

REPAYMENT SERVER AND METHOD FOR PROVIDING PAYBACK OF A LOAN

TECHNICAL FIELD

[0001] Various aspects of this disclosure relate to repayment servers and methods for providing payback of a loan.

BACKGROUND

[0002] Microlending refers to a lender (also referred to as “microlender”) granting a small loans (referred to a “microloan”) to a user (i.e. a beneficiary of the loan). Microlending use cases have been exponentially growing in the past few years in South East Asia, and there is an upward trend in the availability of microlending as a service across payment use cases in the next few years in the South East Asia region.

[0003] As with every loan, a major issue is that the lender of a microloan carries a risk since the microloan may not be paid back. Accordingly, one of the key factors that drives microlending use cases are the levers that the lender (e.g. a lender’s credit risk team) has in order to reduce risk.

[0004] Therefore, approaches to reduce risk for a lender in microlending application and in particular approaches to provide payback of a loan which are reliable for the lender as well as acceptable and convenient for the borrower are desirable.

SUMMARY

[0005] Various embodiments concern a repayment server, comprising a communication interface configured to receive a specification of a loan and a specification of one or more deduction sources for deducting amounts to pay back the loan, a processing unit configured to determine a plurality of points of time for deducting amounts from the one or more deduction sources to pay back the loan and to determine, for each point of time, an amount to deduct from the one or more deduction sources and a transfer interface configured to deduct, for each point of time, the determined amount from the one or more deduction sources.

[0006] According to one embodiment the processing unit is configured to determine the amount to deduct from the one or more deduction sources such that a predetermined minimum amount remains on the one or more deduction sources.

[0007] According to one embodiment, the communication interface is configured to receive a specification of an instalment timing and the processing unit is configured to determine the plurality of points of time such that they occur in accordance with the instalment timing.

[0008] According to one embodiment, the communication interface is configured to receive a specification of an instalment frequency with which to deduct amounts from the one or more deduction sources and wherein the processing unit is configured to determine the plurality of points of time such that they occur with the specified frequency.

[0009] According to one embodiment, the communication interface is configured to receive the specification of the instalment frequency from a lender of the loan.

[0010] According to one embodiment, the instalment frequency is daily, weekly, every weekday and monthly.

[0011] According to one embodiment, the communication interface is configured to receive a specification of a time when the loan is overdue and wherein determining the plurality of points of time comprises determining the plurality of points in time such that they are after the time from when the loan is overdue.

[0012] According to one embodiment, the processing unit is configured to select at least one of the deduction sources and the transfer interface is configured to deduct, for each point of time, the determined amount from the selected at least one deduction source.

[0013] According to one embodiment, if the selected at least one deduction source has too little funds for deducting the determined amount, the processing unit is configured to select another deduction source and the transfer interface is configured to deduct, for each point of time, the determined amount from the selected other deduction source.

[0014] According to one embodiment, the communication interface is configured to receive a specification of a priority of at least one of the one or more deduction sources and wherein selecting the at least one deduction source comprises selecting at least one deduction source prioritized by the priority.

[0015] According to one embodiment, the processing unit is configured to select a deduction source which is prioritized by the priority and, if the selected at least one deduction source has too little funds for deducting the determined amount, the processing unit is configured to select another deduction source with lower priority and the transfer interface is configured to deduct, for each point of time, the determined amount from the selected other deduction source.

[0016] According to one embodiment, the processing unit is configured to determine the amounts such that a ringfencing amount is maintained in the one or more deduction sources.

[0017] According to one embodiment, the processing unit is configured to determine the ringfencing amount depending on a total loan amount of the borrower using the one or more deduction sources for payback.

[0018] According to one embodiment, the processing unit is configured to determine the amounts such that the ringfencing amount lies above a configurable ringfencing minimum and to lie below a configurable ringfencing maximum or both.

[0019] According to one embodiment, the points of time are points of time at regular time intervals.

[0020] According to one embodiment, the processing unit is configured to determine the plurality of times and the amounts such that after deducting the determined amounts at the determined plurality of times the loan has been paid back.

[0021] According to one embodiment, the loan comprises multiple sub-loans, each having a loan amount, wherein the total amount of the loan is the sum of the amount the sub-loans.

