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Using SROI as a tool to quantify non-financial risks within Credit Risk Management in banks

Abstract

With claims about the benefits of SROI and various shortcomings raised, this research attempts to investigate the integration of SROI as a tool for non-financial risks quantification within banks credit risk management through exploring the fit between SROI features and the practice of credit risk management through an extensive literature review. The research reasons that in spite the promising developments in quantifying social impact of activities through the SROI tool, the current state of the framework does not fit it integration within banking credit risk management efforts because of cost limitations, time constraints, lack of incentives for measuring the social impact, scarcity of expertise, lack of processes to attain quality data along with lack of standardization which results in the difficulty of comparing organizational performances and assessing the social or environmental risks. Future research area is suggested with the hope it can be used to construct tools that can utilize the benefits currently offered in the current SROI framework as well as overcome the shortcomings raised.

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List of Abbreviations

- GRI Global Reporting Initiative
- CBA Cost Benefit Analysis
- SROI Social Return on Investment
- CRM Credit Risk Management
- ECB European Central Bank
- BIS Bank for International Settlement
- GDP Gross Domestic Product
- GARP Global Association of Risk Professionals
- RBS Risk Based Supervision
- CAMELS Capital adequacy, Asset quality, Management, Earnings, Liquidity, Systems and controls
- E&S Environmental and Social

Chapter 1: Introduction

With the sheer increase of human activity around the globe, the role of the banking sector becomes more evident as the flow of funds across the globe increases. And as banks continue expanding, diversifying their revenue streams and increasing their scope of activities; the risks they face continue to shape the spectrum of the banking activities. Especially with the extension of the risk umbrella to include five different kinds of risks, in their centre environmental and societal risks (World Economic Forum, 2018). As banks became more involved with not only financial risks but also non-financial ones; it is worth the time to explore the potential of new methods in assessing societal and environmental risks within the practical scope of banks decision making process, as better understanding of the surroundings and more comprehensive information yields better preparation, plans and actions for banks.

This research premise is to explore the applicability of using a social and environmental impact quantification tool within banks' lending activities so that banks are better informed and can take better lending decisions. However, this premise needs to be narrowed down as the attempt to understand and quantify the social and environmental impact of human activity on the surroundings resulted in the development of various tools. Some tools used qualitative methods, others used quantitative methods and few mixed both approaches, just to mention a few approaches like Sustainability accounting as Global Reporting Initiative (GRI), Cost Benefit Analysis (CBA) and the focus of this research the Social Return on Investment (SROI) framework, all gained attention from researches and practitioners. However, to construct a specific research question, the mentioned tools will not be covered in this research, SROI framework is chosen as the primary focus for this research - reasons for the choice will follow – as the approach for societal and environmental impact quantification assessment tool. SROI will be checked if it creates better risk management for banks. On the other side; risk management for banks need to be broken down as it is a vast discipline, – the break down will be shown in the literature

review- and since the research is concerned with lending activities of banks, then the focus is credit risk management.

Based on the above, the research question shaped is: can SROI be integrated within banking Credit Risk Management? The answer for this question will be based on literature review. The research focuses on the practice of credit risk management and the validity of using SROI within credit risk management. That means that the literature review will not focus on the theory behind CRM or externalities internalization, but it will focus on the practice of CRM in banks and the practice of SROI framework.

The research question will diverge into three questions, the first two questions will be answered in the literature review. The first one is what are the CRM stages and what are their objectives? Followed by the answer of the second question; what are the distinctive features of SROI? To answer the second question, SROI framework and procedures will be elaborated, then the distinctive features of SROI will be highlighted. The discussion chapter is concerned with the debate about the potentials and disadvantages of the SROI features, where the validity and applicability of these features within the credit risk management stages will be examined. The discussion chapter is dedicated to answer the research question of whether SROI can be integrated within banking Credit Risk Management? The discussion chapter will be followed by the research limitations, proposed areas of research and the conclusion. The research is not intended to advocate for or against using SROI as a method of social impact evaluation in banking operations, but rather understand the capacity of the approach and whether it has some features that fits within the credit operation of banking. A simple illustration summarizing the research approach follows.

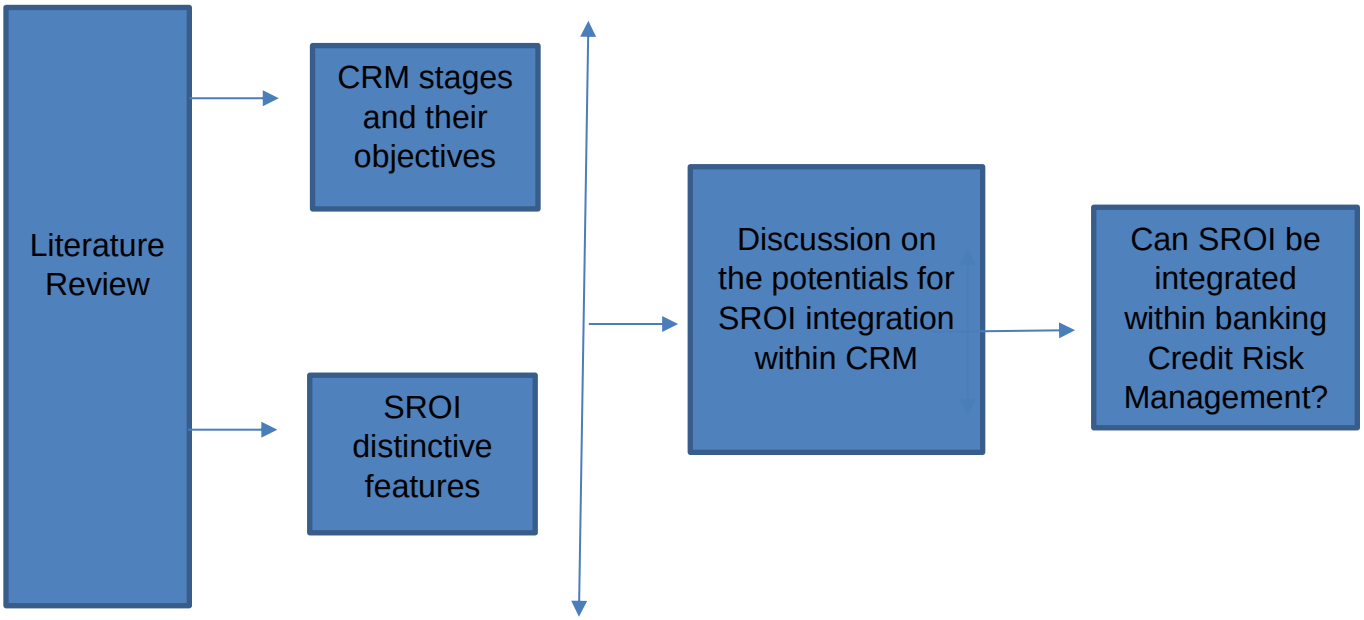

Figure 1: Research Approach

1.1 Reasons for choosing SROI

As mentioned, several approaches attempt to quantify social and environmental impact, as this research will not delve into the different approaches, it is necessary to explicitly highlight the reasons for the choice of SROI as the other quantification approaches will not be covered. Starting with filling the knowledge gap as published literature linking between SROI and credit risk management in banks using this approach is hard to find. Moreover, the flexibility of the approach to be used as an evaluative tool or for forecast (Nicholls, Lawlor, Neitzert, & Goodspeed, 2009), whereas banks credit risk management uses a mixture between evaluative and forecasting tools to assess the borrower's risks as it will be discussed below in the literature review. Furthermore, the growing interest from the non-profits and social enterprises to improve their services, understand, increase, fund and communicate their service (Arvidson,et.al, 2013) increased the interest in SROI as an approach to assess and quantify social and environmental impacts at the early 2000s, especially for social enterprises (Cordes, 2017). This increase of interest is evident below in figure 1 as it shows the exponential increase in the number of

published SROI analysis over the years, which shows the potential of the tool in the future. And the last reason to choose SROI is the different array of users including “funders” who were named by the authors of the official guide of the SROI as one of the main users of the SROI framework (Nicholls et al., 2009), which is currently evident in the rise of Social Impact Bonds and other tools that are environmentally and socially aware funding mechanisms. “Tools like SROI could play a major role in such arrangements” (Krlev et al., 2013, p. 5). As SROI provide the funders an adjustable tool that can widen or focus the scope of the analysis as needed (Cooney, 2017). Thus, it is no surprise that SROI can be utilized in banks.

