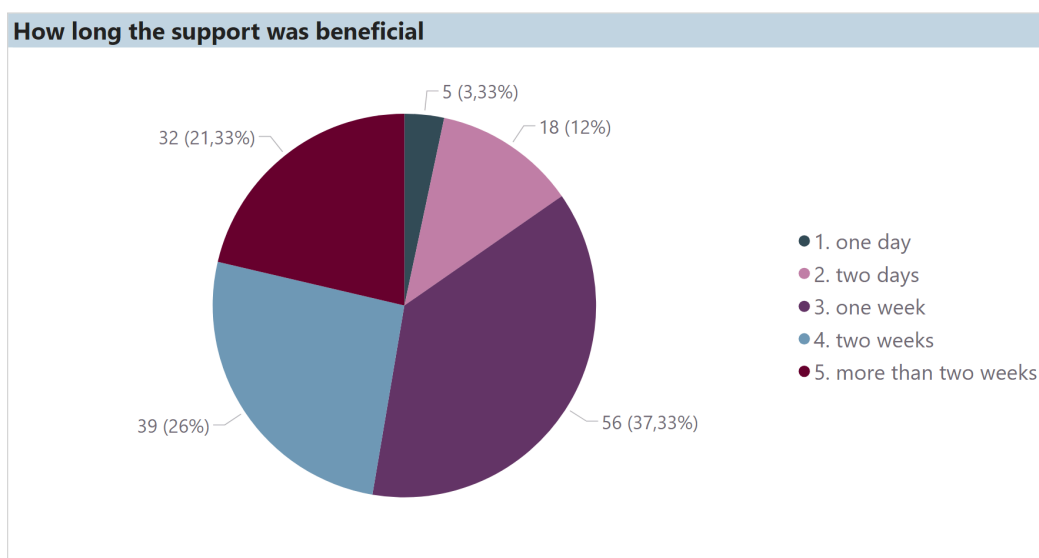
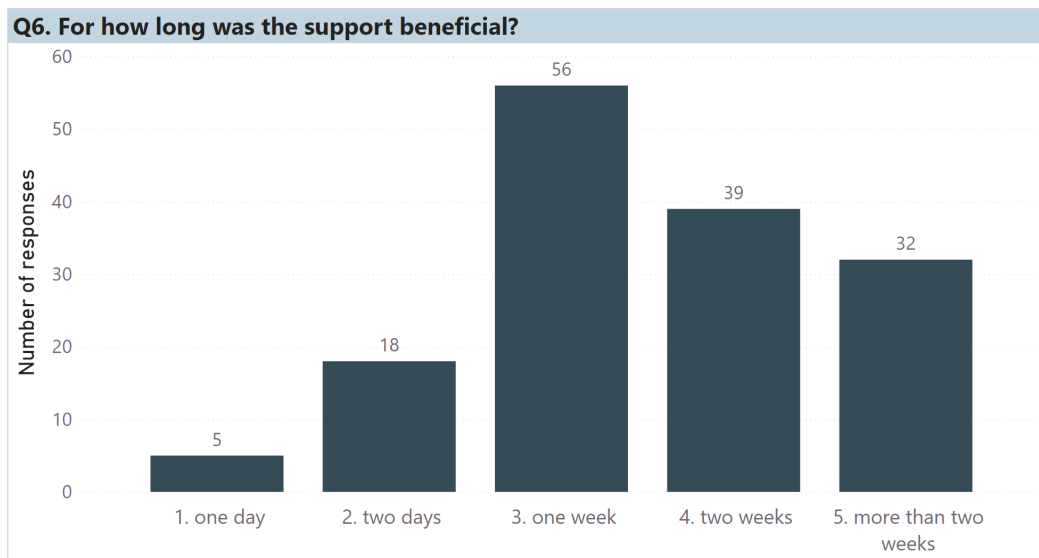


FIGURE 15. Result for the question: How long has the support you received helped you?

The last question in the questionnaire which measures the last of the key indicators of impact, as defined in the plan was the statement, “*The support I received was enough for my urgent needs*”. This was designed to measure what respondents felt about the support, with respect to their urgent needs. Did it meet their most urgent needs? The result, as was expected, shows that 77 (or 51,33% of total respondents) strongly agreed that the support they received was enough for their most urgent needs. 58 (or 38,67% of total respondents) somewhat agreed, while 10 respondents (or 1,33% of total respondents) were not sure. The number of respondents who somewhat disagreed and strongly disagreed stood at 3 (or 2% of respondents) and 2 (or 1,33% of respondents) respectively. This question attempted to measure how respondents feel about the support they have received. The result shows that the vast majority feel that the support was enough for their urgent needs, which means that the purpose for the support offered to them was effectively met.

