ABSTRACT

This report, prepared on behalf of the members of The Montreal Group (TMG), provides a perspective on the role development banks (DBs) play in the specific field of “maturity model for loan origination automation”. Based on member experience in different countries, with different levels of commitment to this digital transition, the report serves as a reference tool that can be used by organizations to assess their progress and guide the evolution of their digital lending offering.

ABOUT THE MONTREAL GROUP

Micro, small and medium-sized enterprises (MSMEs) face ongoing challenges. In response, governments have developed schemes to help remedy market deficiencies where private sector sources are unable or unwilling to operate, by creating public development banks.

The Montreal Group is a forum of such State-Owned Banks that have a strong focus in supporting MSMEs. The forum was created in 2012 to foster peer group exchanges, identify best practices and innovative solutions on issues/products of common interest. Accompanying the MSMEs is at the heart of any exchange.

At the moment of publishing this report, members are:

- Business Development Bank of Canada (BDC)
- Bpifrance
- Banco Nacional de Desenvolvimento Econômico e Social (BNDES)
- China Development Bank (CDB)
- Finnvera
- Nacional Financiera (Nafinsa)
- Saudi Industrial Development Fund (SIDF)
- Small Industries Development Bank of India (SIDBI)
- SME Bank

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MEMBERS OF THE KEY TOPIC GROUP

The activities of The Montreal Group (TMG) are organized around specific topics selected by Board Members. For the period 2018-2019, the Online Services and Digitalization Key Topic Group was formed by the following members who agreed to produce the paper “Maturity Loan Origination Automation”:

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Report

MATURITY MODEL FOR
LOAN ORIGINATION
AUTOMATION
Context

The **Maturity Model for Loan Origination Automation** is a reference tool that can be used by Development Banks to assess their progress and guide the evolution of their digital lending offering.

The Model

Dimensions

17 dimensions representing topics, activities, processes or technical capabilities have been identified, all related to loan origination automation through digital channels (covering electronic documents & processes, web and mobile app channels).

Some dimensions are related specifically to second-tier development banks, supporting and working through other front-line financial institutions.

Level of Maturity

Each dimension has five levels of maturity: **Basic, Improved, Evolved, Developed and Advanced**, for which a summary description is provided.
How to use the Model: an example

There are many ways for a Development Bank to use this model. One of them would be to assess where your organization stands now regarding each of the dimensions that apply to you in terms of loan automation, and compare this to where your organization aims to be in the future.

In the following example, the actual state (as-is) would be denoted by the blue color.

The following step would be to identify the target state (to-be) for your organization in the future. You can have many future states, based on Now+1 year, Now+2 years or on different types of loans or markets. In our example, the future state is in green.
Dimensions and stages

1. Strategy

**Stage 1 Basic**
Be present in the digital loan market with a minimal offering, digital lending being only a stand-alone offer duplicating existing products.

**Stage 2 Improved**
Improve client experience for selected categories of clients through digital loan platform by progressively improving the quality and the number of products that are offered through digital channels, covering different needs. The offer is still not integrated with existing lending offering.

**Stage 3 Evolved**
Be differentiated in the lending market by providing an easy and fast experience for more categories of clients, covering an increased variety of needs and starting to be aimed at specific markets to answer specific needs.

**Stage 4 Developed**
Play a major role in the digital lending market and serve a substantial proportion of the Bank loans from that channel. Specialization of digital lending offer to fit specific business needs, based on segmentation of clients following criteria such as loan purpose, amount of loan, total engagement, revenue size, number of employees, industry, geographical region or legal structure of company.

**Stage 5 Advanced**
Be the market leader for digital lending and be perceived as the most innovative lender in the market. Digital loans are the preferred option to answer specific needs and/or for specific markets. In some cases, they are the only option available. The digital offer is fully integrated in the portfolio of financing solutions.

*Note: The degree of loan digitization must be based on the needs and characteristics of specific types of clients and/or markets.*
2. Acquisition of Digital Loans

Stage 1 Basic
No recognition in web search engines. Minimal outreach in social media and through email & SMS channels. Limited advertising budget spent in digital channels.

Stage 2 Improved
Basic results in SEO (Search Engine Optimization). Reach to financial professionals for referrals. Distribution of basic newsletter to a limited number of entrepreneurs/companies. Corporate presence in social media.