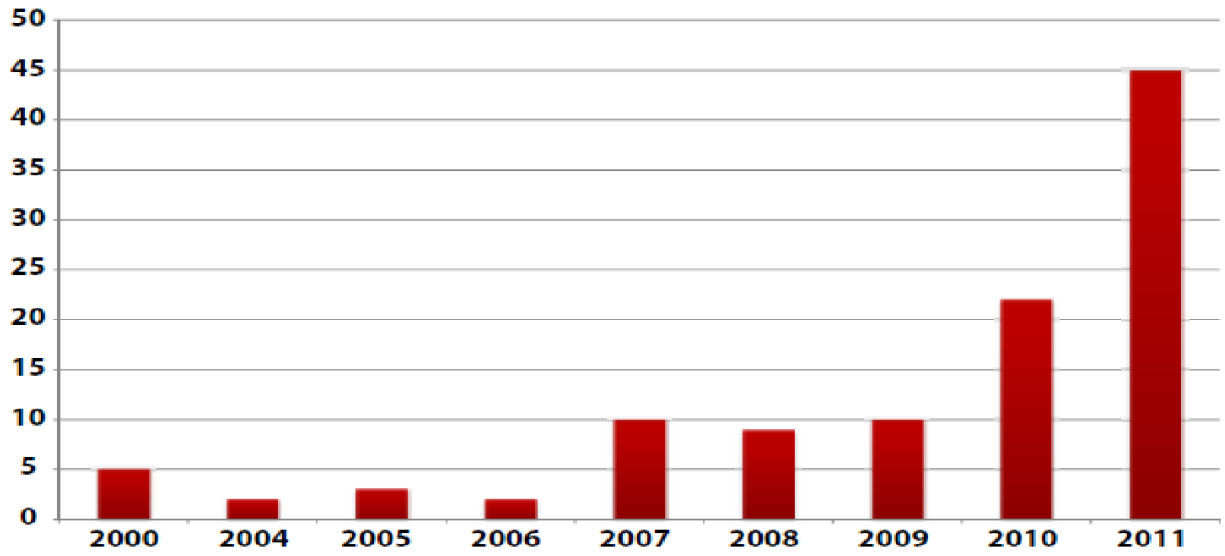

Figure 2: SROI published studies; source (Krlev, Münscher, & Mülbert, 2013).

Based on the above reasons, SROI was chosen as the focus of this research and the literature review will cover the approach. Starting with its origin, procedures, advantages and disadvantages, indicators and ratios used, as well as the conductors of the research. The literature review will aid as a base for the discussion section.

Chapter 2: Literature Review

2.1 Brief about Financial Institutions

Banks business is to accept deposits where there are assets excess and deliver loans or investments to where there is assets deficiency (Jeucken, 2004) In other words, moving funds from entities with excess financial resources to entities in need of financial resources, whereas banks accept deposits and make loans (Mishkin, 2007).

Within this movement of funds, a big number of banking activities were developed, especially with the growing global economy. As an example of the variety of banks activities, and as an illustration, following is the grouping of institutions according to the European Central Bank (ECB) guidelines.

- *Monetary Financial Institutions*: these institutions deal with credit, deposits and can invest, examples include retail banks, commercial banks, corporate banks, pension funds and money market funds
- *Investment Funds*: Institutions that invest in financial and non-financial assets,
- *Financial vehicle corporations*: are corporations that issue instruments for sale, whereas these corporations sell those instruments on behalf of their clients, examples include corporations engaged in securitization
- *Payment statistics relevant institutions*: are payment service providers, examples include electronic money institutions
- *Insurance corporations*: are corporations that pools risk in the shape of insurance, examples of that is life insurance corporations (ECB, 2018).

The above classification is one of various classifications for financial intermediary services across the world. These examples show the vast variety of activities financial intermediaries engage in. As evident in the complexity of activities, grouping all these activities under the umbrella of one research would be impossible. Thus, a specific activity to focus on is needed as all the activities mentioned have differences in the way they are conducting their business. Whereas credit activities can happen in a variety of ways between the different institutions, the specific activity within the commercial banks of providing loans to corporations will be chosen as the research focus area. The choice was made as loans is the primary financing source for businesses globally. (Mishkin, 2007). Also, there is a positive strong link between economic growth and banking development. (Levine & Zervos, 1998). In addition to the researcher professional career in the banking industry, specifically credit risk management.

2.2 Risks in commercial banking

As banks develop, they embark more and more into the business of lending as creating bigger portfolios is considered an indicator for the banks development. (Levine & Zervos, 1998). This pursue of bigger portfolios poses different kinds of risks for banks, as some risks deal with the global economy, regional or national economy conditions, others deal with the bank's borrowers performance and risks of the borrower business sector and some risks are specific to the bank itself and the way the bank carries on with its activities.

However, and to group the risks under separate umbrellas as they keep on evolving continuously with the developments in the banking sector. The research will follow the Bank for International Settlement (BIS) method of branching the main risks to banks under three main branches, namely; credit risks, market risks and operational risks. The choice of BIS is strengthened by the fact that it is owned by 60 central banks that together represent 95% of the world GDP, with the mission of pursuing financial stability in the banking sector. (BIS, 2018).

BIS segregated the main risks to banks under three main categories. Based on these three categories banks abide to specific obligations so that the financial stability in banks is pursued. The three branches are:

- ➢ Credit risks: Concerned with managing the credit given to borrowers, the risk here is these loans turning into bad loans as the borrower failed to pay it back, usually because of the borrower's inadequate income.
- ➢ Market risks: Concerned with losses because of market prices changes, this risk is usually correlated with capital market activities and not lending activities. This is not the focus of this research as it is not loans related.
- ➢ Operational risks: Concerned with the internal process, systems and people in the bank, examples include reputational and legal risks to the bank. This is not the focus of this research.

Credit risk is chosen as the domain for this research as it deals with the borrower's loans, whereas the other two sections deal with the banks internally within the same bank (Operational risks) or between different banks (Market risks). Credit risk is a different story; the importance of credit risk stems from the inherent nature of the credit risk to the credit business, it cannot be transferred, thus it is almost always discussed in any controversy or conversation regarding risks in banks, as it should be dealt with internally. Based on the choice of the credit risks, it becomes practical to delve into the details of how banks manage this risk as the discipline of Credit Risk Management as it deals with the borrowers' risks be it financial or nonfinancial risks.

2.3 Credit Risk Management

All businesses seeking profit gets exposed to a risk of some sort. Risk management in banks as used by Pike & Neale (2006) is defined as the process to identify and evaluate the trade-off between the expected return and risk, and thus choose the valid action. A more broader definition of risk management came from the Global Association of Risk Professionals (GARP) defining risk management as “the identification, assessment and prioritization of risks”. An even bigger umbrella for the definition of risk management comes from the dedicated ISO certificate for risk management (ISO 31000) that describes risk management as the principles, framework and process that manages risk, the ISO definition is quite broad as it tries to incorporate most of economic activities across different sectors and though different sizes of organizations.

For the sake of this paper, risk management in this paper specifically refers to the process of identification and evaluation of risks and subsequently taking an action accordingly. Hence credit risk management entails the process where potential credit risks - bank borrowers failing to meet the arrangements with the bank – are identified, evaluated and subsequently acted upon. In other words, as elaborated by BIS in the principles for the management of credit risk published in 1999, credit risk management goal is to maximize profit/risk return for the bank by keeping the bank’s credit risk exposure maintained within an acceptable range across portfolios, industries as well as individual clients.

