Loans4SME

Lab Instrument Analysis

October 2016

The India Innovation Lab for Green Finance is a public-private initiative in India that brings together experts from government, financial institutions, renewable energy, and infrastructure development to identify, develop, and accelerate innovative investment vehicles for green growth in India.

Loans4SME

INSTRUMENT DESIGN AND ANALYSIS
October 2016

DESCRIPTION —

A financing facility that would provide debt financing to small and medium enterprises (SMEs) for renewable energy and energy efficiency initiatives.

GOAL —

To provide access to finance for SMEs and unlock new capital for their finance requirements.

SECTOR —

Renewable energy and energy efficiency

PRIVATE FINANCE TARGET —

High net worth individuals (HNIs), banks, institutional investors

1. CONTEXT

Small and medium enterprises require USD 44 billion in debt financing, to 2022, to harness the opportunities presented by renewable energy and energy efficiency initiatives.

1.1   THE NEED FOR PEER-TO-PEER LENDING

Bank lending is the most common source of external finance for many small and medium enterprises (SMEs) and entrepreneurs, who are often heavily reliant on traditional debt financing to fulfill their initial capital requirements, working capital requirements, and other investment needs. However, these entrepreneurs must contend with a banking system that has traditionally relied on collateral and past track records as key decision factors. As a result:

- There are high rates of default and non-performing assets (NPAs) in the banks' records and thus they have become increasingly conservative in taking on new exposure. Most renewable energy companies fail to meet their stringent lending criteria such as the requirement for at least three years of profitability.
- First generation entrepreneurs often do not have real estate to offer as collateral.
- Banks are not fully aware of new technologies or asset light businesses, and are generally wary of taking credit exposure on these companies.
- Turn-around times for loan sanctions are currently several months, resulting in companies missing out on opportunities.

These conditions have limited lending to SMEs in renewable energy and energy efficiency. Large megawatt (MW) scale projects have partially solved this problem by bringing in foreign debt from development agencies and private investors, however, for smaller companies, regulations and the resulting high transaction costs make it expensive to explore this option. As a result, these companies must either raise high cost equity and owners' capital to meet their working capital and other debt requirements or, in most cases, their growth suffers because of lack of capital. A case in point is renewable energy service companies (RESCOs). Multiple instances exist where these companies were able to secure orders to set up solar power projects to cater to an institutional customer but were not able to secure funding to execute the project on time.

1.2   THE POTENTIAL FOR PEER-TO-PEER LENDING IN INDIA

Peer-to-peer lending could be a solution to scaling up capital for renewable energy and energy efficiency for SMEs. In particular, it can: (i) expand the source of domestic debt capital beyond banks; (ii) focus on cash flows and repayment capabilities of the projects and create trust in the minds of investors; and (iii) be able to offer timely financing.

There are 48 million SMEs operating in India, (Economic Times, 2013), of which only two million are registered. The estimated potential, or market, for peer-to-peer lending for SMEs in the renewable energy and energy efficiency space can be calculated in terms of their debt requirement as follows:

- **Renewable energy:** In India, the market potential for solar rooftop is 124 GW while the national targets for solar rooftop and off-grid installations are 40 GW through 2022 (MNRE, 2015). Assuming that by 2022 the potential for solar rooftop installation for SMEs is 40% of the national target, with the other 60% installed in other sectors, like households, the potential turns out to be 16 GW. This assumption is based on the fact that the SME sector in India is energy intensive and has enormous need for cheaper power. The debt funding requirements for solar rooftop installations for SMEs is then USD 11.78 billion.
- **SMEs with engineering procurement & construction (EPC) business models:** This is the financing required by SMEs that operate as EPC contractors that would be undertaking renewable energy and energy efficiency projects for the SME sector. The total debt funding requirement through 2022 for this group is USD 28.26 billion.

- **Energy efficiency:** Energy efficiency is an unorganized, prospective market for SMEs and to estimate the debt funding requirement we have relied on an external study (ADB, 2013). Based on this study we have estimated the debt financing potential for SMEs in energy efficiency to be USD 3.97 billion up to 2022.

1.3   MARKET AND REGULATIONS FOR PEER-TO-PEER LENDING IN INDIA

Peer-to-peer lending practices in India are at a very nascent stage with just close to 30 platforms operating in India (RBI, 2016). These platforms target micro-finance activities with a focus on improving access to capital for entrepreneurs engaged in small business activities. One of the biggest advantages to these consumers has been cost effective capital as compared to unorganized lending options. Most of the peer-to-peer lending platforms are based on the reverse auction business model. More than 400 million people have accessed capital through traditional peer-to-peer lending practices (Livemint, 2015).

Unlike in the U.S, in India, peer-to-peer lending practices are currently unregulated. In April, 2016, the Reserve Bank of India brought forward a consultation paper on the need to regulate peer-to-peer lending practices, and also suggested a modal regulatory regime for such platforms. While having specific regulations would bring transparency and certainty to peer to peer lending business, there is no regulation currently governing peer to peer lending in India. Further, regulations are expected to be introduced only when the market size is considerable enough in India.

For any future regulations, or consideration of regulatory risk, it is important to consider that for most peer-to-peer lending platforms, including Loans4SME, the platform operator is not a party to the loan contract agreed between participants in any way except for matchmaking. The operator doesn't take or accept risks on behalf of either the borrower or the lender. All this is instead supported through a centralized database management system, fully online to aid risk assessment, collections, and enforcement.

2. INSTRUMENT MECHANICS

Loans4SME is a technology-driven business platform that could help expand the pool of available debt capital for SMEs beyond banks to include high net worth individuals, family investment offices, and corporate treasuries through peer-to-peer lending. Utilizing a curated market place that connects prospective lenders to borrowers, Loans4SME will focus on cash flows and the repayment capabilities of the projects in order to increase investor confidence and offer timelier financing.

2.1   PEER-TO-PEER LENDING

A combination of new technology and freedom from regulations means peer-to-peer lenders can offer better interest rates to lenders, and better access to finance to borrowers. In India, peer-to-peer lending is still in early stages.

Peer-to-peer lending (also known as P2P lending) is the large-scale lending of money using an online platform. The practice involves lending money to individuals or businesses through online services that match lenders directly with borrowers. On peer-to-peer lending platforms, potential borrowers apply for credit, receive a credit rating, and post to a listing that investors view. Investors can then choose to fund part of the loan, and are repaid periodically until the loan matures.

These platforms have grown rapidly over the past decade and have advantages and disadvantages for small business owners who are seeking capital. While a high degree of automation with use of technology reduces transaction costs, most of these platforms operate on collateral-free models and therefore are exposed to higher risks.

Figure 1: *Typical structure of peer-to-peer lending*
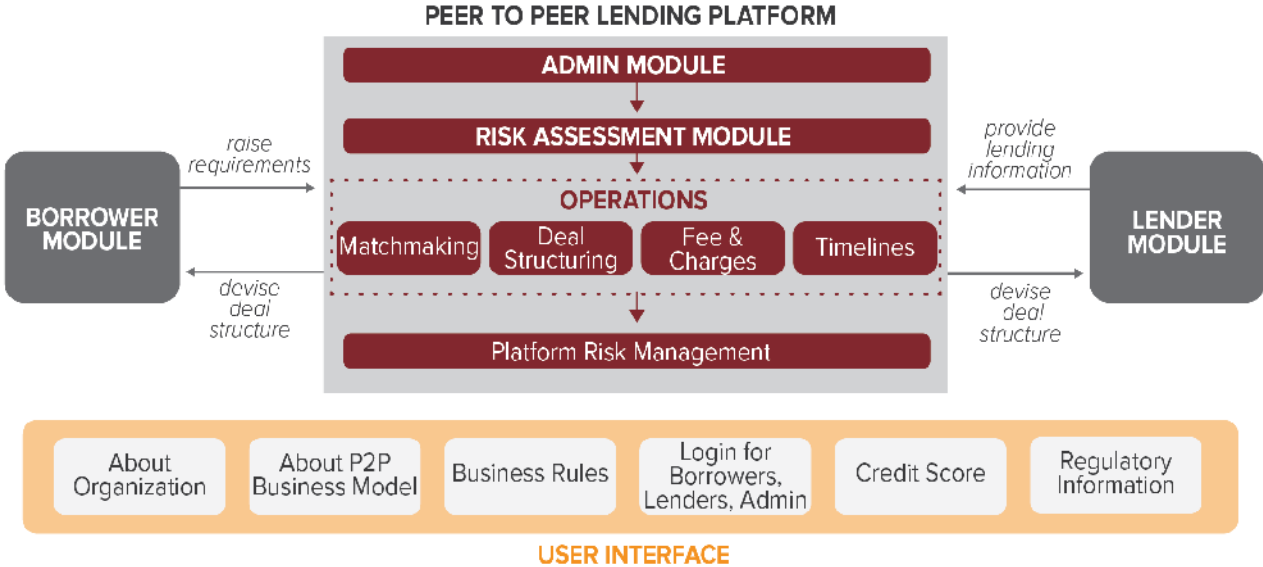
In India, several online portals have sprung up to facilitate peer-to-peer lending, with some even receiving private funding from investors. However, overall, peer-to-peer lending in India is still at a nascent stage compared to countries such as the U.S. and China, and there are no other peer-to-peer lending facilities for SMEs in India that lend specifically for renewable energy and energy efficiency projects (See Section 3).