[0022] According to one embodiment, each sub-loan corresponds to a loan voucher given to a borrower of the loan redeemable at a merchant.

[0023] According to one embodiment, the repayment server is configured to limit the number of loan vouchers by a predetermined limit.

[0024] According to one embodiment, the repayment server is configured to provide an Application Programmers Interface between the lender and the merchant for redemption of loan vouchers.

[0025] According to one embodiment, a computer implemented method for providing payback of a loan is provided , comprising a repayment sever receiving a specification of a loan, the repayment server receiving a specification of one or more deduction sources for deducting amounts to pay back the loan, the repayment server determining a plurality of points of time for deducting amounts from the one or more deduction sources to pay back the loan, the repayment server determining, for each point of time, an amount to deduct from the one or more deduction sources and the repayment server deducting, for each point of time, the determined amount from the one or more deduction sources.

[0026] According to one embodiment, a computer program element is provided comprising program instructions, which, when executed by one or more processors, cause the one or more processors to perform the method for providing payback of a loan described above.

[0027] According to one embodiment, a computer-readable medium is provided comprising program instructions, which, when executed by one or more processors, cause the one or more processors to perform the method for providing payback of a loan described above.

[0028] It should be noted that embodiments described in context of the repayment server are analogously valid for the method for providing payback of a loan.

BRIEF DESCRIPTION OF THE DRAWINGS

[0029] The invention will be better understood with reference to the detailed description when considered in conjunction with the non-limiting examples and the accompanying drawings, in which:

- FIG. 1 illustrates a lending infrastructure.
- FIG. 2 shows a flow diagram for implementing use-case specific lending with an expiry.
- FIG. 3 shows a flow diagram for implementing easy securitisation of assets.
- FIG. 4 shows a flow diagram for implementing repayment with minimal user interaction.
- FIG. 5 shows a repayment server according to an embodiment.
- FIG. 6 shows a flow diagram illustrating a computer implemented method for providing payback of a loan according to an embodiment.

DETAILED DESCRIPTION

[0030] The following detailed description refers to the accompanying drawings that show, by way of illustration, specific details and embodiments in which the disclosure may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice the disclosure. Other embodiments may be utilized and structural, and logical changes may be made without departing from the scope of the disclosure. The various embodiments are not necessarily mutually exclusive, as some embodiments can be combined with one or more other embodiments to form new embodiments.

[0031] Embodiments described in the context of one of the devices or methods are analogously valid for the other devices or methods. Similarly, embodiments described in the context of a device are analogously valid for a vehicle or a method, and vice-versa.

[0032] Features that are described in the context of an embodiment may correspondingly be applicable to the same or similar features in the other embodiments. Features that are described in the context of an embodiment may correspondingly be applicable to the other embodiments, even if not explicitly described in these other embodiments. Furthermore, additions and/or combinations and/or alternatives as described for a feature in the context of an embodiment may correspondingly be applicable to the same or similar feature in the other embodiments.

[0033] In the context of various embodiments, the articles “a”, “an” and “the” as used with regard to a feature or element include a reference to one or more of the features or elements.

[0034] As used herein, the term “and/or” includes any and all combinations of one or more of the associated listed items.

[0035] In the following, embodiments will be described in detail.

[0036] FIG. 1 illustrates a lending infrastructure 100.

[0037] A user (acting as borrower) 101 sends a request 104 for a microloan to a lender 102. This typically happens via the Internet which is implemented by an arrangement of communication networks 103 (e.g. radio access network, backhaul network, backbone network etc.). If the lender 102 accepts the request 104 and thus grants a loan 106 according to the request 104, the lender 102 may contact, for example, a merchant 105 to transfer money to the merchant 105 to pay for goods the user wants to buy. This is referred to disbursement of the loan 106. The loan 106 may also be disbursed by transferring money to a bank account 108 of the user himself (rather than a merchant's) at a bank 107 such that the user 101 may spend (or withdraw) the money. The bank 107 may also be operated by the lender 102, i.e. the user 101 may have an account or (digital) wallet 108 at a bank of the lender 102 from which the user 101 may withdraw money. The wallet 108 may also be operated by a merchant 105, i.e. the user 101 may have an account at a merchant 105. The merchant 105 may sell goods but may also provide services. For example, the merchant 105 may be a taxi driver (or a transport service provider, e.g. the operator of an e-hailing service).