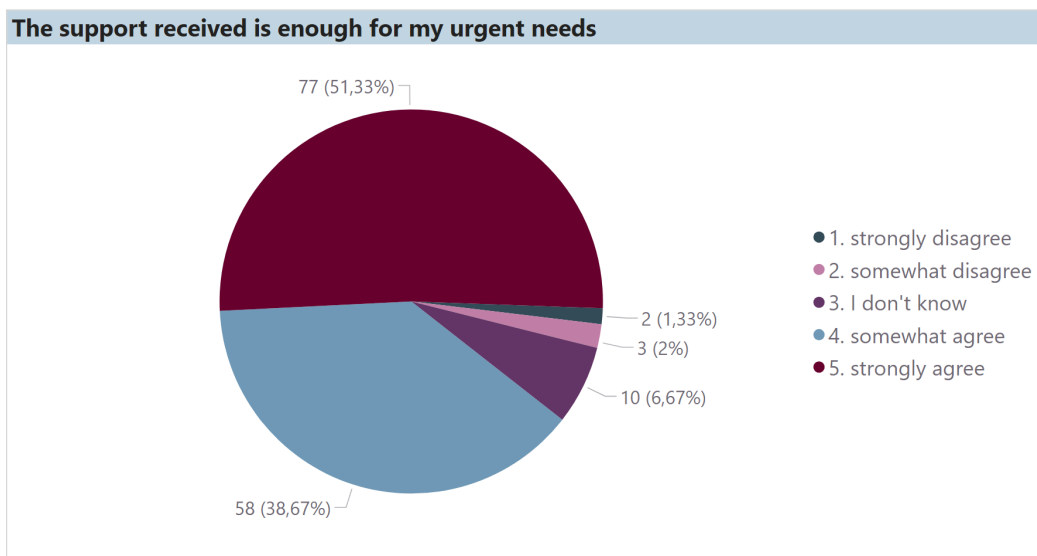
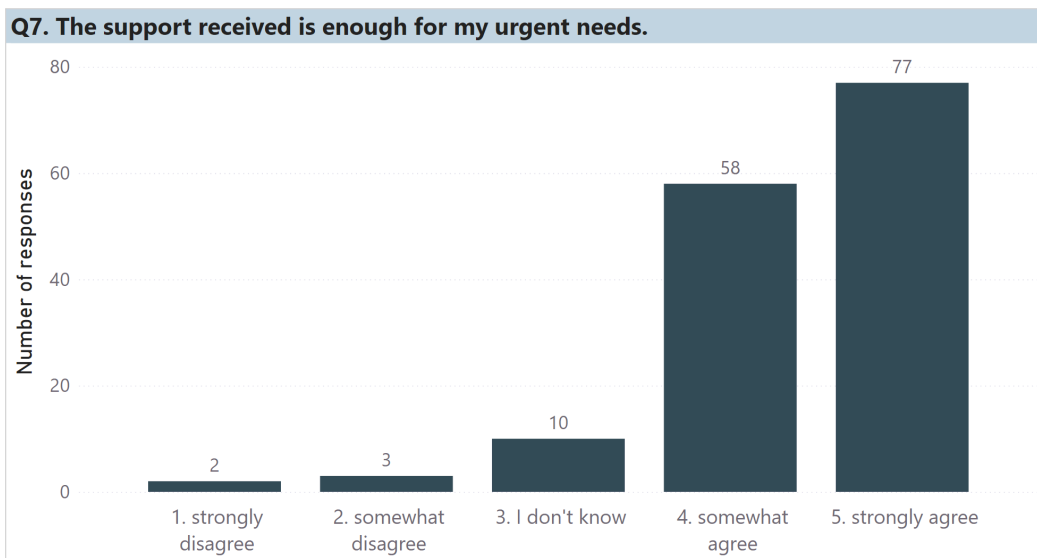


FIGURE 16. Result for the question: *The support received is enough for my urgent needs.*

12.2 The impact report summary

As mentioned in the theory part of this thesis, there was a need to develop a means of putting all the results of the impact measurement into one comprehensive report, using the scoring methods described on pages 32-40. The two methods presented were:

1. Impact measurement by using impact score adapted from the CVSS method.
2. Impact measurement, using the mean of the metric scores rated from 0-10.