Peer-to-peer lending differs from traditional lending in that it matches borrowers directly with lenders without assuming any risks as compared to banks, which act as intermediaries assuming all risks related to transactions. In peer-to-peer lending, there is no intermediary between borrowers and lenders, and these entities interact directly while the platform only manages the structure of the deal or supplies the credit rating of the borrower, as is the case with Loans4SME. Loans4SME helps small time borrowers meet directly with lenders through an electronic platform. Loans4SME will operate in renewable energy and energy efficiency to raise debt finance beyond the traditional lenders like banks. Loans4SME is a curated marketplace that will connect businesses with debt providers.

Figure 2: *Peer to peer lending allows direct interaction between borrowers and lenders*

Traditional Bank Financing Model:
No direct interaction between borrowers and lenders

BORROWERS — borrowing request → BANKS
BANKS — loan services → BORROWERS
BANKS ← deposits — DEPOSITORS/LENDERS
BANKS — interest income → DEPOSITORS/LENDERS

Peer to Peer Lending:
Direct interaction between borrowers and lenders

PEER TO PEER LENDING PLATFORM

BORROWERS — borrowing request → LENDERS
states lending terms

The Platform connects borrowers directly with lenders, allowing for more transparent borrowing terms

Figure 3: *Transaction flow and fund flow in peer-to-peer model*

TRANSACTION FLOW

Offer acceptance translates into loan agreement

BORROWERS   LENDERS
Accepts lending terms
Specifies lending terms
P2P LENDING PLATFORM OPERATOR
Matchmaking based on credit rating and lending terms

FUND FLOW

Loan disbursement

BORROWERS   LENDERS
Principal + interest payment
Platform usage fee
Platform usage fee
P2P LENDING PLATFORM OPERATOR

2.2 COMPONENTS OF LOANS4SME

Loans4SME is a technology-driven business platform that connects prospective lenders with borrowers through a curated market place.

Loans4SME will have four main components that interface with each other: a user interface, the borrowers' module, the lenders' module, and the operating module.

Borrowers and lenders interact with each other on the Loans4SME platform through a user interface that can be accessed with valid login details. The operation module has sub-modules: administration, risk assessment, fees and charges, and timeline. There is also a module for managing risks related to platform operations.

The borrower/lender module links users of the platform through a validated login process. The platform administrator performs a Know-Your-Customer (KYC) check of a potential account holder before they begin transactions through the platform. Through the KYC, a user's background on his or her business and financial position are scrutinized. Once that is completed, the administrator conducts a fraud check to ascertain the validity of the account holder. Following that, the account is activated. The user (borrower and/or lender) can log in only after the account is activated by the platform administrator (Figure 4).

Figure 4: *Interaction of borrowers' module with administrator module*
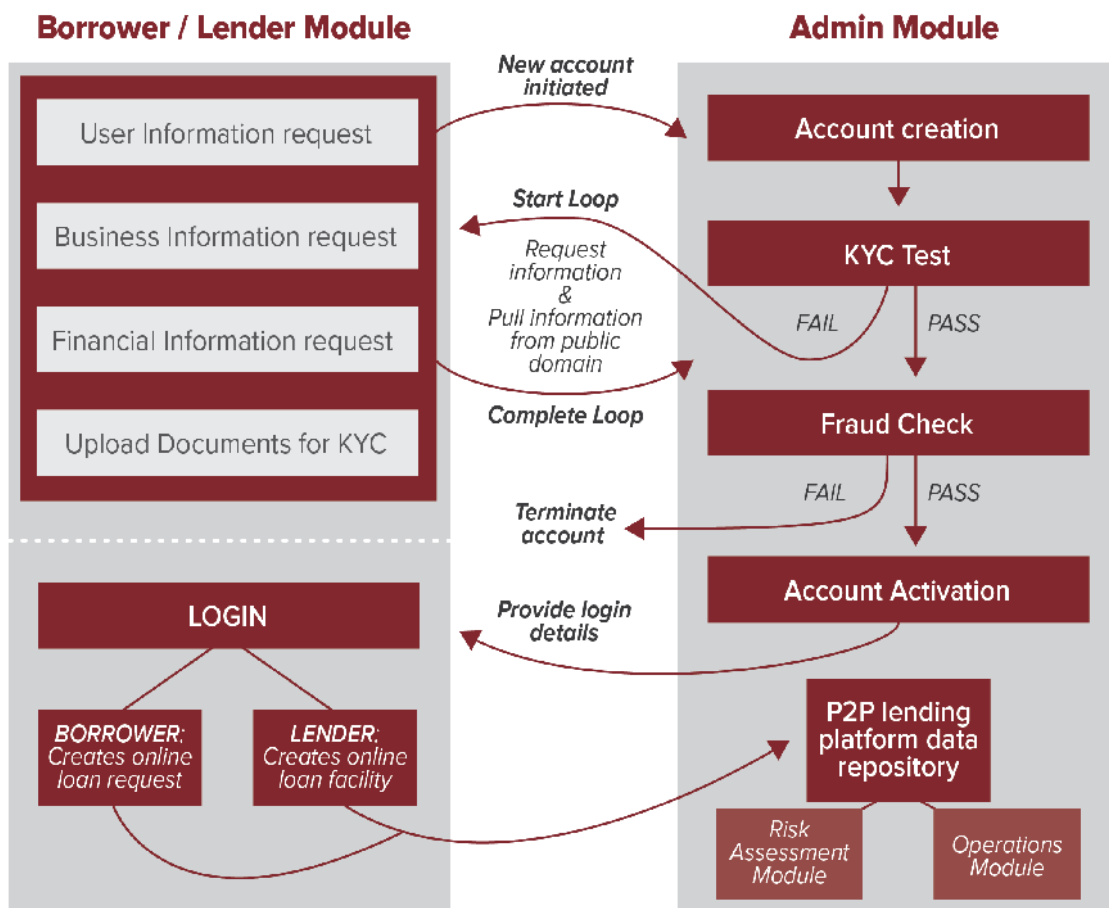
The administrator module interacts with the credit assessment and the operations module. The operations module keeps track of the matchmaking on a first-come, first-serve basis. This means that borrowers are matched with lenders in the serial order of their listings on the platform. No auction can take place on the platform and the match-making is based on timestamping of offers placed by the borrower and seller.

All information submitted to the platform is stored in the platform database, which is managed by the administrator and which can be retrieved on call by the operations module.

2.3 CREDIT RISK ASSESSMENT MODULE

While there is more innovation in credit modeling and underwriting in peer-to-peer lending than traditional lending, poor lending decisions, whether by a financial institution, corporation, bank, or a peer-to-peer lending platform, can lead to significant losses. There is a need for a resilient credit risk assessment mechanism for building lender confidence and also to minimize bad lending decisions and their subsequent consequences.

Loans4SME is supported by a resilient credit risk assessment module (Figure 5) that incorporates a wide range of data elements as compared to traditional credit scoring mechanisms (PwC (2015). Information from the peer-to-peer database is retrieved by the operations module where an analysis of financial data like ratio analysis and other factors like industry risk, management risk, business risk, and financial risk is carried out. Further, an analysis of commercial information including evaluation data like exports, imports, staff, number of collaborators, as well as legal status is carried out. Once the credit score is calculated, it is displayed through the user interface for prospective lenders and is also pushed to the operations where the match-making process starts. Further information on Loans4SME credit risk assessment methodology is provided in Appendix I.