Stage 3 Evolved
Some recognition in web search engines. Partnerships with sources of referrals, private and public, where information can be exchanged. Email newsletter program developed, reaching a high penetration of the market. Convert some traffic from web, email and social channels into loan applications. Social marketing: employees equipped with the right messages. Growing proportion of advertising is spent in digital channels. Outreach strategies such as advertising, events and sponsorship are used for lead generation.

Stage 4 Developed
Good results in web search engines. Partnerships generate referrals that are identified and tracked. Use sophisticated outreach strategies (ie: email nurturing with entrepreneurs and companies on topics of interest for them, through a comprehensive content marketing program). Develop a lead scoring algorithm to identify leads that should be contacted by sales teams for follow up. Large and influential social media presence, where corporate presence and employee presence is well balanced and complementary. Solid presence and spending in digital advertising. Advanced targeting techniques, based on AI, are used to identify prospects.

Stage 5 Advanced
Among the leader in search engine marketing, both for organic results and paid results. Customisation of connections between partners through API (Application Programming Interface) or other mechanisms, connecting systems directly for fast transfer of leads and transactions. Deployment of multi-channel automated campaigns based on profile analysis. Personalized interactions and continuous testing in digital channels to improve conversion rates.

Sophisticated content strategy to be a credible and renowned source of information for the target market, supporting email/SMS, social, web and digital advertising channels. Significant part of advertising budget aimed at digital media.
3. Loan Conditions

**Stage 1 Basic**
Loan conditions in digital loans are predefined and cannot be negotiated (take it or leave it).

**Stage 2 Improved**
Loan conditions are predefined and cannot be negotiated (take it or leave it), but some options can be available (ie: fixed or variable rate).

**Stage 3 Evolved**
Loans conditions offered in digital loans are based on the needs of different market segments. Many options are available and there is some flexibility as long as it stays into risk parameters. Conditions of the loan are slightly customized, but are not negotiable. Interest rate is determined based on risk evaluation, into specific brackets.

**Stage 4 Developed**
Based on the selection of options and parameters, and after automated analysis on the bank side, client-specific conditions/products are proposed and a letter of offer is issued with customized conditions. Respect of these conditions enable the Bank to offer better terms for the loan. Pre-approved loans are available for existing and potential clients, based on the monitoring of their financial health and on available information.

**Stage 5 Advanced**
Loan conditions are highly targeted based on specific market segments, each having distinct automated features. Proposed conditions for the loan are automatically generated and can be highly customized based on client needs and the bank's policies. Based on the reaction of the client to the conditions, there is an automated mechanism to generate the letter of offer (staying into acceptable risk parameters). Clients have a pre-approved loan that is available for them, based both on the continuous monitoring of their financial health and on the data that is shared with financial partners (consent from the client is necessary). This offer is available through digital channels and is fast and easy to accept. Technology team needs to provide a fast response time to enable timely changes to the digital offering.
4. Speed

This dimension evaluates the time it takes for a client from the end of the digital loan application process to the final decision transmission to the client.

Stage 1 Basic
Answer in more than a month since first discussion.

Stage 2 Improved
Answer in one week to a month since first discussion.

Stage 3 Evolved
Answer in a couple of days since first discussion.

Stage 4 Developed
Answer in a couple of minutes to a few hours.

Stage 5 Advanced
Answer in real-time (seconds), as soon as the request is completed.
5. Digital Form

**Stage 1 Basic**
Simple PDF lead form where basic information is collected on individual, company and project, aimed at speeding up pre-qualification process, which is done later. The content of the form is retyped into systems supporting loan origination. Consent to gather and exchange information is collected (applies to all stages).

**Stage 2 Improved**
Simple web or application-based lead form where basic information is collected on individual, company and project, aimed at speeding up pre-qualification process. Existing clients must still type their information into forms, even if some of it is already known by the financial institution. Information captured in form is available in an electronic format but is not transferred into other systems.

**Stage 3 Evolved**
A pre-eligibility small questionnaire is available at the start to filter companies not eligible to the digital loan. Form captures information related to most online lending processes. Other information will be collected through other channels to complete the loan processing and take a decision. Output of form is automatically sent to the team managing the pre-qualification process and some of it can be transferred directly into systems (ie: individuals & company coordinates transferred in CRM). Information already known is pre-filled in the form to speed up process. Applications started but not completed can be saved, enabling the applicant to come back later and complete its application.