[0038] With the disbursement of the loan 106, the lender 102 takes a risk since the lender 102 cannot be sure that the user 101 will pay back the loan.

[0039] According to various embodiments, multiple levers are provided that help a lender 102 to reduce risk substantially using technology and integration as the fundamental building blocks.

[0040] The lender 102 can potentially reduce risk in two areas: before the loan 106 is disbursed, and after the loan 106 is disbursed. In the following, approaches for reducing risk in both areas are described.

[0041] Before a loan is disbursed

[0042] By limiting the use cases for which the loan 106 (also referred to as credit) is given to the user 101, risk reduces substantially for the lender 102. According to various embodiments, a voucher on the loan 106 is given to the user 101, and repayment schedules are tracked separately. The voucher has an expiry associated with it, thereby limiting the time for which the loan 106 granted is available to be redeemed (i.e. used). A voucher is tied to a specific merchant 105 where the voucher can be used. The use case (e.g. for which goods or services the voucher can be used) may be defined by the merchant 105.

[0043] A loan agreement is to be signed by the user 101 when a vouchers is availed for a loan 106, but disbursement of the loan 106 happens only when the voucher has been redeemed at the merchant's side. The lender 102 may operate a computer system which has active API integrations with the merchant's computer system to disburse the loan 106 during redemption of the voucher in real-time (e.g. to pay the merchant 105 for a good (or service) when the user redeems the voucher).

[0044] After a loan is disbursed

[0045] Once a loan is disbursed, risk reduces substantially if the lender can:

1. Increase the frequency of repayments thereby reducing the amount to repay.
 - a. For this, according to various embodiments, a daily repayment schedule and equated daily instalments are used, which are automatically deducted from the user's wallet (or account) 108 (which may also be managed by the lender 102), wherein the equated daily instalment amount is lesser than or equal to the average wallet balance of the user.
 - b. Further, according to various embodiments, a maximum deductible amount and a minimal deductible amount from the user's wallet 108 are provided as levers to the lender 102, so the lender 102 can define varied values across markets and segments of users with varied average wallet balances.

2. Provide securitisation of assets towards instalments that are due.

- a. According to various embodiments, the user's wallet balance is considered as an asset that the lender 102 securitises. The lender 102 may for example limit the amount that the user 101 can withdraw on any given day, to leave back a certain amount in the user's wallet 108, depending on the instalment amount that is due for the user. This concept is termed as Ringfencing. The lender 102 (e.g. a credit risk operations) defines the minimum amount to ringfence on the user's wallet 108, and the user can withdraw only after leaving back the minimum amount to ringfence in the wallet 108 (wherein withdrawal also includes transfer to another account.)
- b. The minimum amount to ringfence may be given by a mathematical formula having multiple parameters. For example, the minimum amount to ringfence for the user 101 may depend on the total debt-to-service ratio across all loans that the user has with the lender 102.

[0046] In the following, the approaches outlined above are described in more detail.

[0047] FIG. 2 shows a flow diagram 200 for implementing use-case specific lending with an expiry.

[0048] A user 201, corresponding to user 101, a lender 202, corresponding to lender 202, and a merchant 203, corresponding to a merchant 105, are involved in the flow.

[0049] The lender 202, e.g. an inventory manager of the lender 202, enables the creation and storage of vouchers issued by the merchant 203. For example, the lender's operations team uploads the vouchers to the inventory manager for users to purchase them. In the present example, the lender 202 creates a voucher 204.

[0050] In this example, the user 201 sends a request for a voucher (or a loan) 203 and is, in response to the request, given a voucher (for a loan) 204.

[0051] The output of the voucher 204 (e.g. when being transmitted to a computer of the user 201) is static online code, QR code, or Barcode.

[0052] The vouchers from the inventory are periodically cached in the lending infrastructure from where the available vouchers are fetched by users (by requests). For example, the voucher 204 is fetched by the user by request and is given by the lender 202 to the user 201 depending on the user's eligibility, country, and current city.