Figure 5: Credit risk assessment module
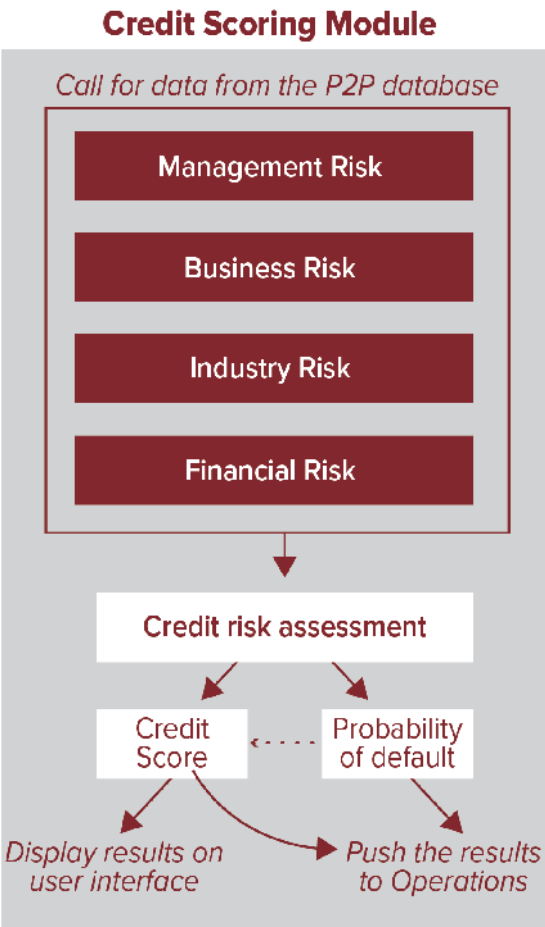
2.4 CREDIT SCORING ALGORITHM

The Loans4SME credit rating model is robust and offers significant advantages over bank and credit rating agency models.

The credit scoring algorithm developed by Loans4SME will provide lenders with a tool to measure the relative risk of all the loans listed on the portal and organize them according to their risk profile. Unlike other credit scoring models, such as Merton Model or Kealhofer, McQuown and Vasicek, Oldrich Alfons Vasicek (2012), which are based on single factor Monte Carlo simulations to calculate distribution of probability of default, the Loans4SME credit scoring model evaluates multiple factors to calculate a score (out of 100) that indicates the riskiness of the loan, relative to the other loans listed. The model is used in conjunction with cash flow projections to form a view on relative riskiness of the transaction. We have also developed a generic credit assessment methodology for SMEs based on Altman's Z-score model using worldwide financial data for SMEs.[1]

---

[1] Please see **Appendix-I** for detailed methodology and credit assessment process.

2.4.1 Loans4SME credit rating working methodology

The model uses extensive data from borrowers and independent data sources to assess the creditworthiness of the borrower.

Data from Borrower	Independent Data Sources/Verification
• Complete set of audited financials • Full accounting downloads • Interview with founders and CFO	• CIBIL • ROC, tax returns and statutory filings • Bank Statements and utility bills • Social Media data • Industry research • Auditor discussions

This data is then used to calculate 94 metrics that have consistently proven as relevant factors contributing to probability of default. These attributes cover five categories:

• Management quality
• Credit history
• Forward-looking financials
• Market potential and operational strength
• Security and expected recovery on default

The model assigns higher weights to forward-looking financials (30%) and management quality (25%). The weights were calibrated during an extensive back-testing of the model with real small business data for SMEs based in India. The higher the score out of 100, the better credit quality a borrower has.

2.4.2 *Validity of Loans4SME credit rating results*

The Loans4SME model has been extensively back-tested with data from small businesses in India across sectors and stages of business. The ideal testing criteria for a credit model is default/no default. However, given that defaults are few and far between, we have tested the model with a proxy hypothesis by observing the free cash flow/debt ratio for two years immediately following the test data. The free cash flow/debt ratio is used to evaluate a company's funds rather than earnings as it provides better insight into a company's ability to pay its debt obligations. Loans4SME results show a bivariate Pearson correlation coefficient of 0.76 between higher scores and better financial and debt repayment performance, which is close to being significant correlation.[2] The credit score from Loans4SME credit scoring algorithm with a bivariate Pearson correlation of 0.76 on data for Indian SMEs works at least as well as Altman's Z-score model, with a bivariate Pearson correlation coefficient of 0.72 on worldwide data for SMEs.[3] Hence, we conclude that Loans4SME credit scoring algorithm that derives credit scores using quantitative and qualitative data is a credible credit scoring algorithm.

---

[2] Bivariate Pearson correlation coefficient of 0.8 or higher is considered significant.

[3] Please see Appendix-I for more details on Altman's Z-score model and generic methodology for credit scoring.

3. INNOVATION AND RISK MITIGATION

There are no other peer-to-peer lending facilities in India that cater specifically to SMEs in renewable energy and energy efficiency.

3.1 INNOVATION

Currently, there are no other peer-to-peer lending facilities for SMEs in India that lend specifically for renewable energy and energy efficiency projects. While there are peer-to-peer lending platforms in other countries for renewable energy deployment, there are two key innovations that differentiate Loans4SME from other peer-to-peer platforms and other debt solutions that currently exist:

- **Assessment:** The proprietary algorithm uses decades of academic research to calculate a score that indicates the risk profile of the loan. Every investor who accesses the platform gets access to complete accounting data, credit history, and business metrics from the borrower. The analytical model then scrapes data from social media and uses hundreds of data points proven to be relevant to credit performance as input for the company's credit score. In addition to generating the credit score, the information is organized so that the most relevant data for lenders can be made available in one go, thereby saving time on processing a loan.
- **Structuring:** Through Loans4SME, borrowers can access not just traditional lenders like banks and non-banking financial companies (NBFCs) but also high net-worth individuals, corporate treasuries, and family offices. Even when investors are convinced about a project, extensive documentation and regulatory compliance requirements are a deterrent for investment to close a transaction. Loans4SME constitutes not just debt structurers but also accountants, company secretaries, and lawyers to ensure that transactions close in a timely manner.

3.1.1 Advantages of the Loans4SME credit rating model

While banks and rating agencies in India most often use a similar multi-factor model to evaluate credit risk and rank borrowers as the Loans4SME model, these standard models typically focus on financial metrics for the past several years. Management and market/sector related factors, if added at all, are generally based on a subjective score that can vary considerably depending on the person running the model. Loans4SME has significant advantages over such bank and rating agency models:

1. **Forward-looking:** Loans4SME uses forward-looking financial data, focusing on adequacy of cash flows to repay debt, rather than just the past three to five years of ratios.
2. **Objective management quality metrics:** Loans4SME uses metrics identified by academic studies as relevant for predicting management quality and its effect on business longevity, rather than one subjective management quality score.
3. **Alternative sources of data:** Most bank and rating agency models rely only on financial data provided by the borrower. Loans4SME pulls in external, validated data from several alternative sources including statutory payments and social media data.
4. **Technology:** Loans4SME uses technology to automate data capture and metrics calculation. Not only does this make the process more efficient, it also reduces the scope for errors.
5. **Calibrated to real data:** Loans4SME has been extensively tested with data from small businesses and the weights have been calibrated to reflect the working environment and data availability for target businesses in India.

3.2 BARRIERS ADDRESSED

Loans4SME will be able to facilitate more financing for SMEs by addressing the barriers of limited availability of finance, demonstrated creditworthiness, and high transaction costs for small deals.

Loans4SME addresses the following barriers to scaling up finance for SMEs in renewable energy and energy efficiency:

- **Limited availability of financing**: SMEs in renewable energy and energy efficiency significantly contribute to India's green growth goals. However, limited access to finance is among the main obstacles to their expansion. Even when banks do lend to these SMEs, they charge a higher risk premium or demand high collateral requirements because of their perceived higher credit risk associated with information asymmetries and lack of collateral to cover this risk. Financing alternatives outside the banking sector are limited. The problem escalates when SMEs look for financing their requirements in the renewable energy and energy efficiency space.
- **Variation in quality and access to information about borrowers**: Entrepreneurs typically possess privileged information on their businesses that prospective lenders or outside investors cannot access easily. This leads to two problems. Firstly, the lender may not be able to differentiate clearly between 'high quality' and 'low quality' companies and projects. In that case, price variables (that is, interest rates) may not work well as a screening device, because high interest rates may lead to an excessively risky portfolio (the 'adverse selection' problem). Secondly, once the lenders/investors have supplied the funding, they may not be able to assess whether the enterprise is utilizing the funds in an appropriate way (the 'moral hazard' problem) (OECD, 2011).
- **Higher risk associated with small-scale activities**: Suppliers of external funds regard SMEs as riskier enterprises for a number of reasons. Firstly, SMEs face a more uncertain competitive environment than larger companies - they experience more variable rates of return and higher rates of failure. Secondly, SMEs are comparatively less equipped in terms of both human and capital resources to withstand economic adversities. Thirdly, there is the problem of inadequate accounting systems, which undermines the accessibility and reliability of information concerning profitability and repayment capacity (John Ackah, 2011a).
- **Transaction costs**: The cost of appraising an SME loan application or conducting a due diligence exercise. For all practical purposes, the following costs are fixed: (i) administrative costs; (ii) legal fees; and (ii) costs related to the acquisition of information, such as the purchase of a credit profile from a specialized agency. In the case of smaller loans or investments, it is more difficult to recoup these costs (John Ackah, 2011b).