**Stage 4 Developed**
Form include capture of all information required to process the loan end-to-end. The form is shortened because many information come from internal and 3rd-party validated sources, limiting data needing to be typed by the applicant. Information collected is automatically transferred in other systems for processing, preventing retyping of information into back-office systems. Applications started but not completed can be saved and the applicant can either complete it in digital channel or in other channels (phone, in branch, face to face, etc.). Automated emails are sent to applicants who abandoned the application process at specific stages.
Stage 5 Advanced
Sophisticated dynamic form that adapts based on knowledge of the company and as information is collected. Only one form is required to cover all types of loans, simplifying the client experience. Questions not necessary are automatically removed based on information available. Shortened because of internal and 3rd-party collected information. Information automatically transferred from the form in other systems. Electronic documents that are uploaded are automatically parsed and stripped down of their information, which is available as data to be used in systems. Ongoing monitoring of loan application form performance is applied automatically through robotic process automation (RPA) or other mechanisms. Ability to upgrade form while simultaneously operating a previous version. Ability to conduct A/B and Multivariate testing on the form to optimize its design. At each stage of the process, the applicant knows exactly where he is and what will be the next steps. Automated emails and phone calls are sent in a staged approach to applicants who abandoned the application process at specific stages.

6. Digital Client Support

Stage 1 Basic
Phone support.

Stage 2 Improved
Phone and email support. Frequently Asked Question (FAQ) is available.

Stage 3 Evolved
Phone, email and online real-time chat support. Frequently Asked Question (FAQ) and previously answered questions are available.

Stage 4 Developed
Phone, email and chat support are available through extended hours early in the morning and late at night for entrepreneurs. Dynamic monitoring enables prompting of a chat window at the right time (ie: when someone is stuck longer on a page or screen). Frequently Asked Question (FAQ) and previously answered questions are available.

Stage 5 Advanced
Phone, email and chat support are available 24 hours, 7 days a week. Chat is supplemented with a chatbot technology for Frequently Asked Question (FAQ). Dynamic monitoring enables prompting of a chat window at the right time. Online and/or app-based video conferencing is also available in real-time through many formats and applications. FAQ and previously answered questions are available (user-generated content), with voting by users to determine the best answers.
7. Culture & Organisation

Stage 1 Basic
Organisation transposed their existing processes and lending products in a digital lending format with almost no adaptation to the new channel of delivery and client expectations.

Stage 2 Improved
Organisation starts slowly to adapt its processes and products to meet its client’s expectations regarding format, speed of treatment and simplification of the experience. However, the focus is still mostly on meeting internal needs and constraints.

Stage 3 Evolved
Organization frequently, but not systematically, evaluates process and product changes related to digital lending from the client's point of view. There is a need to rethink or optimize some existing back-office processes.

Stage 4 Developed
Organization more systematically evaluates in a formal process all changes to processes and products to digital lending that can affect client experience. Some client journey mapping is conducted. Pro-active client and market related data capture for understanding of needs and trends. Initiate partnerships to gather and share information and best practices. Most back-office processes and tools related to digital lending need to be reviewed.

Stage 5 Advanced
Client impact analysis is always conducted whenever a change in process or product related to digital lending is considered and journey mapping is systematically updated. All pertinent processes and tools are tailored for optimization of digital lending, including in the back-office. Efforts are often lead by cross-functional teams.
8. Know your client (KYC)

**Stage 1 Basic**
Standard process, nothing different for digital loans. Physical documentary evidence is required to identify client. Face to face and phone calls are required to complete KYC process.

**Stage 2 Improved**
Due diligence is fast tracked but is manual.

**Stage 3 Evolved**
Some parts of the KYC process are automated. Often, automated validation with 3rd-party sources, such as social media and credit bureau, are in place but they are still processed and validated manually.

**Stage 4 Developed**
Most parts of the KYC process are automated, often including location, employment and income. Minimal manual intervention is required. Automation is complete for simple cases.

**Stage 5 Advanced**
Complete automation of KYC process for all simple and even for some complex cases. Many transfer of information from third-party sources. Biometric identity validation mechanisms may be used. Organisation transposed their existing processes and lending products in a digital lending format with almost no adaptation to the new channel of delivery and client expectations.

9. Due Diligence

**Stage 1 Basic**
No automation, all procedures, validations and decisions are conducted manually.

**Stage 2 Improved**
Some technology is used to gather information from 3rd-party sources, in some cases automatically, in some cases through a manual intervention.