[0053] The lender 202 books a loan when the voucher 204 is availed by the user 201 and marks the loan as disbursed when the user 201 redeems the voucher at the merchant 203. The number of vouchers that a user 201 can avail is capped by a product level limit which is pre-assigned to the user.

[0054] When the user 201 has availed one or more vouchers 204 (also referred to as purchasing the vouchers), the user 201 is shown the listing of the purchased vouchers indicating, for each voucher 204, the expiration date of the voucher 204 until which the user 201 can redeem the voucher. Redemption of the voucher 204 can happen online, e.g. using the redemption code on the merchant's website during checkout. The user 201 may also redeem a voucher offline at the store merchant's store by scanning the QR code or barcode.

[0055] To limit cases where the voucher 204 expires before its use (i.e. its redemption), a notification is sent to the user 201 if the voucher is not redeemed for more than X number of days, where X is a configurable number of days.

[0056] FIG. 3 shows a flow diagram 300 for implementing easy securitisation of assets.

[0057] The flow takes place between a user 301, corresponding to user 101, wherein loan 106 has already been granted to the user 101, a user wallet 302 supported by the lender, e.g. corresponding to the wallet 108 (being at least partially managed by the lender 102) and a wallet controller (which may be operated by the lender, e.g. in cooperation with bank 107 in the case that the wallet 108 is maintained by a bank 107).

[0058] The wallet controller 303 performs ringfence calculation 304, i.e. determines a minimum amount to ringfence 305 (also referred to as ringfencing amount).

[0059] Ringfencing is a safeguard mechanism so that the lender 102 can always make sure there is a minimum amount backed up in the wallet 108 when the user withdraws money from the wallet 108. The ringfence 305 is calculated by the wallet controller 303 in the ringfence calculation 304 according to a mathematical formula having parameters given by the details 306 of the loan. For example, a primary input parameter for the formula is the amount of loans of the user which are overdue (i.e. the user's overdue amount 307).

[0060] The lender 102 can configure maximum and minimum thresholds at user level (i.e. individually for each user 301) as follows:

- Minimum threshold for the ringfencing amount 305: to reduce the risk for lender

- Maximum threshold for the ringfencing amount 305: to be user friendly, so that the user 301 is still able to withdraw (e.g. cash out) a certain amount even when the user 301 has a high overdue amount 307.

[0061] This means that

ringfenced amount =

$\max(\text{minimum threshold}, \min(\text{function (user's overdue amount)}, \text{maximum threshold}))$

wherein 'function' refers to the mathematical formula given above. This function may simply be the identity (i.e. its value may be equal to the user's overdue amount) but it may be far more complex and include additional parameters given by the loan details 306 and information about the user 301, the respective market or region, time of the year, etc.

[0062] FIG. 4 shows a flow diagram 400 for implementing repayment with minimal user interaction.

[0063] A lender 401, corresponding to lender 102, a program/loan manager 402, a deduction engine 403, a loan booking system 404 and deduction sources 405 are involved in the flow. The deduction engine 403 is for example part of a repayment server (implemented by a server computer).

[0064] In order to improve user experience and reduce credit risk during the repayment of a loan (redeemed by a user), automated deductions are implemented by the (automated) deduction engine 403. The lender 401 registers a loan at the deduction engine 403. Once the loan is overdue, the engine 403 deducts the overdue amount for the loan from one of the user's deduction sources 404 (which for example corresponds to 108). This automatic repayment approach is extensible in the sense that it is extensible to any kind of user (drivers, passengers or merchants) and the wallet or account 405 from which the amount is deducted may be a wallet or account outside of the lender's 102 system, e.g. at a bank 107 which is not operated by the lender 102. The approaches may be easily scaled (in particular to how many users it is applied and at what frequency (e.g. per day, per week or month)).

[0065] The following parameters may be configured in the automatic repayment approach:

- Deduction sources (configurable for each user): for example the deduction source is a credit wallet or a cash wallet, a wallet of the user at a merchant or a credit card or bank account, e.g. depending on the user and the lender.