Loans4SME has the ability to address these barriers. For the purpose of investigating the ability of Loans4SME in addressing barriers to scaling up finance in SMEs for renewable energy and energy efficiency, we conducted secondary research of peer-to-peer lending businesses. We have rated the effectiveness of Loans4SME in addressing each barrier on a three-point scale (1 indicating low, 2 indicating moderate, and 3 indicating high) as follows:

Barriers	How Loans4SME addresses the barrier	Effectiveness in addressing the barrier
Limited availability of financing	Unlocks new sources of finance (HNIs) through a curated marketplace to lenders, which can be accessed online by borrowers who require financing to invest into renewable energy or energy efficiency. Since this is the mainstay of the Loans4SME facility, it scores high on addressing limited availability of finance.	3
Variation in quality and access to information about borrowers	Information about creditworthiness and financial capabilities of the borrowers is displayed online on the platform, which is easily accessible to the lenders. The platform being an electronic marketplace will provide lenders and borrowers with relevant information and hence the facility scores high on addressing variation in quality and access to information.	3
Higher risk associated with small scale activities	Independent risk assessment is carried out at the platform level that provides an updated account of what are the possible credit scores of the borrowers. Lenders can then choose a deal based on their risk appetite and place offers for lending. The Loans4SME facility apart from providing a market-place also provides independent risk assessment to lenders and therefore it scores high on addressing higher risk associated to small scale activities.	3
Transaction costs in handling SME financing	Being a highly automated platform there is minimal human intervention, which reduces the transaction costs. However, this happens when the scale of operations is very large. In the initial stages, the transaction costs are in the range of 1%-1.5%, whereas ideally to make the desired impact the transaction costs should be below 1% for SMEs. Due to marginally higher transaction costs, the Loans4SME platform scores moderately on reducing transaction costs.	2

3.3 PLATFORM LEVEL INTERNAL RISK MANAGEMENT

Apart from having a robust mechanism to ascertain risks related to borrowers, the management at Loans4SME has indicated a determination to have in place a secure process to mitigate any risks arising out of its business operations. As part of its organizational governance structure, Loans4SME has the following guidelines for its operations:

- Clear, fair, and transparent communications: Loans4SME makes all relevant information about the business, its business model, policies, procedures, and key management protocols available in a transparent manner on its website.
- Secure and reliable information technology systems: Reliability deals with the internal functioning of the Loans4SME platform and market, while security deals with external attacks of possible intruders. Loans4SME employs a dedicated team responsible for

seamless functioning of the system, dealing with internal and external bugs, and any data protection issues that might threaten security or reliability.

- Fair complaints handling: Loans4SME envisages fair and clear complaint-handling procedures and processes, as well as a dedicated customer service and complaints-handling team. This mitigates risk of any unfair treatment to customers, as well as allows improved product quality and associated service delivery, fewer mistakes and less time spent fixing them, better understanding of customers' needs, increased customer loyalty and word-of-mouth referrals resulting in improved business reputation.

- Anti-fraud measures: Participants are required to comply with applicable anti-money laundering regulations and other such anti-fraud measures in line with best practice, such as membership in a fraud prevention service.

- KYC - Know Your Customer checks: KYC is defined under the Prevention of Money Laundering Act, 2002 At Loans4SME, basic KYC is a one-time exercise that would be conducted while enrolling market players that wish to deal in the curated market place offered by Loans4SME. Loans4SME will check typical records such as details of identity, address, financial health of borrower and lender, registration details with Registrar of Companies of India, income tax records, sales tax and service tax records, etc. before registering and allowing the borrower to participate in the online curated market place offered by Loans4SME.

4. IMPACT

Loans4SME has the potential to add 800 MW of solar rooftop capacity and mobilize around USD 2.2 billion in debt financing for SMEs in renewable energy and energy efficiency.

4.1 TRANSFORMATIVE

Capacity Addition

The Government of India aims to generate 40 GW of energy from rooftop solar panels. Our estimates suggest that 40% of this target could happen in the SME sector, which is about 16 GW by 2022. At 5% market share, Loans4SME has the potential for 800 MW of solar rooftop capacity addition.

Greenhouse gas reductions

In the absence of renewables, most of India's energy needs will be met by coal-fired generation. By freeing up finance for renewable energy and energy efficiency, Loans4SME could therefore help lower CO_2 emission by an estimated 1107 mMT (0.93 mton per MWh power generation) per year by 2022. In addition, it would lower SOx and NOx (polluting oxides of Sulphur and Nitrogen) emissions by 3681 mMT and 5146 mMT respectively per year by 2022. We have assumed 1MWh off renewable energy power can reduce lower SOX and NOX emission by 3.09 mton and 4.32 mton. This is based only on the solar rooftop installation potential for SMEs.

4.2 INNOVATIVE

Availability of capital

Peer-to-peer lending, as a whole, can drive roughly USD 2.2 billion of private capital in 2016-17 alone**,** which is 5% of the total (at scale) potential of USD 44 billion during 2016-22.

4.3 CATALYTIC

Assuming that the Loans4SME facility would be able to capture 5% of the total peer-to-peer lending market, the expected mobilization of private finance is USD 107 million in the piloting phase (through 2018). While Loans4SME doesn't need significant public capital, it would require USD 0.46 million of public capital for commissioning the facility. The leverage of private finance through Loans4SME facility is therefore 1:234, which is very high.

In the longer-term, total potential for debt financing through Loans4SME is USD 2.2 billion including solar rooftop (USD 590 million), EPC financing (USD 1410 million) and energy efficiency financing (USD 200 million).

4.4 ACTIONABLE

Loans4SME scores 2.67 (a simple average of the rating of the individual metrics) on a 3-point scale determining its feasibility and is therefore highly actionable (refer to Section 5.1 for details).

5. IMPLEMENTATION PATHWAY

Loans4SME can start operations in under ten months with funding support of USD 460,000. The India Lab can assist Loans4SME in getting the required funding support by connecting the platform to investors.

5.1 IMPLEMENTATION FEASIBILITY

We determined the feasibility of implementation of Loans4SME by identifying seven criteria and rating each on a three-point scale (RBI, 2016a) (1 indicating low feasibility, 2 indicating moderate feasibility, and 3 indicating high feasibility). Loans4SME scores a 2.67.

Criteria	Description	Implementation feasibility
Precedence	There is precedence for peer-to-peer lending in India, which benefits the platform, however this platform specifically caters to the requirements of SMEs in the renewable energy and energy efficiency domain, which means it is not a crowded marketplace; hence rated high.	3
Institutional framework	This facility is not under the purview of any regulations as of now and can be freely implemented, hence it is rated high on this parameter.	3
Dependence on financial markets	This facility is independent of financial markets and aims to unlock new sources of financing, which will add to the size of the financial market, hence it is rated high here.	3

Criteria	Description	Implementation feasibility
Implementing agency	This facility has an implementer in place and is therefore rated high on this parameter.	3
Involvement of stakeholders	The success of the instrument depends on a limited number of stakeholders. Investors are the only key stakeholders for the facility to go live; hence it is rated moderate on this parameter.	2
Timeline	The facility can actually result in a deal in less than ten months; hence it is rated moderate on this parameter.	2

5.2 IMPLEMENTATION STEPS

Identification of implementing agency *(Achieved)*	→	Development of Loans4SMEs lending platform *(3-4 months)* Securing funding for platform *(3 months)*	→	Deal Sourcing *(4 months)*	→	Actual transaction through the platform *(2 months)*
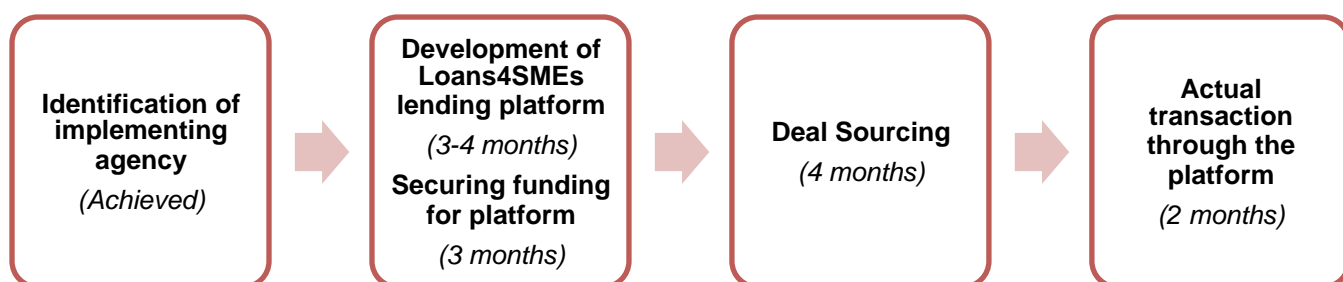
We have identified several critical milestones to implementation outlined below:

- **Identification of an implementing agency** – the creators are the instrument implementers. An implementing agency has therefore been identified.
- **Securing funding for the Loans4SME facility platform** – essentially the implementers would pitch the idea before donors to obtain grants. This process might take three to four months.
- **Development of the Loans4SME facility lending platform** – the technology platform is in place. Scaling it up and undertaking more rigorous testing will take three months. This process will run parallel to securing funding.
- **Deal sourcing** – the first deal might be sourced in four months as it requires marketing and promotion efforts.
- **Actual transaction through Loans4SME facility platform** – once a deal is sourced, a transaction can happen in two months.