**Stage 3 Evolved**
Most sources of information used for due diligence are automated. Specialized software solutions and providers are used to track AML-CTF as well as prior criminal activity. Alerts can be triggered automatically for further investigation.
**Stage 4 Developed**
Validations are performed through automated connections and tools in real-time or quasi real-time. The system compiles the information and makes a preliminary recommendation. A human makes the final recommendation, after review of all the facts.

**Stage 5 Advanced**
All due diligence process, including check for criminal activities, Politically Exposed Person (PEP) validation, Anti-Money laundering (AML) and Counter-Terrorism Financing (CTF) are automated through use of systems, third-party sources and partnerships.

### 10. Credit decision

**Stage 1 Basic**
No automation. All validations are processed manually.

**Stage 2 Improved**
Credit bureau and 3rd-party sources of information are collected, some manually, some through technical integration between systems.

**Stage 3 Evolved**
Credit scoring is automated for simple cases. Analysis of financial information and statements is facilitated by technology, but most of the analysis is done manually.

**Stage 4 Development**
Credit bureau and other sources of credit quality information, past transactions and other data sources are automatically collected, creating an automated credit scoring for all transactions. A recommendation is automatically generated for the loan approval officer, who takes the final decision.

**Stage 5 Advanced**
Credit scoring is fully automated for standard cases through API connections with credit bureau and data providers. Credit decision is fully automated but if there are warnings about a transaction, a manual validation can be performed. Acceptation and decline letters are sent automatically, in electronic format (email, app, extranet web, etc.). Decline letters include reasons for decline as well as advice and tools to help the entrepreneur improve his financial situation.
11. Security Taking

**Stage 1 Basic**
Focus on working capital loans with no security taking on physical assets. Personal guarantee may be required.

**Stage 2 Improved**
Technology is supporting the transfer of information between parties. A General Security Agreement (universal hypothec) may be taken on the assets of the company applying for a loan. This security has a subordinated rank to all other pre-existing securities registered on the company assets. It can be taken without any validation of pre-existing registration of securities.

**Stage 3 Evolved**
Direct connection between parties for security taking leads to fast transfer of information and processing. Many types of subordinated rank securities can be taken on an applicant’s company asset, as long as the situation is simple and no negotiation is involved with other financial institutions.

**Stage 4 Developed**
Automation can be applied to some simple type of security taking with the support of direct connections between contracting parties, connection with 3rd-party sources of information and with electronic signature.

Electronic registries of business/corporate securities for buildings and land, equipment, vehicles, intellectual property, transferable securities or other types of assets need to be accessible in the jurisdictions where the bank operates. Research on these existing securities must still be made manually into different registries.

**Stage 5 Advanced**
If no exceptions or complex situations arise, all of the security taking process can be completed through digital channels. Automated access to centralized authority managing registration of securities is available for almost all classes of assets. There is a central digital clearinghouse/marketplace where information is available on current securities taken on the assets of the companies and where lawyers can discuss ranking and priority of securities as well as negotiate changes in existing agreements, if necessary. Use of electronic signature.
12. Client file

**Stage 1 Basic**
Paper-based only.

**Stage 2 Improved**
Some elements are digitalized.

**Stage 3 Evolved**
Electronic format only.

**Stage 4 Developed**
All documents associated to the request are available in electronic format.

**Stage 5 Advanced**
Electronic format only. All other documents are electronic, in data-readable format when required. Record management principles are applied to the client file (identification, classification, storage, security, retrieval, tracking, archiving and destruction are applied automatically). Focus on working capital loans with no security taking on physical assets. Personal guarantee may be required.

13. Signature

**Stage 1 Basic**
Paper-based on paper format. Humans decide who is required to sign.

**Stage 2 Improved**
Paper-based on paper format. A formal process identifies who is required to sign on behalf of both parties. Login on digital platform is considered as an accepted authentication mechanism for simple tasks having no financial impact.

**Stage 3 Evolved**
Still paper-based, but a signed document can be printed, scanned and then uploaded to accelerate the process. However, the original document with a signature must still be provided later in the process, to be kept as evidence. Login on digital platform is considered as an accepted authentication for simple tasks having no financial impact.
Stage 4 Developed
Electronic signature is implemented for the acceptation of the letter of offer and terms and conditions from the borrower. Security taking is still signed manually. Login on a digital platform is considered as an accepted authentication for simple tasks having no financial impact.