Both methods use the same metrics but the scoring of the metrics were different. When comparing both methods described above, the line plot of the individual impact score for each respondent shows that both methods produced very similar scores, across all respondents. However, some of the scores were lower for the CVSS-adapted method when compared to the “mean of metric scores” method. For example, when the CVSS-adapted score for a certain respondent was 0 (no impact), that score was 2,3 (low impact) for the “mean of metric scores” method. While this may not be a critical difference, it can be misleading data in cases where granular analysis at the respondent level is needed. For example, it can be misleading to conclude that the program had low impact of 2,3 (on a beneficiary) when in fact there was an impact score of 0, meaning that for that particular respondent, the program did not impact them positively.

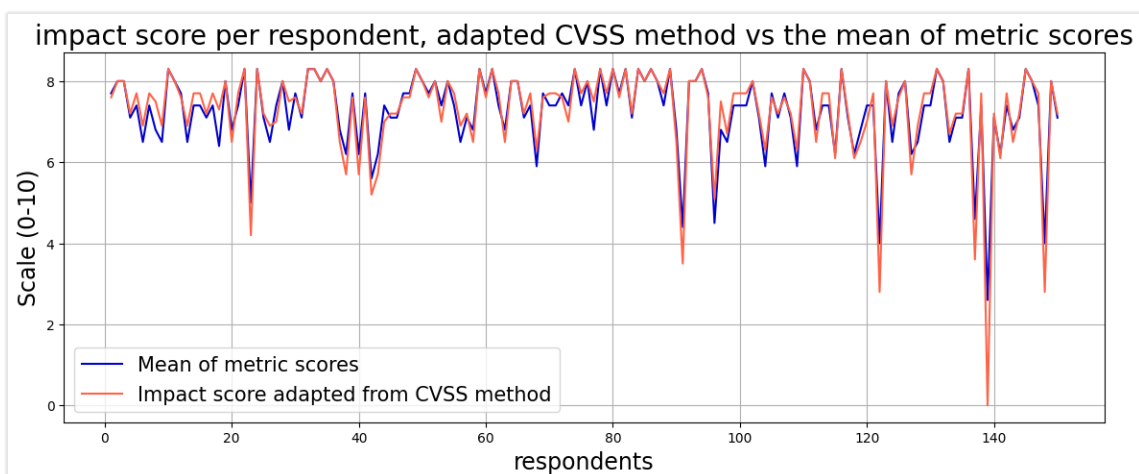


FIGURE 17. Line plot of the impact score per respondent, compared

The result of the above explained potential problem was also seen in how the rankings were grouped. The “mean of metrics scores” method grouped the rankings to low impact for one respondent, medium impact for 39 respondents, and high impact for 110 respondents. The CVSS-

adapted method on the other hand, grouped them more broadly (presumably more accurately) into no impact for one respondent, low impact for 4 respondents, medium impact for 30 respondents, and high impact for 115 respondents.

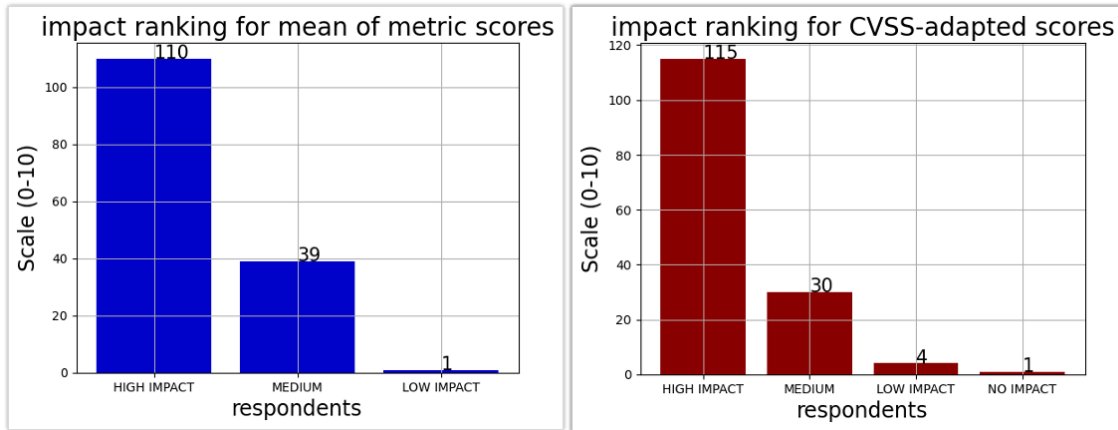


Figure 18. Comparing the categories for CVSS-adapted method and the mean method.