5.3 KEY IMPLEMENTATION CHALLENGES AND RISKS

Loans4SME is unique in the sense that it will cater only to SMEs for the purpose of finance renewable energy and energy efficiency. It however faces some implementation challenges and we conducted secondary research on peer to peer lending business platforms to assess the feasibility of implementation of Loans4SME (RBI, 2016b), (SEBI, 2014). We have identified five key challenges to implementing Loans4SME, and rated each challenge on a three-point scale (1 indicating low risk, 2 indicating moderate risk, and 3 indicating high risk) for its severity.

Implementation challenge	Description	Risk
Lack of funding for the platform	Lack of donor capital can delay implementation of the facility or may completely prevent it. The implementing entity has already conducted outreach and is in conversation with donors, hence this challenge poses only moderate risk to implementation and therefore this challenge poses moderate risk to implementation.	2
Credit rating algorithm	The core of the Loans4SME facility is the credit rating algorithm that is perceived to be superior to credit rating models used by banks or other credit rating agencies. The model has however not been stress tested extensively as there is lack of open data. This challenge poses some risk to implementation.	1
Platform integrity	Trust in new online intermediaries is essential for the market to keep growing. Peer-to-peer lending platforms are primarily responsible for maintaining integrity of operations. Further, regulators can also play a fundamental role in this regard, implementing a system to check the integrity of lending platforms, their credit scoring models and their reliability. Since Loans4SME is	1

Implementation challenge	Description	Risk
	willing to implement strong procedures for managing transparency and integrity of operations and the Reserve Bank of India has shown interest and intent in the peer-to-peer space, this is a low impact implementation challenge.	
Prevention of fraud	How platforms identify and prevent fraud is perhaps one of the most important concerns for peer-to-peer lending operators. Even if there is not yet a market-standard solution for this issue, especially at this stage where platforms are still relatively small, it is most likely that as the sector grows, a support network will emerge that will invest in mechanisms that can combat fraudulent activity. Loans4SME has taken all possible measures to prevent fraud and therefore this challenge poses low risk to implementation.	1
Regulatory uncertainty	There is high regulatory uncertainty regarding the overall peer-to-peer lending business in India with no regulations in place. Regulations in the future may adversely impact the functioning of the Loans4SME, and thus this is a high-risk scenario.	3

5.4 CAPITAL AND TEAM REQUIRED

The capital and team requirements for piloting the Loans4SME facility are provided below:

Capital requirement: Details provided in Appendix - II

Source of funds (Rs. Million)					Uses of funds (Rs. Million)				
	2016-17	2017-18	Total	% of Souces		2016-17	2017-18	Total	% of spending
Grant Money	10.00	0.12	10.1	32.5%	Staffing	5.2	19.7	24.9	80.2%
Equity Funding	1.00	20.00	21.0	67.5%	Technology	1.0	2.0	3.0	9.6%
			-		Marketing	1.3	3.5	4.8	15.4%
			-		Capex	2.4	3.0	5.4	17.4%
					Operating Costs	4.3	9.9	14.3	45.8%
			-		Less - Income	- 2.6	- 20.0	- 22.6	-72.7%
			-		Plus Working Capital (2 months)	0.6	0.8	1.4	4.3%
Total Funding	11	20	31.1	100.0%	Total Funding Required	12.19	18.94	31.12	100.0%

			Requirement in $ million	0.46

Team requirement:

Staff number	2016-17	2017-18	2018-19
Management	1	2	3
Investor Relations	2	3	4
Sourcing	2	6	26
Diligence and Monitoring	1	4	18
Tech and Helpline	1	2	3

6. KEY TAKEAWAYS

SMEs in renewable energy and energy efficiency will require USD 44 billion in debt financing to fully harness the opportunities of the sector and contribute to India's green growth goals, however access to finance is currently limited. Loans4SME, a technology-driven business platform, connects prospective lenders to borrowers through a curated marketplace of peer-to-peer lending. It could help expand the pool of available debt capital for SMEs beyond banks, to include high net worth individuals, family investment offices, and corporate treasuries.

- **Transformative**: Peer-to-peer lending has huge potential to mobilize around USD 44 billion in debt financing for SMEs in renewable energy and energy efficiency. The Loans4SME facility, assuming a 5% market share in the peer-to-peer lending market, could lower CO_2 emissions by an estimated 1167 MT (0.98 ton per 1MWh power generation) per year by 2022. In addition, it could lower SOx and NOx emissions by 3681 MT and 5146 MT respectively.
- **Innovative:** Loans4SME can address key barriers for the growth of SMEs in renewable energy and energy efficiency, including limited availability of finance, information asymmetry, and high risk and high transaction costs associated with small-scale lending.
- **Catalytic:** The expected mobilization of private finance by Loans4SME is USD 107 million in the pilot phase. Loans4SME, doesn't need significant public capital, however public finance of USD 460,000 would be mobilized for commissioning the facility. The leverage of public to private finance through the Loans4SME facility is 1:234, which is very high.
- **Actionable:** Based on evaluation criteria of precedence, institutional framework, conformity with existing financial regulations, dependence on financial markets, implementing agency, involvement of stakeholders, and timeline, Loans4SME has high implementation feasibility. Moreover, it can become fully operational, making its first transaction within ten months with the assistance of Lab in securing impact investment/grant funds to make the platform operational.

7. APPENDIX I - ASSESSING THE CREDIT RISK OF SMES

7.1 INTRODUCTION

The poor lending decisions, by a financial institution or a corporate or a bank, or a peer to peer lending platform, can lead to significant losses. There is a strong need for resilient credit risk assessment mechanism for building the lender confidence and also to minimize the poor lending decisions & subsequent financial losses. The lending decisions by the peer to peer lending platform would be supported by a resilient credit risk assessment module. There is more innovation in credit modeling and underwriting in peer to peer lending than traditional lending done by banks. Loans4SME - a peer to peer lending platform in its credit assessment algorithm has incorporated a wide range of data elements as compared to traditional credit scoring mechanisms.

7.2 OBJECTIVE

There are various methods and models available for assessing the credit risk for small and medium enterprises (SMEs) and other large corporates. The objective is to analyze a credit scoring method for SMEs and compare the output with credit scoring algorithm used by Loans4SME. The idea is to test the default prediction performance of the algorithm build by Loans4SME. We have worked on a set of financial ratios for SMEs for assessing the credit worthiness of the SMEs.

There are various methods and models available for assessing the credit risk for small and medium enterprises (SMEs) and other large corporates. The objective is to analyze a credit scoring method for SMEs and compare the output with credit scoring algorithm used by Loans4SME. The idea is to test the default prediction performance of the algorithm build by Loans4SME.

We have worked on a set of financial ratios for SMEs for assessing the credit worthiness of the SMEs. The ideal method for testing the predictive performance of the Loans4SME credit scoring algorithm was to build a credit scoring algorithm similar to the Loans4SME algorithm. The results from this algorithm should have been compared with the Loans4SME credit scoring algorithm.

Due to constraints of data availability and intellectual property rights issues, it was difficult to build a generic algorithm similar to the Loans4SME credit scoring algorithm. Hence, we have looked at other methods to assess the credit worthiness of the SMEs. This involved an analysis of various methods available for assessing the credit worthiness of the SMEs.

There are various models that work on quantitative and qualitative data for SMEs for assessing the credit worthiness of the SMEs as indicated in the literature review of this appendix. Due to lack of quantitative data being available, we have used quantitative data for SMEs from Wharton Research Data Services (WRDS) database, University of Pennsylvania.

In absence of qualitative data for SMEs, we were not in a position to develop a credit scoring algorithm which could have provided similar output as provided by Loans4SME credit scoring algorithm. Our preliminary research suggests that, a credit scoring algorithm built using the qualitative and quantitative data can better assess the credit worthiness of the SMEs. We used financial data for SMEs from Wharton Research Data Services (WRDS) database, University of Pennsylvania.