This goal of credit risk management needs to be broken down into two goals. The first goal deals with the profit/risk return maximization and the second goal deals with the acceptable ranges. To attain the two goals, banks work on two separate levels. The first level is set according to the bank strategy as for instance the risk appetite of the bank and also the regulatory environment the bank operates in. The second level is the procedural level which draws the day to day operation to reach and maintain the strategy set on the first level. This literature review will not delve into the first level as it is not the scope of the research as the research question is concerned with the second level which is the practice of credit risk management that is embodied in credit risk management procedures. Furthermore, the first level is bank specific and country specific as the regulations vary from country to another as well as from bank to another based on the aspirations and the visions of each bank. This literature review will focus on the procedural level for risk management in the broad sense as referred to by Dickson (1995) which is concerned with the identification, analysis and control of risks; in this case credit risks.

2.3.1 Credit risk management approach

As the research is reflecting on the procedural manner of tackling credit risk whether it results from financial or non-financial aspects, highlighting the framework for the procedures will add a theoretical layer to the discussion about how credit risk is addressed in the banks. This research will adopt the Risk-Based Supervision (RBS) approach. It is the theoretical approach used by the supervisory bodies[1] of financial institutions so that the supervisory bodies can enhance the risk management processes of the financial institutions. The RBS approach is built to identify the critical risks facing a bank and assesses how the bank addresses those risks. The RBS approach is chosen as it deviates from the predecessor approach that focused on compliance and transaction, called CAMELS which stands for (Capital adequacy, Asset quality, Management, Earnings, Liquidity, Systems and controls) as RBS approach provide banks with a more comprehensive view on risks and not limiting itself to only tackling the five topics in CAMELS, furthermore RBS focus on evaluation of current and future risks which is different than CAMELS which focuses on current assessments. (Deloitte, 2014) Furthermore, the objective of the approach is continuous supervision and the ability to recommend early corrective action. Moreover, the Basel Committee for banking supervision noted the RBS approach ability to lead a continuous improvement process within a bank using the following pillars.

- Data gathering and analysis
- Risk, control and compliance assessment
- Assessment of probability of failure
- Rating
- Action plan. (BIS, 2012)

[1] An example of the supervisory bodies is the central banks

These pillars can formulate the approach behind how banks manage their risks. In the case of this research, the RBS approach would mean that when banks address credit risk management they cover how data is gathered and analysed, how the credit risk is controlled and kept within limits, how the probability of default for borrowers due to credit risk is assessed, the borrower rating and the action plan and decisions made after the assessment is conducted.

It is worth noting that this research is interested in the practice of the credit risk management, the theoretical approach links the credit risk management practice to the overall risk management, therefore RBS is not used as the base for answering the research question. The next section will show the practice side of the credit risk management through CRM procedures.

2.3.2 Credit risk management procedures

This section deals with the procedures needed to manage credit risk; as highlighted the focus of this upcoming section of the literature review is to articulate more about the procedural approach to the three key elements in risk management; identification, analysis and control, within this research identification, analysis and control of specifically credit risks. In this section each element “stage” objective will be highlighted along with tools used to attain the stage’s objective. Worthy to note that each stage contains a regulatory or strategic level, that level will not be discussed as the research aim is to highlight the procedural nature of the credit risk management and not delve into the regulatory or strategic consideration.

Starting with identification – sometimes called screening – stage's objective. In this stage, the bank's focus is on the identification of borrowers' risks that can affect the borrower's ability to pay back the loan in a timely manner (GARP, 2012). The bank officials are expected to attain specific information from the clients via different mediums whether via attaining the information from the client directly, verification of external parties or validation of information via internal staff (Scholten, 2008). Banks have already developed and established standardized reporting and documentation requirements from each client, this standardization in reporting and documentation facilitates comparisons of credit risk across clients. (Santomero, 1997). This stage paves the way for the next stage, which is assessment. Whereas the development and changes in the identification stage are influenced by the requirements of the assessment stage.

The second stage is the assessment stage which has the objective of assessing borrowers in a consistent manner based on an established standardized assessment methodology (GARP, 2012). Another perspective for the assessment stage is delivering a decision based on the bank desired equilibrium between the risk of the client and the expected return of the loan; basically, achieving the desired risk / return equilibrium (Mohamed, 2016). Furthermore, the Basel principles does not oblige banks to use a specific model to assess credit risk, the Basel principles requires banks to carry out their individual method of risk assessment so that banks across the globe are able to carry out assessment with the flexibility required especially that banks vary in complexity across the globe (BIS, 1999). This flexibility gave way to a variety of tools to be used by various banking institutions so that each bank can assess the credit risks in their lending business.

Going through all the tools used across the globe for assessment would be impossible, as each bank uses a mix of tools for assessment, some are inhouse built models, others are bought by the banks. The research will elaborate on some common methods for assessment that are developed internally and some common methods for assessment that are bought. Starting with the internally developed tools which include spreadsheets developed by the bank, credit scoring system whether developed by the bank or developed across a coalition of banks and the Risk Adjusted Return on Capital (RAROC[2]) method. The choice - or mix of choices - of the method utilized by the bank depends on the view and strategy of the bank management. (Mohamed, 2016, Eddie, 1997, Allen, 2003, Oldfield and Santomero, 1995)

Starting with the custom-made spreadsheets; this method is as powerful as the staff using it. In other words, the validity of the results from the spreadsheet tool depends on the expertise of the staff and their awareness of the market and client business, spreadsheets are based on the notion of forecasting the future performance based on the evaluation of the historic trends. Next, is the RAROC method assessment, which relies on the figure delivered, whether the loan will deliver the appropriate return for a specific amount of risk. The RAROC method shows the minimum accepted return for a specific amount of risk, based on this notion, if a loan produces higher return than the minimum produced by RAROC, the loan is granted. Another method developed internally is the credit scoring system, which utilizes the expertise of the bank staff as well as the abundance of information for comparability between clients and the market conditions, in this tool more emphasis is done on assessing the risks of the loan as it assesses and assigns weights to the borrower's risks. Furthermore, the credit scoring system can be used to categorize borrowers into risk classes based on their risk rating, whereas the RAROC can be used as a threshold that can be used by the decision taker i.e. above a certain figure is accepted, below a certain figure the loan is declined (Mohamed, 2016, Eddie, 1997, Allen, 2003, Oldfield and Santomero, 1995).

[2] A model that is popular among bankers as it provides a reference between clients in the same sector. The main use of this tool is to check whether there is a buffer of capital to withstand worst case scenarios.

As for the readymade tools, the research highlights only three to show how each tool capitalizes on a specific strength and have some pitfalls. That shows that there is no superior tool or method for assessment, each method has some strengths and some weaknesses and according the bank strategy - the first level already mentioned-, tools are chosen to address specific risks. The tools that will be discussed are Credit Metrics, CreditRisk + and KMV. Each model relies on a different notion for assessment. The choice was based on their wide use as well as the availability of literature discussing those tools and debating their functionality. The following researches were conducted to compare these tools together Chen, Shia and Lee, 2011, Spuchľáková, Valašková, and Adamko, 2015, Kollár and Gondžárová, 2015, Crouhy, Galai, and Mark, 2000, and their common findings were as follows.

Starting with Credit Metrics which relies on the notion of credit Value at Risk or Credit VaR, the second is CreditRisk+ which relies on the probability of default of the borrower and last is the KMV model which is based on the Asset Value model which relates the probability of default to the value of the borrower's assets in the market. The CreditVar was criticized as it considers risk on individual bases, i.e. on client by client basis; and that the method overlooks the risks of the overall portfolio, moreover it is the most time-consuming method across the mentioned methods. On the positive note, Credit VaR is recognized for its flexibility and its comprehensiveness as the inputs in the model are not restrictive. The second method which is CreditRisk+ was found to underestimate the default risks across the borrowers yet its relatively easier than the Credit VaR method in calculations and data input. Finally comes the KMV method which is considered the easiest method, yet its output is volatile as it depends highly on the market value of the borrower's assets which can be extremely volatile if the borrower holds volatile assets as stocks for example.

Moreover, it was found that the migration from any method to another is an ad-hoc experience where the migration from one approach to another can be costly in terms of time and resources. It was concluded by the literature reviewed that each tool used in the stage of assessment would have pros and cons; the training and the expertise of the staff is crucial for the validity of the assessment result.