When it came to the overall impact score, both methods produced quite similar scores which supports the finding that the overall impact of the program was high. The CVSS method gave an overall impact score of 7,6 while the “mean-of-metric-scores” method produced an overall impact score of 7,3. This meant the difference between both methods was at 0,3 points. Despite this difference, both methods had similar overall impact score which was between 7,0 and 8,9. The final score within this range is ranked as “high impact”. This result exceeded the target of at least 5,4 (medium impact).

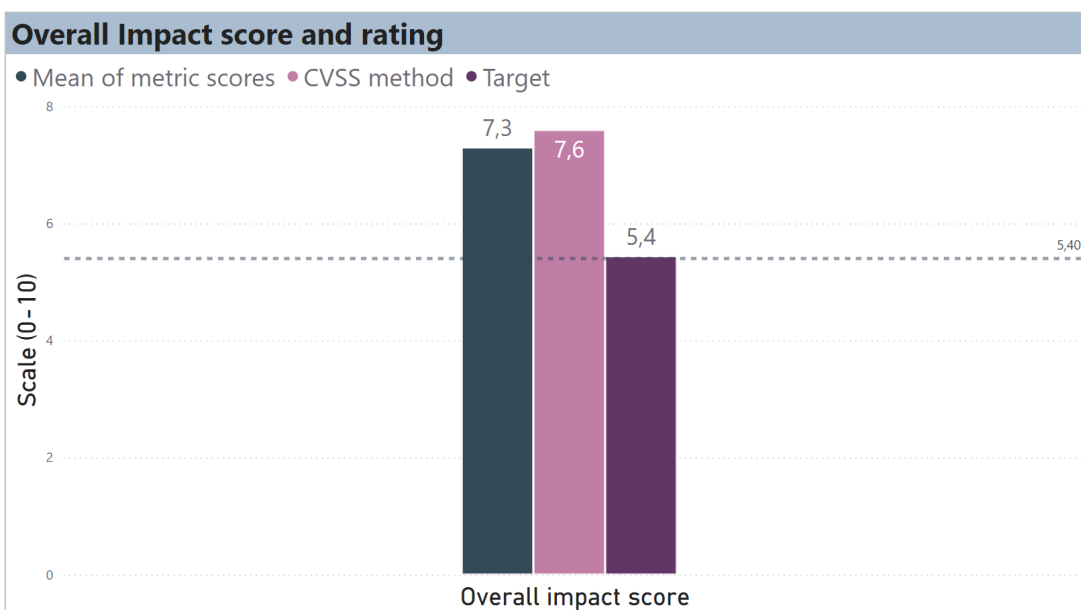


Figure 19. Comparing the overall impact score and ranking of both methods

Based on these findings, the CVSS method is recommended. The method produced more consistent results and provided a more balanced result of impact on

1. a per-respondent level, the grouping of respondents into the different ranking
2. providing a more reliable overall impact score.

This has helped to summarize the entire impact measurement exercise into a comprehensive overview by giving it a quantitative as well as qualitative value. This final overview showed that the social support program in the Satakunta area is effective, and impact is high, with most of the respondent reporting that the support benefitted them for at least one week, support met their most urgent needs, and the support helped them in a short term. This high impact was more than the medium impact expected.

13 DISCUSSION AND SUGGESTION

This thesis was in two parts: a theory part and a research part. In the theory part key aspects, terms, and concepts on the topic of “impact measurement” was presented.

The main questions that the research attempted to answer were:

1. What tools can be used for performing impact measurement?
2. What ways can the measurement be reported?

Other questions to be answered based on the case study were:

1. How has Pelastusarmeija’s social support program been impacting the lives of the beneficiaries?
2. What level of impact is it making in the lives of the beneficiaries?

Four different approaches to impact measurement were also presented, and an impact measurement process suitable for Pelastusarmeija’s programs or activities especially at the corps was proposed.

The research was conducted by distributing a questionnaire to social support beneficiaries at two locations in the Satakunta region. The research questions were answered by thoroughly analysing the results of the survey. The questions were designed in accordance with the impact measurement goals and key indicators defined during the impact measurement’s first stage (define your theory of change).