- Deduction timings: e.g. automated deductions are tried every hour and even more frequently at peak working hours. This also helps in reducing the risk that the user may withdraws before instalments are deducted.
- Deduction priority: e.g. in case there are multiple deduction sources configured for a user, a priority can be set. Deduction are tried from a high priority source first, and then moves on to sources with lesser priority.
- Minimum amount to keep back in the wallet: In order to ensure user satisfaction, having a minimum amount in a deduction source is configurable per user so that lenders do not deduct, for example all the day earnings of the user.
- Frequency of deductions or loans: e.g. daily, weekly and monthly are frequencies which allow adapting the instalment amount.
- Regular reminders: automated reminders to top up funding sources may be sent out regularly to the user, thus reducing manual interventions to collect back money and letting the engine take care of deducting instalments.

[0066] Corresponding configuration parameters may for example be set in the program/loan manager 402 and retrieved by the deduction engine 403 such that the deduction engine 403 may perform the repayment. The loan booking system 404 for example stores the amount that is due (or overdue).

[0067] In summary, according to various embodiments, a repayment server is provided as illustrated in FIG. 5.

[0068] FIG. 5 shows a repayment server 500 according to an embodiment.

[0069] The repayment server 500 comprises a communication interface 501 configured to receive a specification of a loan and a specification of one or more deduction sources for deducting amounts to pay back the loan.

[0070] The repayment server 500 further comprises a processing unit 502 configured to determine a plurality of points of time for deducting amounts from the one or more deduction sources to pay back the loan and to determine, for each point of time, an amount to deduct from the one or more deduction sources.

[0071] Further, the repayment server 500 comprises a transfer interface 503 configured to deduct, for each point of time, the determined amount from the one or more deduction sources.

[0072] According to various embodiments, in other words, a repayment server is used for managing repayment of a loan. After receiving a specification of a loan (and thus registering

the loan with the repayment server), the repayment server (automatically) handles repayment of the loan by determining repayment amounts as well as repayment times and deducting the determined amounts and the determined times from one or more deduction sources (e.g. from a deduction source which the repayment server selects from a plurality of possible deduction sources).

[0073] FIG. 6 shows a flow diagram 600 illustrating a computer implemented method for providing payback of a loan according to an embodiment.

[0074] In 601, a repayment server receives a specification of a loan.

[0075] In 602, a repayment server receives a specification of one or more deduction sources for deducting amounts to pay back the loan.

[0076] In 603, the repayment server determines a plurality of points of time for deducting amounts from the one or more deduction sources to pay back the loan.

[0077] In 604, the repayment server determines an amount to deduct from the one or more deduction sources for each point of time.

[0078] In 605, the repayment server deducts the determined amount from the one or more deduction sources for each point of time.

[0079] While figures 5 and 6 explain the operation for a single loan, the repayment server may proceed similarly for a plurality of loans. In particular, the repayment server may receive specifications of multiple loans the repayment of which it manages simultaneously.

[0080] The methods described herein may be performed and the various processing or computation units and the devices and computing entities described herein (in particular the repayment server and its components, i.e. the communication interface, the processing unit and the transfer interface) may be implemented by one or more circuits. In an embodiment, a "circuit" may be understood as any kind of a logic implementing entity, which may be hardware, software, firmware, or any combination thereof. Thus, in an embodiment, a "circuit" may be a hard-wired logic circuit or a programmable logic circuit such as a programmable processor, e.g. a microprocessor. A "circuit" may also be software being implemented or executed by a processor, e.g. any kind of computer program, e.g. a computer program using a virtual machine code. Any other kind of implementation of the respective functions which are described herein may also be understood as a "circuit" in accordance with an alternative embodiment. In particular, the processing unit 502 may be a processor, e.g. operating on data stored in a memory of a server computer implementing the repayment server 500.

[0081] While the disclosure has been particularly shown and described with reference to specific embodiments, it should be understood by those skilled in the art that various changes in form and detail may be made therein without departing from the spirit and scope of the invention as defined by the appended claims. The scope of the invention is thus indicated by the appended claims and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced.