The last stage of the procedural credit risk management is the control stage. This stage follows the assessment stage which supplied the bank's decision takers with the required analysis for the borrower's credit worthiness and based on the analysis, the loan decision is taken. Following granting the loan, the stage of control commences where monitoring the borrowers is crucial. (Spuchľáková et. al, 2015). The control practices are set to enable bank officials to identify early signs of risks along with tailoring the covenants that reduces and mitigates the bank's risks. (GARP, 2012). The bank officials monitor the borrower activities closely to pick up early on the signs of trouble through using some performance indicators as discipline in payments, turnover, profitability and liquidity, this is done through reporting requirements. Thus, at the warning signs the bank can start steps to return the loan or decrease the losses according to the covenants signed with the borrower. (Spuchľáková et. al, 2015).

2.4 Non-Financial risks

As shown above; banks identify, analyse and control risks of borrowers through credit risk management. The credit risks common feature is their capacity to tamper with the borrower's ability to repay the money. Hence the realm of credit losses in banks does not only fall within the scope of financial risks or financial indicators. Thus, credit risk management that encompasses social and environmental aspects creates a deeper understanding quantitatively and qualitatively of the risks encountered in the lending business. Therefore, this deeper understanding of the non-financial risks aids in better decisions making (Zeidan et al., 2015).

As we acknowledge that corporations do not exist only as an economic entity, but rather as a citizen of the surroundings. That citizen - or borrower in this research case - creates value to the surroundings or causes damages to it. The benefits provided by the corporation to the surroundings is called positive externalities, whilst the costs incurred by the surroundings because of the corporates' business activities are called negative externalities (Dixon et al. 2013).

As an example, for externalities, a manufacturer that produces a product creates a trail of pollution throughout the stages of production, starting with the extraction of raw material to the manufacturing process itself to the disposal of that good. In all stages a trail of pollution is created as an outcome as well as the good itself. However, the end user or consumer will not pay the full price of the product and the pollution trail as the manufacturer did not bare any cost for the pollution as well. In this example emitted pollution might be air pollution -negative externality- and it is a cost for neighbouring residents who will suffer from it, socially (in the form of health) and economically (in the form of medical costs). In this scenario, the manufacturer did not pay the full cost of production, neither did the buyer; the cost was also paid by an uninvolved party which is the neighbouring residents. These costs are the negative externalities referred to earlier. When the impact on the uninvolved party is considered a benefit, then the manufacturer

created a positive externality. In both cases accounting for these externalities in the corporation activities is done through a process called “internalization”. (Ring, 1997). That discrepancy between the accounted for benefit or cost which is a fraction of the overall benefit or cost creates a distorted image of reality and incomplete information. Thus, and to capture the whole image of reality to take informed decisions, ways to “internalize externalities” were developed whether the sphere of externalities is social or environmental or both. This complete picture aids banks in taking more informed decisions.

As internalization of externalities provided credit risk management more tools to capture missing information to better identify, analyse and control risks. More and more researchers tried to use approaches to narrow the information gap using non-banking tools. This research falls within this category, where it will attempt to deliver an understanding of how a tool can capture externalities and whether it can be utilized in the credit risk management practices.

2.4.1 Internalization of externalities

Internalization of externalities provides an opportunity to capture the full picture for economic activities by organizations. Several methods were proposed to assist in decision making use of externalities internalization. For instance, Sustainability accounting methods as the Global Reporting Initiative (Nicholls, 2017), another method is using multiple criteria analysis through ranking, weighting and organizing criteria and basing a decision on the findings of a scoring system (Zeidan et al., 2015). An additional method is quantification of externalities through tools like Social Return on Investment(SROI). The research will not delve into the different methods of internalizations as each of the methods mentioned can be regarded as an entire domain, furthermore the reasons for choosing SROI was elaborated on in the introduction.

2.5.1 Social Return on Investment origins

As the private sector determines the direction of their investments based on the expected returns of such investments, the public sector started to look for ways to evaluate and justify their choice of investments as well. However, quantifying the intangibles deemed challenging with the available tools, thus economists developed the methodology of Cost Benefit Analysis (CBA) as an established economic analysis popular amongst economists to aid the public sector in decision making. (Arvidson, Lyon, McKay, & Moro, 2013). As CBA was integrated within the evaluation of public policy, it did not only account for the impacts of the direct beneficiaries but also accounted for the impact to or by all stakeholders, direct or indirect, that fell under the notion of accounting for externalities or secondary effect (Cooney, 2017, Cordes, 2017).

Based on this notion of accounting for externalities, CBA was a direct comparison between benefits - positive and negative outcomes, tangible and intangible – versus costs using monetary terms, as it was argued that the monetary terms make it easier to compare the outcome and costs of the public program or policy in question on the entire population, thus an evaluation can be made (Herman, Avery, Schemp & Walsh, 2009, Arvidson,et.al, 2013). This approach was used to evaluate the performance of public decisions and later the performance of non-profit (Cordes, 2017), where the activity or policy analysed quantified monetary benefits outweigh the quantified monetary costs according to the evaluator's perspective, the activity or policy is approved or deemed successful. This led to the interest of non-profit organizations in said quantification of value, this interest led to the development of various tools for measuring the social impact among them, with the Social Return on Investment (SROI) being one of them (Arvidson et al, 2013). SROI capitalized on the concept of quantification using money terms and expanding the economic focus used in CBA to a more broader scope including social and environmental impact, yet SROI had the advantage of a sharper scope as not all impact is accounted for but rather the impact deemed material – more details in the procedures section - by the direct stakeholders(Cordes, 2017) so non-profit organizations took notice

of that difference and was interested in how SROI can enhance their decision-making, provide supplementary arguments for funding and communicate with the stakeholders in business terms (Nicholls et al., 2009).

2.5.2 Social Return on Investment procedures

CBA underlying framework is more beneficiary for accounting for social return or cost than other business frameworks like Return on Investment (ROI) (Cordes, 2017). This more accommodating framework for quantification of social impact gave the rise to SROI as an evaluative tool. As SROI was designed to encourage funding in public and private organizations (Yates and Marra, 2017). However, before delving into why SROI is used, the definition of SROI, how SROI was developed and the procedures need to be addressed before distinguishing the SROI features and discussing whether the SROI framework can be integrated within CRM.

SROI provides a framework based on the SROI principles -discussed below- to measure the positive and negative impact of an activity on the economic, social and environmental fronts using monetary values only as a scale of quantification but not as a measure of profitable or lost money. (Nicholls et al., 2009). SROI -as CBA- quantifies the impacts through monetization (Krlev et al., 2013) to stay more relevant to financial markets and investments (Arvidson et al. 2010) thus SROI users can check financial, social and environmental benefits at the same time (Krlev et al., 2013). SROI framework attempts to translate the social value yielded from an activity in a financial manner using the SROI coefficient. (Krlev et al., 2013). The SROI coefficient means that for each dollar invested in this activity, the coefficient amount is generated as a social benefit for all the stakeholders not only the investor returns. SROI coefficient is calculated by dividing the monetized sum of all benefits (positive and negative) by all the present costs of the investment, where future benefits and costs are discounted through financial modelling techniques – as Net Present Value (NPV) – to account for the time value of money. (Cooney, 2017).

As for the procedures of SROI and what principles are behind the SROI analysis, the guidebook of (Nicholls et al., 2009) was used in this literature review to illustrate the stages and principles of SROI which was created as a hybrid between cost benefit analysis and social accounting. The SROI framework constitutes of seven principles, each of the seven principles is translated into seven stages to provide a step by step guide for SROI analysts and users. The seven principles will be briefly discussed below as well as the seven stages suggested to create the SROI report.

• Involve stakeholders.

This principle is concerned with the first stage where the scope for the SROI report is established as well as identification, listing and methods of communication with the involved stakeholders[3]. The first stage is concluded when the SROI report objective as well as the involved team, resources available, activities to be measured and priorities for measurement are identified and articulated.

• Understand what changes.