- We have used Altman's z-score model for assessing the credit worthiness of the SMEs as this model is one of the most widely used method for assessing the credit worthiness of the private firms.
- The Altman's Z-score obtained for SMEs can be easily converted to probability of default and a credit score can be developed further.
- Altman's Z-score model is a credible credit assessment model using only the financial data. However, more robust credit assessment model can be developed that makes use of qualitative and quantitative data for deriving the credit scores.

- The development of a more robust model requires availability of data for SMEs which is not easily available.
- We, therefore need a credit scoring methodology that works well in the Indian context, combining qualitative and quantitative data.

We have used the financial data available with us to calculate the Z-score and then, converting these Z-scores into probability of default. We have also shown the correlation between Z-scores and the probability of default that comes out to be significant. We have also mapped the probability of default with the interpretation of the Altman's Z-scores.

7.3 LITERATURE REVIEW

SMEs operations are very different from large corporates in terms of financials factors and market forces. Hence, the credit risk assessment for SMEs done in a different fashion as compared to the methods used for the large corporates. The availability of data for SMEs is key factor while adopting any credit assessment method.

There are various models available for assessing the credit worthiness of SMEs. These models can be classified into two broad categories statistical models and structural models. Hybrid models can also be developed by adopting more than one technique.

- Statistical models: These are historically specific models and outputs are dependent on the data used to create models. These use historical data on characteristics of issuer (for example, measures of earnings or liquidity) to determine the set of characteristics that best predict the occurrence of the selected outcome. The precise form of the relationship between the inputs and the outcome is specified by the particulars of the statistical model used (Frade J, 2008).
- Structural Models: These are in general based around a stochastic model of variation in asset liability ratio and require market equity data. It is used for listed firms. The examples include the Merton model (Merton, 1974), KMV-Merton model (Dwyer et al, 2004). Moody's default models are based on structural models.

One of the first studies on credit assessment for SMEs was done in 1972 in which 19 financial ratios were analyzed using multivariate discriminant analysis for developing a model to predict default for SMEs for a period from 1954-1969 (Edmister R, 1972).

There have been successful models developed for assessing the credit worthiness of the large corporates which are KMV Model[4] and Altman Z-score model. But, there haven't been a credit assessment model specifically developed for SMEs.

The credit risk assessment for SMEs in India is primarily done using a combination of quantitative and qualitative variables (Sreekantha D, 2013). In absence of qualitative data not being available with us, we have relied on the quantitative variables and we have used a set of financial ratios.

Our objective is to compare the outputs from our model with the outputs form the Loans4SME algorithm. The Loans4SME model uses a combination of qualitative and quantitative data for assessing the credit worthiness of the SMEs and generates a score out of 100. This credit score out of 100 describes the relative riskiness of the various borrowers listed on the Loans4SME lending platform.

We have used Altman's Z-score model for private firms for assessing the credit worthiness of the SMEs which is a widely used model for assessing the credit worthiness/default prediction of the large corporates using only financial data/a set of financial ratios. We acknowledge that our

---

[4] KMV model is now owned and marketed by Moody's/KMV.

analysis can be improved using qualitative information as predictors in the default prediction model for assessing the credit worthiness of the SME.[5]

7.4 APPROACH & METHODOLOGY

7.4.1 Data Set

Our analysis is based on a set of financial ratios. We have sourced the financial data for SMEs from Wharton Research Data Services (WRDS), University of Pennsylvania. We have used financial data for SMEs from WRDS database with sales less than USD 65 for the year 2015.[6]

7.4.2 Sampling for Z-score

Data availability on SMEs is a big challenge while doing the assessment of credit worthiness of the SMEs. We have done Altman's Z-score analysis for 150 SMEs taking financial data for the year 2015.[7]

7.4.3 Altman's Z-score

We have now calculated the Altman-z-score for these SMEs.[8] The Altman Z-score for private firms is given by the following equation:

$$Z = 0.717X_1 + 0.847X_2 + 3.107X_3 + 0.420X_4 + 0.998X_5$$

Where,

X_1 = working capital/total assets

X_2 = retained earnings/total assets

X_3 = earnings before interest and taxes/total assets

X_4 = book value of equity/book value of total liabilities

X_5 = sales/total assets

- Working Capital: Operating liquidity available to a business, calculated as current assets minus current liabilities
- Retained Earnings: The percentage of net earnings not paid out as dividends, but retained by the company to be reinvested in its core business or to pay debt.
- Earnings Before Interest and Taxes (EBIT): A company's earning power, represents the earnings which the company has achieved. Measure of an issuer's profitability.
- Sales: Total dollar amount collected for goods and services provided.
- Total Liabilities: The liabilities found by adding current liabilities to long-term debts.
- Total Assets: All the property owned by a corporation.
- The outputs from the Altman Z-score model have the following interpretations:

  - $Z > 2.9$: "Safe" zone or low probability of bankruptcy

  - $1.23 < Z < 2.9$: "Grey" zone

  - $Z < 1.23$: "Distress" zone or high probability of bankruptcy

The Z-score obtained for the SMEs has been converted to the probability of default using a normal density function on distance to default (Wahlen et al., 2010). The distance to default can be calculated using the following equation:

---

[5] If the qualitative data is available for SMEs, a combination statistical models and neuro logic algorithm can be used for better judging the credit worthiness of the SMEs.

[6] Sales limit of USD 65 million comes from the new Basel Capital Accord's definition of a SME (June 2004).

[7] We have left the SMEs that didn't have sufficient data for carrying out the Z-score analysis.

[8] Altman had used Multiple Discriminant Analysis technique for assessing the credit worthiness large corporates through Z-score. Altman had examined 22 potentially helpful financial ratios and he selected five ratios for providing the prediction of corporate bankruptcy.

Distance to default = Z-score − 1 (Wahlen et al., 2010)
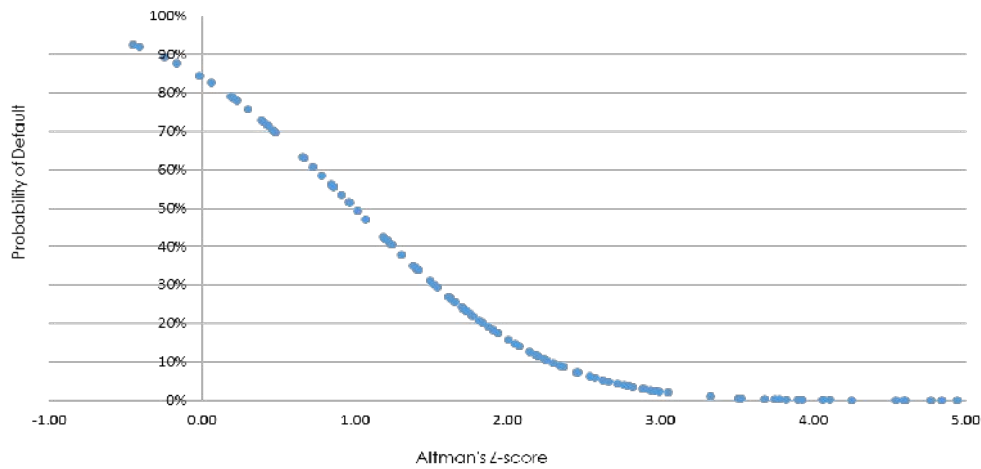
7.4.4 Output from Altman's Z-Score and their mapping with probability of default

The Z-score calculated for the SMEs can be interpreted in the above mentioned zones such as "Safe", "Grey" or "Distress Zone". We have further calculated the distance to default for these SMEs using the above equation. We find that the Z-score is a good indicator for predicting the probability of default for SMEs.

The Altman's Z-score has negative correlation with the probability of default. We have done the bivariate correlation between Altman's Z-score and the default for the SMEs.[9] We get a correlation of -0.72 which is significant. The following table shows the mapping of Altman's Z-scores with probability of default:

Sr. No.	Altman's Z-Score	Probability of default	Interpretation
1	Z ~ zero	More than 93%	"Defaulted"
2	Z < 1.23	41% to 93%	"Distress" Zone
3	1.23 < Z < 2.9	3% to 41%	"Grey" Zone
4	Z > 2.9	Less than 3%	"Safe" Zone
Source: Mapping is based on interpretation of the Altman's Z-score			

- The SMEs that have got a Z-score near to zero, have probability of default more than 93%. We find from our database that these firms have actually "defaulted" which proves the default prediction power of Altman's Z-score model.
- The SMEs that have got Z-score less than 1.23 have got probability of default in the range 41% to 93% and it is interpreted as "distress" zone or high probability of bankruptcy.
- The SMEs that have got Z-score between 1.23 and 2.9 have got probability of default in the range 3% to 41% and it is interpreted as "grey" zone.
- The SMEs that have got Z-score greater than 2.9 have got probability of default less than 3% and it is interpreted as the "safe" zone or high probability of bankruptcy.