CLAIMS

1. A repayment server, comprising:
a communication interface configured to receive a specification of a loan and a specification of one or more deduction sources for deducting amounts to pay back the loan;
a processing unit configured to determine a plurality of points of time for deducting amounts from the one or more deduction sources to pay back the loan and to determine, for each point of time, an amount to deduct from the one or more deduction sources; and
a transfer interface configured to deduct, for each point of time, the determined amount from the one or more deduction sources.
2. The repayment server of claim 1, wherein the processing unit is configured to determine the amount to deduct from the one or more deduction sources such that a predetermined minimum amount remains on the one or more deduction sources.
3. The repayment server of claim 1 or 2, wherein the communication interface is configured to receive a specification of an instalment timing and wherein the processing unit is configured to determine the plurality of points of time such that they occur in accordance with the instalment timing.
4. The repayment server of any one of claims 1 to 3, wherein the communication interface is configured to receive a specification of an instalment frequency with which to deduct amounts from the one or more deduction sources and wherein the processing unit is configured to determine the plurality of points of time such that they occur with the specified frequency.
5. The repayment server of claim 4, wherein the communication interface is configured to receive the specification of the instalment frequency from a lender of the loan.

6. The repayment server of claim 4 or 5, wherein the instalment frequency is daily, weekly, every weekday and monthly.
7. The repayment server of any one of claims 1 to 6, wherein the communication interface is configured to receive a specification of a time when the loan is overdue and wherein determining the plurality of points of time comprises determining the plurality of points in time such that they are after the time from when the loan is overdue.
8. The repayment server of any one of claims 1 to 7, wherein the processing unit is configured to select at least one of the deduction sources and the transfer interface is configured to deduct, for each point of time, the determined amount from the selected at least one deduction source.
9. The repayment server of claim 8, wherein, if the selected at least one deduction source has too little funds for deducting the determined amount, the processing unit is configured to select another deduction source and the transfer interface is configured to deduct, for each point of time, the determined amount from the selected other deduction source.
10. The repayment server of claim 8 or 9, wherein the communication interface is configured to receive a specification of a priority of at least one of the one or more deduction sources and wherein selecting the at least one deduction source comprises selecting at least one deduction source prioritized by the priority.
11. The repayment server of any one of claims 8 to 10, wherein the processing unit is configured to select a deduction source which is prioritized by the priority and wherein, if the selected at least one deduction source has too little funds for deducting the determined amount, the processing unit is configured to select another deduction source with lower priority and the transfer interface is configured to deduct, for each point of time, the determined amount from the selected other deduction source.

12. The repayment server of any one of claims 1 to 11, wherein the processing unit is configured to determine the amounts such that a ringfencing amount is maintained in the one or more deduction sources.
13. The repayment server of claim 12, wherein the processing unit is configured to determine the ringfencing amount depending on a total loan amount of the borrower using the one or more deduction sources for payback.
14. The repayment server of claim 12 or 13, wherein the processing unit is configured to determine the amounts such that the ringfencing amount lies above a configurable ringfencing minimum and to lie below a configurable ringfencing maximum or both.
15. The repayment server of any one of claims 1 to 14, wherein the points of time are points of time at regular time intervals.
16. The repayment server of any one of claims 1 to 15, wherein the processing unit is configured to determine the plurality of times and the amounts such that after deducting the determined amounts at the determined plurality of times the loan has been paid back.
17. The repayment server of any one of claims 1 to 16, wherein the repayment server is configured to provide an Application Programmers Interface between the lender and the merchant for redemption of loan vouchers.
18. A computer implemented method for providing payback of a loan, comprising:
 - a repayment server receiving a specification of a loan;
 - the repayment server receiving a specification of one or more deduction sources for deducting amounts to pay back the loan;
 - the repayment server determining a plurality of points of time for deducting amounts from the one or more deduction sources to pay back the loan;

the repayment server determining, for each point of time, an amount to deduct from the one or more deduction sources; and
the repayment server deducting, for each point of time, the determined amount from the one or more deduction sources.

19. A computer program element comprising program instructions, which, when executed by one or more processors, cause the one or more processors to perform the method of claim 18.
20. A computer-readable medium comprising program instructions, which, when executed by one or more processors, cause the one or more processors to perform the method of claim 18.