The second principle is crucial for the outcome of the second stage, which is an impact map. The impact map should be built after the stakeholder engagement took place, where the SROI creators attempt to understand the changes -positive or negative- stakeholders were subjected to. In other words, the impact map – the product of the second stage- shows how the resources (inputs) used in the measured activities, resulted in changes (outputs) for stakeholders. These jotted relationships create what is called the logic model or the theory of change or impact map (Arvidson,et.al, 2013).

[3] Stakeholders include all parties involved or affected by the scope of the activity reviewed, whether the impact on the stakeholders is positive or negative

In this stage inputs are identified and valued financially whereas outputs are clarified, and outcomes are described. It is vital to differentiate early on between the outputs and inputs, whereas the outputs refer to the results of the implementation of the program, whether the results are positive (i.e. desired) or negative (i.e. undesired), whereas the cost element refers to the resources used in the program implementation, thus the negative outcomes are not considered costs but rather negative outputs (Yates and Marra, 2017).

Moreover, the separation between outputs and outcomes is structured, where outputs are the quantitative summary of the activity being measured and outcomes are the changes incurred by or benefiting the analysed stakeholders. For example, an output of an activity can be the number of people trained, the outcome however is the jobs the trainees landed as a result from the training program they went through.

• Value the things that matter.

The third principle dictate the development of the outcome indicators. After the development of the impact map, the measurable outcome indicators are chosen as well as the method and cost of collecting the outcomes data, the window of time the SROI analysis is concerned with as well as assigning the outcomes monetary value.

In assigning values to outcomes, SROI uses financial proxies, where the social value is estimated for goods that are not traded and does not hold a specific monetary value. Credible financial proxies as a concept will be reflected upon later in the challenges and discussion sections. Furthermore, the quantitative measures should be also matched by qualitative evidence based on the experiences of the stakeholders. (Arvidson,et.al, 2013).

• Only include what is material.

The fourth principle highlights the importance of materiality, where not all outcomes of the activity are analysed, only the material ones. In this stage the impact of the activity under study is established to provide focus for the analysis prior to calculating the SROI “figure”.

• Do not over-claim.

The principle of not overclaiming is critical in this stage as the calculation of the SROI ratio takes place. All the previous data collected are summarized in the form of financial information where the total social return is calculated -includes the positive and negative outcomes- versus the total cost of the activity inputs. Calculating the SROI ratio is done through the concept of financial proxies, where the SROI figure itself is considered a metric to compare the monetary cost of a program input with the monetary social benefit/cost the program creates. (Cordes, 2017). Financial proxies will be detailed below in the SROI ratio's section and reflected upon in the discussion section.

• Be transparent.

After calculating the SROI ratio, reporting to the stakeholders and communicating the results in a transparent manner is critical to the success of the SROI analysis. The transparent communication of results as well as highlighting the amendments that should take place using the analysis improves the credibility of the analysis. Within this stage the final report is written. Worthy to note that a transparent report does not only include the SROI figure but should also report on the quantitative and qualitative aspects that was used to arrive at the SROI figure (Nicholls et al., 2009). In summary the final report should tell the story of change created due to the analysed activity and show the readers how the figures were derived.

• Verify the result.

The principle of verification comes from the SROI link with the social accounting discipline. Assurance of the results and process strengthens the SROI analysis conducted whether the verification focused on the quality of the analysis or on the quality of the analysis and the quality of the data, which can be done through external audit.

2.6 SROI features

This section of the literature review will highlight the SROI significant features as well as the methods used to control the SROI framework. In this section of the literature review the SROI features will only be introduced, whereas under the discussion section, the features will be discussed as well as linked to the research question which is concerned with the viability of the SROI as a tool within the Credit Risk Management. Thus this section will address first the stakeholder engagement as a feature of SROI that navigates what social elements will be tackled, followed by the materiality role in SROI, then addressing the monetization orientation of SROI along with the required impact map and ratios – financial proxies- used to arrive at the SROI ratio, after that the auditing of the report along with the verification of figures used. And at the end, the diversity of purposes for the SROI analysis. (Krlev et al., 2013, Arvidson et.al, 2013).

Starting with the stakeholder engagement feature which guides which social elements being analysed in a SROI research. Contrary to CBA, SROI framework uses the perspective of involved stakeholders via a stakeholder engagement exercise; where the stakeholders can articulate their concerns as well as point out the areas of benefits they enjoy; thus, the SROI analysis can focus on those areas. (Yates and Marra, 2017). This approach is claimed to be beneficial as it integrates different stakeholders' or interest groups' different views regarding the impact of the evaluated program. (Herman. et. al,2009). Then there is the societal viewpoint which tries to collect the costs and benefits for the collective society (Herman. et. al,2009). As mentioned earlier using stakeholder involvement to guide the material topics is not a novice approach as it has been the key feature for sustainability accounting methods as GRI. (Nicholls, 2017).

The second feature controlling the SROI analysis is materiality. It was borrowed from accounting. And by which only the information that is material is included. Material information is the piece of information that if omitted there would be a misrepresentation of the impacts and can yield a change in the decision of an involved stakeholder. (Nicholls et al., 2009, Nicholls, 2017).

After the materiality exercise is conducted and to pinpoint the focus area of the SROI analysis within the vast social and environmental impact landscape, assumptions need to be developed, documented and tested (Herman. et. al,2009). The assumptions will be monetized using financial proxies to demonstrate the theory of change as discussed earlier in the SROI procedures. These assumptions around the theory of change as well as the indicators used requires careful judgement as the choice of indicators might be limited by the ability to produce good quality data, resources availability and time constraints (Arvidson,et.al, 2013).

That being said, good quality data considers the challenge of deadweight and displacement. Starting with the deadweight costs which refers to activities that was prone to happen regardless the activity subject to the SROI analysis was done or not. For instance, successful applicants in job finding assistance programs contain a proportion of applicants that would have worked with or without that job finding assistance program. This portion of people are referred to as deadweight. On the other side accounting for displacement means considering the people that were denied the opportunity to work from outside the program due to the successful candidates from the program. Furthermore, good data entails accounting for future changes in outcome as the projection of the future outcome of the program might increase or decrease over time. (Arvidson,et.al, 2013).

Financial proxies used to produce good quality data utilizes control groups as a method of determining relatively precise deadweight and displacement percentages. Nevertheless, this comes with time constraints and availability of resources. Thus, controlling the used financial proxies requires the application of standardized data bases -secondary data- that can facilitate comparability of figures, but standardization is pretty much at its infancy (Cooney, 2017, Krlev et al., 2013), which emphasizes the role of audit and verification of results as elaborated on earlier in the SROI procedures. The role of ensuring quality data is not only a part of the end report – final audit as discussed in the previous section- but also assurance has a role within conducting the report. The assurance and verification within analysing the activity aims at avoiding the tendency to exclude information based on personal beliefs or driven by personal motivation and avoid the tendency for overclaiming the positive impacts. For instance, excluding some negative impacts of the activity based on the argument of the impact being out of the scope of the activity or exaggerating the weight of a positive impact within the assumptions. Hence carrying out sensitivity analysis to check how the results change based on changing the underlying assumptions is crucial to validate the robustness of the assumptions made. The sensitivity analysis importance comes from validating the assumptions, especially as the evaluation relies highly on assumptions. (Herman. et. al ,2009, Nicholls, 2017).

Another feature is the diverse functionality of SROI, which was briefly discussed in the previous section, 2.5.3. Where Krlev et al. (2013) suggested based on a conclusive literature review, six purposes for SROI analysis. They are decision making, professional analysis, continuous improvement, money sourcing, accountability by regulators and providing legitimacy to the society (Maier et al, 2015). Whereby and based on the scope of the analysis, an SROI analysis can cost between 4,000 British Pounds till several hundreds of thousands of Pounds when conducted by consultants (Lyon et al, 2010) and can be free using free social calculators online, though their credibility is highly questionable. Furthermore, workload figures reported was between 19 to 38 days to conduct those analysis (Maier et al., 2015).

These figures are hard to interpret as no scope was provided nor complexity of the analysis, yet it can be concluded that conducting an analysis using SROI can be considered resource intensive.