---

[9] For calculating the correlation between Z-score and default, we have converted defaults into binary numbers i.e. 0 for non-default and 1 for default.

7.5 COMPARISON OF OUTPUTS WITH LOANS4SME CREDIT SCORING ALGORITHM AND RECOMMENDATIONS

The Loans4SME credit scoring algorithm uses a data set which comprises of qualitative and quantitative information for the borrowers. This information is used for generating a credit score out of 100 which represents the relative riskiness of the borrowers listed on the platform.

The outputs from Altman Z-score model and the Loans4SME algorithm can't be compared due to the following reasons and limitations:

- The qualitative data is not available for SMEs hence we couldn't develop a credit scoring algorithm which could have provided the same output as provided by the Loans4SME algorithm. In lack of qualitative data, we have done analysis of the quantitative data/financial information available on WRDS database using Altman's Z-Score model.
- The Altman Z-score model is a good predictor for assessing the credit worthiness of the SMEs. The binary Logistic regression can also be used for assessing the credit worthiness of the SMEs.
- The output from Altman Z-score can't be directly compared with the output from Loans4SME algorithm as both models use different data set and the outputs are also different. The common ground for comparing both the outputs can't be established due to lack of information on Loans4SME credit scoring algorithm due intellectual property rights issue.
- Altman Z-score model is widely used for assessing credit worthiness of the large corporates. Credit risk assessment for SMEs can be done using the Altman Z-Score model. However, we recommend that a credit assessment model developed using a qualitative and quantitative information can better assess the credit worthiness as the operations of the SMEs are very different as compared to the large corporates.

8. APPENDIX – II: FINANCING REQUIREMENT CALCULATIONS

Particulars		2016-17	2017-18	2018-19
Model 1: Banks and NBFCs				
No. of Locations		2	3	6
No. of Lenders		5	10	20
No. of Transactions per Lender		5	10	20
Fee		1.0%	1.0%	1.0%
Model 2: Individuals and Family Offices				
No. of Locations		1	2	3
No. of Lenders		10	100	500
No. of Transactions per Lender		0.5	0.5	0.5
Fee		2.0%	2.0%	2.0%
Number of Transactions		30	150	650
Number of Borrowers Sourced		180	900	3,900
Number of Borrowers for Due Diligence		60	300	1,300
Average Deal Size	Rs. Million	7.5	10.0	10.0
Total Transaction Value		225	1,500	6,500
Fee Income		**3**	**20**	**90**
Average Fee		1.2%	1.3%	1.4%
Staff number				
Management		1	2	3
Investor Relations		2	3	4
Sourcing		2	6	26
Diligence and Monitoring		1	4	18
Tech and Helpline		1	2	3
Salaries per year				
Management	Rs. Million	-	3.00	3.17
Investor Relations	Rs. Million	1.00	1.06	1.12
Sourcing	Rs. Million	0.80	0.85	0.89
Diligence and Monitoring	Rs. Million	1.00	1.06	1.12
Tech and Helpline	Rs. Million	0.60	0.63	0.67
Expenses				
Capex	Rs. Million	2.4	3.0	0.5
Salaries	Rs. Million	5.2	19.7	59.4
Technology	Rs. Million	0.5	2.0	4.0
Travel	Rs. Million	0.6	3.0	13.0
Office Rent	Rs. Million	1.8	3.6	3.6
Audit/Accounts/Legal	Rs. Million	1.2	1.8	3.0
Marketing/Ad Spend	Rs. Million	1.0	2.0	3.0
Office Running Costs	Rs. Million	0.5	1.8	2.4

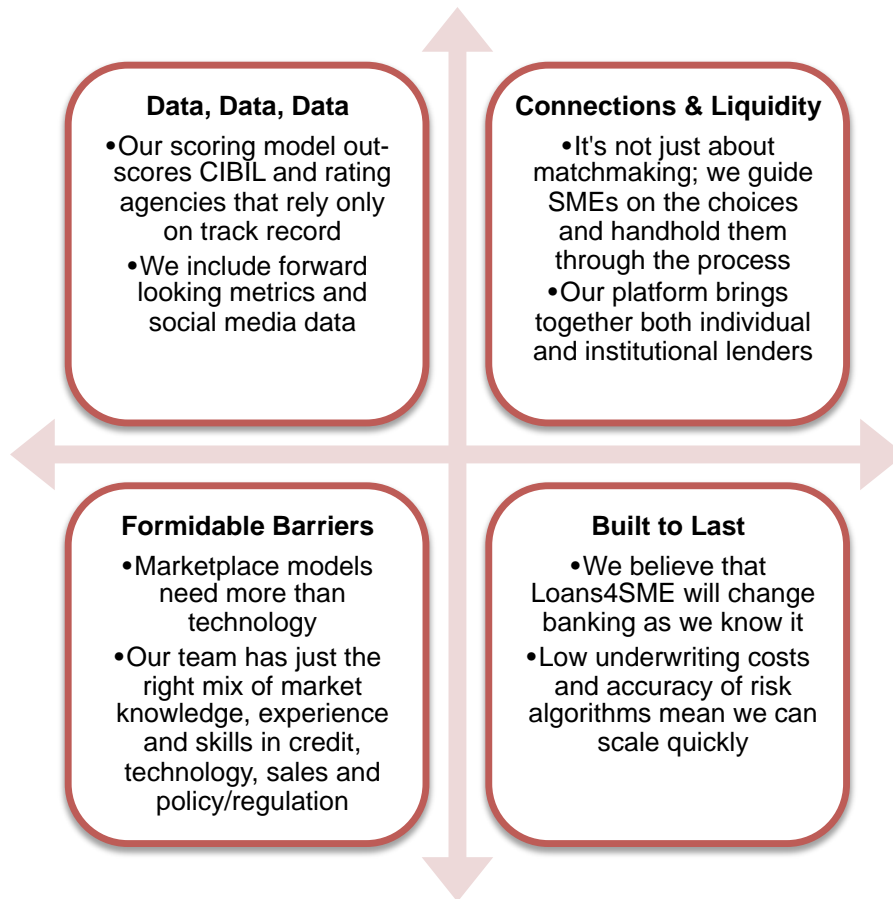|				
Misc	Rs. Million	0.5	1.2	2.7
Pre Launch Costs/Set up	Rs. Million	0.5	-	-
Operating Expenses	Rs. Million	**11.8**	**35.2**	**91.1**
Profit/(Loss)	Rs. Million	**- 9.2**	**- 15.2**	**- 1.1**
office rent		2016-17	2017-18	2018-19
number of offices		1	2	2
monthly rent	Rs. Million	0.15	0.1575	0.165375
rent in year	Rs. Million	1.8	3.78	3.969

Description of projected cost centers:
A. Staffing – Staff expenses are incurred in the performance of the duties of the employment. L4S is planning to hire 78 employees till 2018-19 of which 7 would be hired in 2016-17 at a cost of USD 76000, 17 to be hired in 2017-18 at a cost of USD 290000 and another 54 employees to be hired in 2018-19 at a cost of USD 874000.
B. Capex –While this is a technology driven platform it would entail cost of developing and maintaining the IT system in place. At L4S this cost typically would include capital expenditure related to the major purchase of a server and storage hardware. In addition, an on premises data center for managing financial and management data related to SMEs means the business will have to incur the direct costs involved in purchasing the server associated storage facility, computer systems and network related cost and the overhead costs of owning a server including procurement. The expected capex in 2016-17 and 2017-18 is USD 40000 and USD 10000 in 2018-19.
C. Technology – the technology cost relates to the L4S platform development cost which essentially a software that would be providing a market place to the lenders and borrowers to connect online and do business. The L4S technology platform is already under development and many of its modules like credit rating module has been developed and sufficiently tested, the user interface module is currently being redone to better suits the requirements of the market players. The total cost for developing the technology would be USD 90000 spread over 2016-17 to 2018-19.
D. Marketing – The expense incurred in promoting the business in activities such as some common marketing expenses include marketing and promotion activities like surveys, associated travel, marketing research, promotions, public relations and advertising costs. The total cost for marketing and promotion activities would be USD 88000 spread over 2016-17 to 2018-19.
E. Other operating expenses – Other operating expenses would include Travel, Office Rent, Audit/Accounts/Legal, Office Running Costs and miscellaneous expenses. The total cost for marketing and promotion activities would be USD 88000 spread over 2016-17 to 2018-19. The expected operating expense are USD 60000 2016-17, USD 150000 2017-18 and USD 270000 in 2018-19.