Two methods for impact measurement which also provided a quantitative summary and overview of the overall impact of a program on the beneficiaries were presented. Although both methods produced identical score result, the method adapted from CVSS was the preferred option and was recommended. This method was adopted from the Impact score formula widely used in the cybersecurity industry, and the scoring, as well as the formular, was streamlined and adapted to the impact measurement need of Pelastusarmeija.

The understanding after this research, was that CVSS method provided reliable and accurate impact score estimates and impact ranking, which were useful in summarizing the impact of a program into one quantitative impact score number. A qualitative value based on one of five rankings (no impact, low impact, medium impact, high impact and very high impact) was also derived. The results from the analysis placed the overall impact level of the social program at Pelastusarmeija in the Satakunta region, to high impact. This meant that overall, most of the beneficiaries found the support they received to have been helpful for at least one week, was beneficial in the short term, and was enough for their most urgent needs.

The results of the analysis showed that the social support program made more impact on the respondents than was expected. For other aspects of the analysis like respondent's age group, living situation and family situation, the analysis verified the hypothesis that the program served the right target groups.

One of the new understandings gotten from this research was the importance of the questionnaire design during the impact measurement planning phase. A good understanding of the four universal steps of impact measurement and how each part can affect the overall impact of a program was also very useful in understanding each metric score.

Because this is the first time such a measurement is done, there can be misunderstandings on how the metrics were derived. Additionally, the metrics may not be suitable for all programs, even though the underlying method may be suitable. This underlines the fact that how the method is used largely depends on the kind of program whose impact is being measured and what metrics is being used. A total of five metrics were designed and proposed in the case study presented in this thesis. This is assumed to be the minimum needed to achieve a reasonably accurate estimate of a program's impact.

Using this scoring method together with other traditional analysis methods can provide a very strong evidence and more rounded overview as to whether impact is made and to what extent. This overall quantitative data of the impact situation can also be useful in future in developing predictive models that can help for example, with assessing the minimum requirement for impact to be made even before the program actually starts.

An Excel-based template was also developed to help with reporting. It was made to be simple to use for non-tech employees who need a simple tool suitable for small numbers of respondents. This template will be delivered separately to Pelastusarmeija.

13.1 Further development

Going forward, there will be need to pay special attention the questionnaire design process, as it plays a very important role in determining the quality of the data that will be received. There is also the need to improve the key indicators' metrics as more appropriate ones are identified and defined.

There may also be a need to develop ways to measure the situation of the beneficiaries before they take part in the social support program, so that it can be compared with the measured impact after they have participated in the program. This can help make the impact measurement result even more accurate and beneficial.

Another area of development can be in finding more efficient ways to store and process the impact measurement data. As the number of impact measurement exercise increases, so will the data that needs to be processed and stored increase and storing it in CSV format may no longer be optimal. At some point, other formats like parquet or delta lake may be considered. A more robust and efficient way to store, automatically process and maintain the impact measurement data either in-house or via cloud services, could be considered. Such solutions may include the use of technologies like Apache Airflow, Databricks and Apache Spark.

Finally, testing and adjustment of the “mean of metric score” method more rigorously to ascertain that the results are as reliable as the CVSS-based method can be useful in the future. This can provide a reliable alternative to the CVSS method, and may also be easier to use.

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QUESTIONNAIRE USED IN THE RESEARCH

APPENDIX 1

Thesis research questionnaire 2023, for social support impact measurement.

1. My life situation now is:

1) retired	2) student	3) unemployed	4) employed	5) other
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2. What best describes your family situation?

1. Living alone	2. Living with my spouse	3. Single child custodian	4. Both parents have joint custody	5. other
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3. What is your age?

1) 18-29 years	2) 30-49 years	3) 50-69 years	4) 70 years or more
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4. How often have you received support?

1) This is my first time.	2) Once in 1-2 years	3) Regularly every year
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5. The support I received help me in the short term.

1) Completely disagree	2) Somewhat disagree	3) I am not sure	4) Somewhat agree	5) Completely agree
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6. For how long was the received support helpful?

1) One day	2) Two days	3) One week	4) Two weeks	5) More than two weeks
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7. The support I received was enough for my most urgent needs.

1) Completely disagree	2) Somewhat disagree	3) I am not sure	4) Somewhat agree	5) Completely agree
------------------------	----------------------	------------------	-------------------	---------------------