This diverse functionality arrives from the ability of SROI to deliver evidence of the expected or incurred value returned from an investment. This evidence can be valuable in providing credibility to the society through communication and marketing of results (Lyon and Arvidson, 2011, Maier et al, 2015) and decision-making processes of interested investors for instance. Where SROI works as a tool for investors with social agendas to evaluate the outcome of their grants or investments (Maier et al, 2015, Cooney, 2017). As more informed decisions can be based on the cost of the investment as well as the expected delivered return. Besides SROI can act as an internal communication tool for management to inform employees of the positive impact they produce as a motivational technique (Krlev et al., 2013, Maier et al., 2015).

Moreover, SROI analysis can act as a continuous improvement tool, where organizational learning can capitalize on the process of the SROI as digging deep for the information and proxies educate the organizations and employees involved about their yielded impact (Arvidson et al., 2013, Maier et al, 2015), thus opening the door for performance measurement and development of indicators that can track the project impact and suggestions to improve that impact as well as room for suggestions to decrease costs involved. (Lyon and Arvidson, 2011, Krlev et al., 2013) thus the costs can be more efficiently utilized as well as benefits can be maximized. (Herman. et. al,2009). Finally, SROI can also attract funds for Non-profit organizations (NPC. 2010) through showcasing achievements. (Lyon and Arvidson, 2011). This concludes the main features and uses of SROI, in the next section of discussion, a more focused approach will be used, starting with pinpointing the uses that can be adapted in banks credit risk management efforts. Followed by a critique of each distinctive feature in SROI and understanding its limitations and potentials within CRM scope.

Chapter 3: Discussion

The third chapter of this research attempts to discuss the capacity of SROI as a tool to assist Credit risk management in banks to take more informed decisions. Thus, SROI capacity to deliver relevant information within the discussed CRM framework and the ability of SROI features to deliver the purposes of the CRM stages will discussed based on the conducted extensive literature review and shall be conducted on two levels. The first level is discussing the applicability of social impact quantification within the credit risk management. The second layer and the most important is reflecting on SROI features and whether they can fit within the requirements of Credit Risk Management stages.

3.1Social Impact evaluation level

As banks attempt to integrate non-quantifiable social aspect within their credit risk management procedures, it is critical for risk professionals to comprehend the overall complexity of capturing the externalities of the borrowers. On the positive side using SROI or any other social impact quantification framework or tool encourages decision makers in banks to consider the broad potential values and costs on the entire society based on the borrower's business (Cordes, 2017). Whereas decision makers will consider the information that shed a light on the borrower's probability of default.

Nevertheless, whether the scope risk professionals are looking for is focused on the whole society or just the borrower's probability of default; quantification yields several challenges. Four specific reasons complicate the capturing of the social impact process. The first is the ambiguity of the impact triggers, as corporations do not operate in a vacuum, several factors can lead to the same impact and this makes it very hard to pinpoint a causal relation between an act by the corporation and the direct impact on the surrounding environment. The second reason is the quantification of externalities as happiness, wellbeing, independence, or the "feeling of warmth and security" in the case of street children (Maier et al., 2015); are very hard to capture and quantify. Third, the prevailing notion that any positive impact yielded from the actions of firms should be accepted without regards of its impact or opportunity cost. And finally, it is difficult to create universal tools or methods that fit completely different types of sectors of manufacturing or services. (Krlev et al., 2013). Adding to these challenges, any social impact evaluation can be tailored, (Arvidson,et.al, 2013)thus, a conflict of interest can be created and the credibility of the evaluation can be easily questioned, especially if financing through loans is on the line. These five challenges are across all tools of social impact quantification.

On the other side and as shown in the section titled CRM procedures, tools and methods used in CRM uses financial information that are specific and not ambiguous as they account for quantifiable transactions as sales and return on sales and base the future forecast on historical trends of the borrowers. This is not to say that used models in CRM are flawless, the Value at Risk (VaR) model that is the basis of Credit VaR tool - mentioned in CRM procedures section – tends to underestimate the probability of default with a percentage that falls between 21.7% and 1.8% on average. This error is partially corrected using an uncertainty coefficient (Yuen Liu, 2011) For the sake of percentage comparison, a comparable study using the SROI approach was not found. Furthermore, historical data used within the approaches of CRM are validated by a third party, which does not eliminate the conflict of interest factor but decreases the probability.

Based on the above, all tools attempting to quantify social impact face the same mentioned hurdles, SROI is not different than the other quantification tools. Thus, these challenges will not be the basis for answering the research question. Moreover, the decision to integrate social quantification tools within the bank's business model can rely on the strategy of the bank or the regulatory environment in which the bank works and this research is not capable of answering that question as the literature review did not delve into the details of the strategy and regulations as mentioned in the section titled credit risk management that both scopes – regulatory and strategic- are out of the scope of this research. Therefore, this level will not be reflected upon while attempting to answer the research question, as this level will not help answer whether SROI can be applied in banks CRM procedures as these hurdles are common with all other tools. Thus, the level of overall pros and cons for social impact evaluation methods will not be pondered upon while answering the research question.

3.2 SROI specific level

This section of the discussion is concerned with the specific features of SROI and its compatibility with the credit risk management stages objectives. However, before checking said compatibility we need to recognize that the practice of integrating social and environmental risks within banks practices is on the rise. The viability of externalities integration within the risk framework of the banking industry is not the scope of this research yet elaborating on the current approach towards integrating social and environmental risks within CRM will act as the current alternative used by banks.

Currently banks use a couple of approaches to factor in social and environmental issues within the decision-making process. Starting with the exclusions approach, sometimes referred to as negative screening; where banks does not grant loans to specific sectors that are deemed controversial by the public opinion which changes over time. These excluded activities are listed by donor organizations and global organizations as the IFC and is considered a regular practice for banks pursuing a more environmental and social friendly portfolio. An example for these lists is the exclusion list by IFC which defines the types of projects that IFC does not finance. The list is copied directly from the IFC website and is as follows:

- Production or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements, or subject to international bans, such as pharmaceuticals, pesticides/herbicides, ozone depleting substances, PCB's, wildlife or products regulated under CITES.
- Production or trade in weapons and munitions.
- Production or trade in alcoholic beverages (excluding beer and wine).
- Production or trade in tobacco.
- Gambling, casinos and equivalent enterprises.

- Production or trade in radioactive materials. This does not apply to the purchase of medical equipment, quality control (measurement) equipment and any equipment where IFC considers the radioactive source to be trivial and/or adequately shielded.
- Production or trade in unbonded asbestos fibers. This does not apply to purchase and use of bonded asbestos cement sheeting where the asbestos content is less than 20%.
- Drift net fishing in the marine environment using nets in excess of 2.5 km. in length. (IFC, 2018).

The other approach can be considered more active than the negative screening - they can both be integrated together -, where some environmental and social criteria are used to internalize the externalities of the bank's borrowers in the decision making of granting a loan. The method used to integrate these criteria within the credit risk management is through establishing a social and environmental management system. The system follows the CRM structure starting with the screening or identification stage which includes filling questionnaires by clients to collect vital environmental and social information; referred to as E&S questionnaire. Background check related to historical social and environmental breaches, lawsuits and fines of the borrower. Collecting information is done through client site visits or public information as borrower's sustainability reports, sustainability ratings, sustainability indices and media research or direct contact with relevant authorities and civil society organizations.

Following the information collection, mitigating efforts take place, where monitoring and control procedures are assigned based on the nature, significance and likelihood of borrower's social or environmental risk occurrence. Sometimes the mitigation efforts would warrant an extensive internal or external analysis by an external E&S expert[4]. The assessment stage recommends methods for social and environmental risks mitigation and establish tailored measures and covenants[5] to be followed for monitoring and controlling the borrower's environmental and social performance and consequently risks. (Equator Principles Association, 2011 & IFC, 2012).

The two approaches do not lead to a specific value but rather developing an understanding of the borrowers' social risks. The system is not perfect as concerns about creditability of the questionnaires and the ability of the system to systematically point out the risks as well as costs and time limitation makes the E&S system a work in progress as quantification and comparativeness are not the aim of the social and environmental management system. Whereas The social and environmental system was not dissected in this research as it highlights the positive or negative externalities, but it is incapable of measuring those externalities.