9. APPENDIX – III: LOANS4SME SPECIFIC INFORMATION

9.1 UNIQUE SELLING PROPOSITION OF LOANS4SME

Market participants typically require significant handholding to understand fund raising choices and processes. Loans4SME helps bring these businesses on board by engaging with industry associations, incubators and accelerators. Its unique selling proposition is presented as follows:

Data, Data, Data
- Our scoring model out-scores CIBIL and rating agencies that rely only on track record
- We include forward looking metrics and social media data

Connections & Liquidity
- It's not just about matchmaking; we guide SMEs on the choices and handhold them through the process
- Our platform brings together both individual and institutional lenders

Formidable Barriers
- Marketplace models need more than technology
- Our team has just the right mix of market knowledge, experience and skills in credit, technology, sales and policy/regulation

Built to Last
- We believe that Loans4SME will change banking as we know it
- Low underwriting costs and accuracy of risk algorithms mean we can scale quickly

9.2 SWOT ANALYSIS

Strength	Weakness
• Highly efficient market place • Highly proficient credit rating methodology • Experienced and capable top management • Tested internal risk management structure • Offers access to market to lenders • Offers access to capital to borrowers	• Lack of awareness • Lack of data on Indian SMEs sector • Unregulated sector • Non-collateral transactions • Not as extensive as traditional lenders in terms of quantum of lending
Opportunity	**Threat**
• Huge market opportunity in SME sector • Development/refinement of credit rating algorithm to a level to minimize risks to lenders • Regulations governing Peer to Peer lending with increase trust in the lenders and borrowers • Growth of Peer to Peer industry would lead to economics of scale and further cut the operational expenses.	• Threat of other ill managed Peer to Peer lending platforms collapsing thereby reducing confidence of the business model in industry • Regulatory barriers may arise that may prevent Peer to Peer lending

9.3 MARKETING AND PROMOTION STRATEGY

9.3.1 4Ps of loans4SME

Product	Place	Price	Promotion
• Non-recourse project loans • Loan for working capital/venture debt • Bill discounting • Purchase order based funding for EPC/contractors	• Online market place that is available to all market players • Physical offices at Mumbai and New Delhi	• Low average transaction fee of 1.2% in 2016-17, 1.3% in 2017-18 and 1.4% in 2018-19 per transaction	• Network based approach to engage with different market players including regulators, multilateral agencies, project consultants and the businesses directly

9.3.2 Route to Market

Loans4SME would follow a sector specific distribution strategy that will involve:

- Network driven approach that would involve

    - MoUs with developers with plans to set up multiple projects

    - Referrals from network partners who work closely with small businesses including equity investors and technical consultants

- A combination of online and offline media to maximise reach

   - Digital marketing

    - Key industry conferences

9.4 KEY PEOPLE AND ORGANIZATIONAL SETUP

9.4.1 Key People

Simmi Sareen has 18 years of experience in credit and lending. She's worked with banks, a credit rating agency, global investment banks and a pioneering venture debt fund. With a career focused entirely on SME financing, she is uniquely placed to understand the needs of both the investors and SMEs. Simmi is a chartered accountant with a master degree from London Business School.

Balawant Joshi has 25 years of experience in energy, infrastructure and utilities sectors. He is the founder and CEO of Idam Infrastructure Advisory, founder of Indian Renewable Energy Federation and a member of the governing council of Indian Wind Energy Association. Balawant has been involved in design and development of key energy policies in India. He is an electrical engineer with post-graduation in both finance and software technology.

9.4.2 Organization Setup
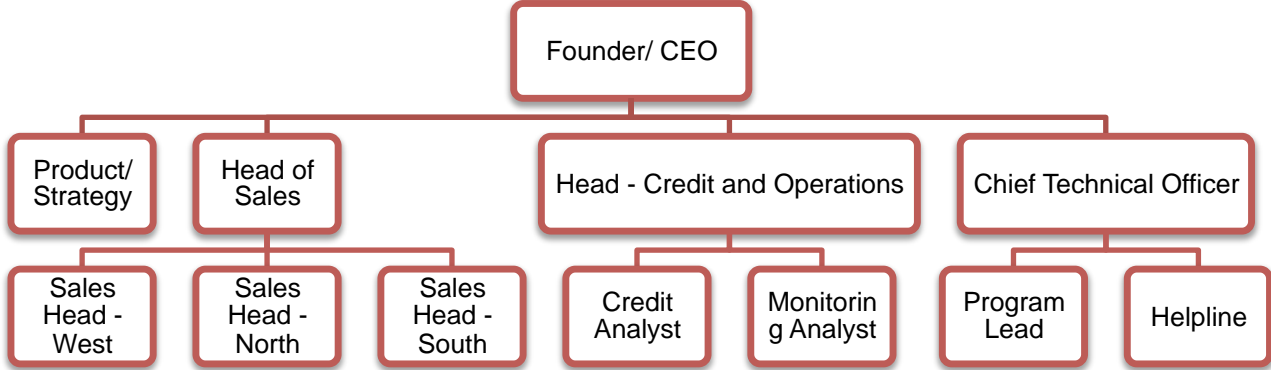
10. REFERENCES

Altman E and Sabato G (2006), Modeling Credit Risk for SMEs: Evidence from the US Market.
https://www.researchgate.net/publication/4737565_Modelling_Credit_Risk_for_SMEs_Evidence
_from_the_US_Market

ADB (2013); Same Energy More Power.
https://www.adb.org/sites/default/files/publication/30289/same-energy-more-power.pdf

Dwyer D W, Kocagil A E, Stein R M (2004), Moody'S KMV RISK CALC™ v3.1 Model.
https://www.moodys.com/sites/products/ProductAttachments/RiskCalc%203.1%20Whitepaper.p
df

Economic Times, (2013); SMEs employ close to 40% of India's workforce, but contribute only
17% to GDP. http://articles.economictimes.indiatimes.com/2013-06-
09/news/39834857_1_smes-workforce-small-and-medium-enterprises

Edmister R (1972), An Empirical Test of Financial Ratio Analysis for Small Business Failure
Prediction, The Journal of Financial and Quantitative Analysis

Frade J (2008), Credit Risk Modeling: Default Probabilities.
https://stat.fsu.edu/~jfrade/HOMEWORKS/STA5168/FRADE_STA5168_paper.pdf

John Ackah and Sylvester Vuvor (2011), The Challenges faced by Small & Medium Enterprises
(SMEs) in Obtaining Credit in Ghana. https://www.diva-
portal.org/smash/get/diva2:829684/FULLTEXT01.pdf

King G and Zeng L (2001), Logistic Regression in Rare Event Data.
http://gking.harvard.edu/files/0s.pdf

Livemint (2015); Are the P2P lending platforms for you?
http://www.livemint.com/Money/6KEmfQvVnCkUAeNCfGB9AM/Are-the-P2P-lending-platforms-
for-you.html

Merton R (1974), On the Pricing of Corporate Debt: The Risk Structure of Interest Rates, the
Journal of Finance, 29: 449–470.

MNRE (2015), State wise and year wise target for installation of 40000MWp Grid Connected
Solar Rooftop systems. http://mnre.gov.in/file-manager/UserFiles/State-wise-and-year-wise-
target-for-installation-of-40000MWp-GCRT-systems.pdf

MNRE (2015), Grid connected solar rooftop systems. http://mnre.gov.in/file-
manager/UserFiles/Rooftop-Presentation-on-07072015.pdf

OECD (2011), Growing SMEs: Tackling Financing Obstacles in the MENA Region.
https://www.oecd.org/mena/competitiveness/47246301.pdf

Oldrich Alfons Vasicek (2012); Structural Models in Credit Valuation: The KMV experience.
http://w4.stern.nyu.edu/finance/docs/pdfs/Seminars/123w-vasicek.pdf

PwC (2015), How peer-to-peer lending platforms are transforming the consumer lending
industry. https://www.pwc.com/us/en/consumer-finance/publications/assets/peer-to-peer-
lending.pdf

RBI (2016), Consultation Paper on Peer to Peer Lending.
https://rbidocs.rbi.org.in/rdocs/content/pdfs/CPERR280416.pdf

SEBI (2014), Consultation Paper on Crowdfunding in India.
http://www.sebi.gov.in/cms/sebi_data/attachdocs/1403005615257.pdf

Sreekantha D (2013), Credit Risk Evaluation of Micro, Small and Medium Scale Enterprises
using Evolutionary Neuro Fuzzy Logic.
https://www.researchgate.net/publication/264325864_Expert_system_design_for_credit_risk_e
valuation_using_neuro-fuzzy_logic

Wahlen J, Baginski S and Bradshaw M (2010), Chapter 5 of Financial Reporting, Financial
Statement Analysis and Valuation