Stage 5 Advanced
Electronic signature is implemented for the acceptation of the letter of offer and terms and conditions from the borrower, co-borrowers and the guarantors. Security taking is also supported by electronic signature. Login on digital platform completed by other means of digital identification (ie: biometric, multi-factor authentication, digital ID, etc.) is considered as an accepted authentication for simple tasks having no financial impact as well as for complex tasks that can have a significant financial impact.

14. Workflows

Stage 1 Basic
No automated workflow in back-office processing.

Stage 2 Improved
The system supports the notion of workflow between steps, for tracking purposes, with approvals before getting to the next steps. While some of these steps are manual, others are supported by technology. Paper is still required to transfer files and to get approval from one step to the other.

Stage 3 Evolved
Each step of the process is supported by a workflow engine that helps the process to move forward, but there is no overall workflow covering all the steps of the loan origination process.

Stage 4 Developed
Transition between steps of the process is automated, but a manual review and authorisation is required to get to the next step. The workflow system supports effective queue management and dynamic task routing (recognises if someone is not available and can reroute the approval to someone else).

Stage 5 Advanced
The flow of information is entirely automated between all steps of the loan origination process. Criteria and business rules are easy to modify through parameter changes. Queue management and dynamic routing is enhanced with machine learning algorithms to optimize treatment based on prior performance and experience for specific types of transactions. Audit trail is left at all points of the process for easy review. Visibility of ongoing transactions is available in real-time.
15. Reporting & Analytics

**Stage 1 Basic**
Basic metrics only, such as number of requests submitted.

**Stage 2 Improved**
Number of requests submitted, number of requests initiated, completion rate.

**Stage 3 Evolved**
Number of requests submitted, number of requests initiated, completion rate, acceptation rate, drop rate by section of form, customer satisfaction metric (ie: net promoter score).

**Stage 4 Developed**
Number of requests submitted, number of requests initiated, completion rate, drop rate by section of form / type of applicant (industry, legal structure of company, etc.) / type of loan, customer satisfaction metric (ie: net promoter score), reasons for decline. Tracking and attribution of all applications initiated in digital channels but completed in other channels.

**Stage 5 Advanced**
Number of requests submitted, number of requests initiated, completion rate, drop rate by section of form / type of applicant (industry, legal structure of company, etc.) / type of loan, customer satisfaction metric (ie: net promoter score), reasons for decline, cross-over of different variables to uncover potential or systemic issues (ie: decline rate for applicants in a specific industry for a specific reason).

Tracking and attribution of all applications initiated in digital channel but completed in other channels. Tracking and reporting on digital touch-points for loans sourced in traditional channels (measure of digital contribution).

16. Accreditation and definition of margins of exposure for Financial Agents (2nd-Tier Banks)

**Stage 1 Basic**
**Stage 2 Improved**
Number of requests submitted, number of requests initiated, completion rate.  
The basic stage added with: Improvement of the workflow and automation of the process.  
Definition of criteria for monitoring operations of lending.  
Receipt of more information to monitor the institution's risk, including delinquency of on loans.

**Stage 3 Evolved**
Improved stage added with:  
- Annual visits to monitor the risk of all entities.  
- Accomplishment of sectorial analysis and improvement of the qualitative evaluation of risks financial entities.  
- Accreditation documents may be available to the financial agent on a digital platform.  
- Combined disbursement and default goals for keeping the level of the margin granted.

**Stage 4 Developed**
Evolved stage added with:  
- Receipt of detailed information on the on-lending portfolio (fees and days of delay of each operation, customer size, etc.).  
- Adoption of risk classification models with more sophisticated indicators, with monitoring of their statistical performance (KS, AROC, error type II, etc.).  
- Degree of relationship and performance of default are integrated to the objective of the analysis.  
- Classification Monitoring more frequently.

**Stage 5 Advanced**
The developed stage added with: The interactions, risk classification and limit control with Financial are supported in an automated way through a specific digital platform (information exchange, data and document sharing). Possibility to establish a credit limit based on future receivables. Other instruments such as anticipation, supplementation of credit limit or bank guarantee are possible. Development of models for risk assessment of the repatriation portfolio with reward systems to maintain the portfolio's good quality of risk.
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