The literature review provided an insight regarding the main features of SROI and CRM procedures stages and their objectives. In this section the sequence will be adjusted slightly to provide a specific critique to the tool. The sequence will start with discussing the purposes of the SROI and singling out the forms that can be utilized in credit risk management based on the requirements of each stage in the procedures of credit risk management. The other features namely: materiality, stakeholder engagement, verification of results, monetization and the use of financial proxies and theory of change will be critiqued as well then reflected upon using CRM stages requirements.

[4] The external expert is used if the loan or project is over a specific limit determined by the bank, yet borrowers in most of cases of embarking in mega projects will need to conduct a social and environmental assessment to attain the regulatory approval.

[5] Covenants are conditions precedent for disbursement of funds or contractual agreement.

3.2.1 Types and purposes of SROI

Externalities assessment is usually either evaluative or forecast; the Social Return on Investment (SROI) provides both. Forecasting application of SROI studies is highly in demand in practice, though the majority of conducted public studies are evaluative with a 65%, versus 30% forecasting studies and 5% combining both. (Krlev et al., 2013). That being the case of SROI, the framework can be applied for different varieties and using different scopes. For example; SROI can cover the social value created by an organisation as a whole – as a social enterprise with a specific activity - or focus on a specific aspect of the corporation's activity (Nicholls et al., 2009). This mixture makes SROI works as a candidate for CRM, as it was shown in the literature review that CRM uses both evaluative and forecasting techniques to determine the credit risk of the borrower. Nevertheless, the tool is oriented towards quantification of the impacts of a specific activity, borrowers can engage in several activities especially the larger the organization is the larger the activities it engages in. On the other side, CRM assesses the borrower's organization as a unit without narrowing down to a specific activity. Hence the first limitation for implementation; the focus of SROI on an activity.

On another front and as mentioned in the literature review; the six purposes for SROI analysis are decision making, professional analysis, continuous improvement, money sourcing, accountability by regulators and providing legitimacy to the society. On the Credit Risk management side there are three stages for the procedures of CRM. The three stages are Screening, analysis and control. The first stage attempts to identify credit risks, the second assesses clients in a consistent manner and the third monitors borrowers for early signs of credit risks. Cross-analysing both the purposes of SROI and the CRM stages; the research will stay away from the topics raised in continuous improvement as well as accountability by regulators and providing legitimacy to the society. Hence the rest of the discussion will mainly focus on the decision making, professional analysis and money sourcing capacities of SROI.

3.2.2 Materiality

The second feature under discussion would be materiality which seems like an elusive expedition where the lack of definitive criterion as well as the urge to monetize (Krlev et al., 2013) will negatively impact the SROI analysis, especially with the incentive of money sourcing from the banks. As materiality for SROI crucially depends on the judgement of what is material as there is no need to account for “every” argued material impact, hence judgement is inescapable in SROI analysis (Nicholls, 2017). However, choice of material issues as well as the dispute about the results is a shared concern with other social impact quantification tools, for instance Life Cycle Costing (LCC) shares the same difficulty of validating the choice of issues as well as the ongoing dispute on data transparency (Krozer, 2008). – data transparency will be discussed below in 3.2.4 - As the issue of materiality is a common concern across the social impact tools, we can refer it to the overall social evaluation level as a general concern for the discipline of externalities quantification. Yet the importance of drafting the material social aspects from the perspective of CRM i.e. what are the social aspects that can cause the borrower to default; is considered relevant to the tool specific level.

3.2.3 Stakeholder Engagement

The third differential feature is the Stakeholder engagement in SROI which attempts to include relevant stakeholders on the contrary of other tools like CBA which tackles the whole society (Yates and Marra, 2017). Nevertheless, amassing the buy in from external stakeholders to provide the costs and benefits is challenging and difficult. For instance, convincing the stakeholders of publicly sharing the information or sending the information to third parties – as banks- is not a guarantee. (Herman. et. al,2009).

3.2.4 Verification & Audit

The fourth feature within SROI is verification and auditing. Verification in SROI uses sensitivity analysis to curb the effect of overclaiming. However, about 50% of the published studies did not undertake sensitivity analysis or explained in a comprehensive manner their sensitivity analysis (Krlev et al., 2013). Furthermore, auditing at the end of the analysis would add costs to an already expensive process (Maier et al., 2015). As evidence to negate or assure the assumptions is time consuming especially if data is it not readily available and peer reviewed in existing literature. As these assumptions that are not readily available in literature needs to be developed, documented and tested to ensure their validity (Herman. et. al,2009).

However, verification and auditing for quality data is not a new topic, researches concerned with other quantification tools also can provide insight for SROI, for example Yoram Krozer (2008) in his research about Life Cycle Costing asserted that there is no simple solutions for data transparency and proposed the solution of controlled experimentation as well as using second opinions. Whereas Herman. et. al (2009) remarked that all evaluation techniques improve via repetition of application across different programs as well as repeating the evaluation several times on the same project but in different time spans. The verification aspect of the tool is directly linked to what is being verified which is the last and arguably the most debated feature of SROI which is its monetization feature and its use of financial proxies.

3.2.5 Monetization & Comparativeness

Cooney (2017) argues that one of the promised future abilities of SROI is to compare across different sectors giving SROI an edge as investors can compare their investment opportunities and scale up on their social impact. This comparability is based on "monetization" as money is assigned as a common benchmark. Especially, with socially driven investors search for a comparative metric that has the capacity to compare apples to oranges (Cooney, 2017). There are several problems with the notion of monetization as a benchmark, starting with notion itself as monetization of social value can lead to a business-like mentality. For instance, some investments in social value are critical regardless of the high or low monetized value it produces (Cordes, 2017). Furthermore, Nichollas et al (2009) and Krlev et al. (2013), agreed that SROI analysis in its current form is not capable of comparing two organizations outcomes even if both organizations operate in the same sector, it was suggested by both authors that one main reason for that is the lack of a comprehensive database for financial proxies and indicators which raises the points of standardization – will be discussed thoroughly below- and the comprehensiveness of the indicators which is a common challenge in social evaluation tools in general, which is not the focus of our research as discussed in the social impact evaluations topic.

Based on the standardization argument, SROI cannot allow for comparisons between different activities or organizations if different proxies and indicators were used. (Arvidson,et.al, 2013). As SROI aspiration to be a tool for investors to compare between projects according to their social value is not met at the time being. As it is difficult building a tool that provides a datum line-through a common unit of measurement, i.e. the SROI coefficient- for comparing social value between different activities (Cooney, 2017).

To conclude, comparativeness is a major appeal for using SROI ratio, though the process itself of acquiring the ratio should be the focus. SROI ratio cannot be used on its own as a comparative ratio, rather the ability of SROI to create a narrative or a story of change is the way to utilize the capacities of SROI tool. (Cooney, 2017). Funders can use that as a reassuring evidence for the positive or negative impact of an activity (Maier et al, 2015). For the time being banks can only use the story telling ability of SROI so that SROI is only used to measure value and not just a tool to value measures as Luke et al. (2013) warned users of social impact quantification tools, as the tool itself cannot be simplified to the SROI figure.

After discussing the comparativeness of the SROI figure, how was the figure concluded will be the focus next. As the fixation on the SROI figure tempts analysts to be more adventurous in their assumptions regarding the financial proxies used or the quantity of people impacted or the impact itself on the people. In other words, conductors of SROI analysis may find themselves seeking higher figures and higher impact on the people as high SROI figures are congratulated, thus the financial proxies will not be precise. (Krlev et al., 2013). Risks of cumulative assumptions is high and with funds at stakes sometimes (Arvidson,et.al, 2013) SROI conductors can decrease the negative impacts. As negative outcomes were rarely addressed in the published SROI analysis. (Krlev et al., 2013). Moreover, as subjectivity of the analysis can be viewed from the theory of change which shows the impact creation, 45% of published studies did not include an impact map in the first place in their SROI report. (Krlev et al., 2013).

Another factor that can affect the SROI calculation heavily is the time value of money, as there are futuristic costs and benefits that needs to be accounted for to measure the SROI, these futuristic values need to be discounted to the present. Choosing the appropriate discount value is a choice of the conductors of the analysis (Cordes, 2017).

The aforementioned topics highlights the fairly large number of variables using the conductor's judgement and choice (Arvidson,et.al, 2013). It is no wonder big differences can appear in the result. And with a focus of end figures and hitting targets in the business world, it can be manipulated. (Cooney, 2017). For instance, the slightest difference in assumptions can change the SROI coefficient for the same activity as illustrated in Cooney& lynch-Cerullo (2014) research from 1.16 $ to 6.07$. With this high amount of variance reliance on the conductors' skills level is high. These concerns highly question the SROI analysis output and it reliability to be used as a factor in Credit Risk Management.

Furthermore, the influence of the conductors of a subjective analysis cannot be underplayed, as even in already structured analysis, conductors opinion changes a lot as shown by Thakor (2016), as he noticed that banks do not treat credit risks/returns the same way during economic booms or busts. In other words, the same credit risk in an economic bust is charged more interest than in an economic boom; Bekaert et al. (2013) provided evidence that a partial reason for that comes from the risk aversion mode for bankers in bust times as the lending standards can vary based on the overall performance of the economy. In other words, credit terms become more lenient during expansions and more stringent during recessions based on the market sentiment and the bankers' sentiment that the economy conditions will be more in the favour of the borrower; thus, less risk is assigned. This example shows that even within a very structured methodology to arrive to results, results will be subject to personal sentiments, considering the subjective nature of SROI, this tendency will severely impair the credibility of the end results of a subjective tool as SROI.

The third aspect with the monetization feature is its demanding of resources. As the required resources to collect the required information will pose as a significant challenge for small entities. (Krlev et al., 2013). Whereas the most common techniques for collecting primary data for SROI analysis are interviews, records, focus groups, questionnaires, seminars and workshops. (Nicholls et al., 2009). Cost wise as referred to earlier in the literature review varies from zero for online evaluators to hundreds of thousands. This high cost to conduct a tailor fit analysis makes it very costly for small and medium size borrowers. For instance, identifying causality relationships using control groups is costly to obtain and not always achievable. (Krlev et al., 2013). As for the time factor, it is hard to be conclusive on the time factor, as the time required to develop the SROI analysis depends on the scope of the analysis (includes objective and target audience), the skills of the analysts, data availability and credibility. Evaluative analysis can take up to several months based on the availability of required data. However, there is time limitation for banking decision making process. Time that is consumed to produce and analyse critical risk information can delay taking decisions for financial institutions which subsequently increases opportunity costs as borrowers will go to faster financial institutions (Bouvard & Lee, 2016). In other words, time is of critical essence for banks and a balance is required between attaining the vital information and the time it requires.

The considerations of comparativeness, adventurous accounting, costs and the timely manner of conducting SROI gave importance to the standardization of the SROI analysis, noting that standardization requires a significant investment in the SROI database. (Cooney, 2017), where currently there are efforts for developing said databases championed by SROI Network, yet it seems problematic in countries that do not possess extensive information databases or in sectors that are considered niches or unpopular by funders. (Maier et al., 2015)

Thus, learning from older experiences as CBA to conduct better SROI analysis by extrapolating available estimates from similar benefits readily available in older analysis; giving way to a variety of plug in inputs that will be readily available, so time and resources can be saved (Cordes, 2017) seem to be a starting point for standardization. As mounting experience helps in getting consensus around the financial proxies faster. (Maier et al., 2015). Though standardization seems promising, yet it is early to judge its ability to fulfil the potential of the SROI tool or overcome the discussed challenges.

To conclude the discussion segment, a helicopter view for change was summarized by Nicholls (2017) where he suggested four factors that can lead an organization to embrace the change in a product, service or process, they were;

- Cost of change;
- Costs of reverting back to the earlier mode if the new mode did not perform according to expectation;
- Costs to stakeholders;
- Risk of incomplete, too general or inaccurate information.

In the case of banks using SROI as their tool of choice to understand the social impact of their borrowers will be very costly for each client whether the bank bares the cost or the borrower, the cost of going back to the old mode is not high as the banks will revert back to not quantifying the social impact of their borrowers, yet banks interested in adopting SROI will face the risk of incorporating an under development tool with a general scope and a lot of unanswered questions.

A counter argument would be the applicability of SROI within large infra structure loans as the borrower will have the means to conduct the SROI assessment. In that case, the borrower needs to be convinced first of the need to conduct an extra assessment, as in mega projects governmental approval would have already required some sort of environmental and social assessment. Moreover, the comparability feature will render less useful as borrowers of such magnitude are very limited, for instance ING bank (the Dutch bank and the tenth biggest bank in Europe by total assets) only reported three cases for infra structure financing in 2017 (ING, 2018); this minimal number of cases would make it hard to sell the adoption of SROI for only mega infra structure loans and change how banks already deal with non-financial risks, specifically social and environmental risks, therefore this research was addressing a flow of credits (procedures) rather than large credit with large societal impacts (e.g. infrastructure large industry)

Especially the question of how banks can quantify non-financial risks. SROI as a tool attempts to monetize these risks. However, pushing monetization in the ongoing stages of SROI tool development will not improve the quality of SROI analysis (Krlev et al., 2013). Lending the tool to banks which are figures driven will not aid the development of SROI as a transparent tool as financial gains will be an incentive for borrowers to manipulate conducted SROI analysis to present for loans.

4. Limitations and suggested research

The research scope was limited to the applicability of using SROI as a tool for credit risk management. It dealt with the practice of both disciplines, the credit risk management and the tool of Social Return on Investment. It did not delve into the theoretical background for Credit risk management as theory of risk pooling and hedging nor into the theoretical background for SROI tool as evaluation theory. Furthermore, the research explicitly stated its distance from any regulatory or strategic consideration for the application of SROI within the Credit Risk management, thus it did not probe into the challenges of quantification of the non-financial risks and only focused on the distinctive features within the SROI framework.

As SROI analysis can enhance from integrating available knowledge from external fields (as drawing knowledge from the field of social psychology in the personal indicators) (Krlev et al., 2013), studying how the existing body of indicators in the banking industry can help in sharpening the results of SROI analysis would be recommended. For instance, banks conduct sensitivity analysis on regular basis, thus methods to improve SROI sensitivity within the scope of analysis can be helpful. Furthermore, banks possess large databases to assess their borrowers, methods of channelling these databases to standardize the information used in SROI analysis can be helpful for the advancing of the tool.

5. CONCLUSION

This research was conducted to explore the possibility of using SROI as a social and environmental impact quantification tool within credit risk management activities in banks.

To find the answer for that exploratory question a thorough literature review was conducted to specify the stages of credit risk management procedures while highlighting each stage objective and to specify the SROI distinguishable features. The discussion section explored the use of SROI features within the requirements of CRM and CRM stages. It came up with the conclusion that in the current form SROI cannot be integrated within the CRM procedures because of the cost limitation, time constraints, lack of incentives for measuring the social impact, scarcity of expertise, lack of processes to attain quality data along with lack of standardization which results in the difficulty of comparing organizational social performance.

Yet the suggested adaptation picture for SROI -or other social and environmental impact quantification tool - in banks CRM would be;

- ➢ The tool can quantify the externalities of the whole business of the borrower, not strictly quantifying the externalities of an activity.
- ➢ The tool has the following functionality; decision making, professional analysis and money sourcing abilities and will integrate evaluative and forecast measures together.
- ➢ The tool integrates standardized material indicators that can function as an early signal of defaults. These indicators that signal defaults needs further research.
- ➢ The tool uses verified theories of change and verified impact maps, their verification came through repetition and academic research

- The tool is using an accredited standardized auditing method, where;
  - A comparative standardized database is created; that will be achieved at the cost of the tool flexibility
  - Adventurous accounting methods are controlled
  - Time span used considers time value of money properly
  - Conductors of the analysis are skilled and objective through a specific accreditation
  - The process is not resource intensive
  - Time consumed in preparing the analysis is according to the time limitation of banks.

Based on the above visualization of the tool adaptation, SROI as a tool has a long way before being used in the lending businesses, yet for the time being banks can apply evaluation methodologies like SROI in their CSR endeavours.

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