FUNDS MANAGEMENT METHOD AND SYSTEM

BACKGROUND OF THE INVENTION

The present invention relates generally to a computerised system for the management of funds, and in particular to a system that enables the management of funds between linked financial accounts in the name of one or more account holders. The invention is suitable for use in computerised systems maintained by banks and other financial institutions in the management of accounts maintained on behalf of their customers, and it will be convenient to describe the invention in relation to that exemplary, non-limiting application.

Conventionally, banks maintain computer systems in which one or more accounts may be maintained for individual customers or account holders. In order to manage the financial affairs of each account holder, a variety of types of accounts may be required, such as a mortgage account, an overdraft account, a current account and a savings account. The mortgage and overdraft accounts are maintained so that the account holder can borrow funds from the bank, whereas the savings account and current account enable an account holder to place funds with the bank and earn interest on those funds. An interest rate is associated with each account, namely either an interest rate determining the additional sums of money that must be repaid by a customer for having borrowed funds from the bank, or an interest rate corresponding to additional sums of money earned by a customer for having placed funds with the bank.

Attempts have been made to assist account holders to manage their various accounts in a financially advantageous manner. For example, some computer systems have recently introduced an offset mortgage function in which funds placed in a savings account are offset against the capital in an associated mortgage account and the interest earned on the savings account is offset against the interest due on the mortgage account. The interest earned on the deposit account is normally at the same rate as the interest due on the mortgage account. This offset mortgage function minimises the interest

expenses that must be repaid by the account holder for the mortgage account and simplifies the management of two accounts for the account holder.

However, many account holders maintain a variety of types of accounts at a financial institution. These accounts include property loan accounts, personal loan accounts, credit card accounts, overdraft accounts, mortgage accounts, cheque accounts, savings accounts and term deposits. Different interest rates may be associated with each of these accounts, so that it is extremely difficult and time consuming for an account holder to determine where their funds should be placed in order to minimise the funds that must be repaid to the financial institution and/or maximise the money that can be earned by the account holder. There currently exists a need to provide a system of managing funds between various linked accounts by one or more account holders that maximises the financial benefits and/or minimises the financial inconveniences to each account holder. There also exists a need to provide a method of managing funds between linked accounts that ameliorates or overcomes one or more disadvantages of known fund management systems.

SUMMARY OF THE INVENTION

With this in mind, one aspect of the invention provides a method of managing funds between linked accounts, the linked accounts including a plurality of loan accounts and plurality of deposit accounts. The method includes the steps of: receiving deposit funds into one or more deposit or loan accounts; and moving the deposit funds to offset borrowings in the plurality of loan accounts to minimise interest paid, up to a first predetermined limit of the deposit funds being moved into a first loan account with up to a second predetermined limit of any excess funds being moved into a second loan account, the first and second loan accounts being determined according to one or more predetermined fund allocation criteria.

In one or more embodiments of the invention, one or both of the first and second predetermined limit is an outstanding loan amount. Alternately,

one or both of the first and second predetermined limit may be a maximum sweeping cap.

The predetermined fund allocation criteria may include an indication of whether a loan account is in arrears. The method may further include the step of, when two or more loan accounts are in arrears, determining a sequence in which the two or more loan accounts are to be settled according to predetermined loan settlement criteria.

The predetermined fund allocation criteria may include a loan account interest rate, the first loan account having a higher interest rate than the second loan account.

The method may further include the step of: once deposit funds have been moved to offset one or more outstanding loan accounts, moving remaining funds into the plurality of deposit accounts to optimise interest earned, the remaining funds being moved into one or more of the deposit accounts according to the fund allocation criteria.

The fund allocation criteria may include a deposit account interest rate, the remaining funds being moved into the deposit account having the highest interest rate.

The fund allocation criteria may be set by an account holder, for example, when two accounts have the same interest rate.

Another aspect of the invention provides a method of managing funds between linked accounts, the linked accounts including a plurality of loan accounts and a plurality of deposit accounts. The method includes the steps of: receiving deposit funds into one of the deposit or loan accounts; and moving the deposit funds into the plurality of deposit accounts to optimise interest earned, the deposit funds being moved into one of the deposit accounts according to one or more predetermined fund allocation criteria.

The fund allocation criteria may include a deposit account interest rate, the deposit funds being moved into the deposit account having the highest interest rate.

The method may further include the steps of: receiving a request to withdraw funds from one of the linked accounts; consolidating the available

balance of funds in all linked accounts; and if the available balance of funds in all linked accounts exceeds the amount of funds requested to be withdrawn, posting the request.

After the withdrawal request has been posted, the method may further include the step of returning funds previously moved to offset loan account borrowings back into the account from which the withdrawal was requested.

Alternately, after the request has been posted, the method may further include the step of returning funds previously moved into the highest interest rate amount back into the account from where the withdrawal was requested.

The linked accounts may include a first plurality of loan accounts and a first plurality of deposit accounts linked under a master profile and a second plurality of deposit accounts linked under a sub-profile. In this case, the method may further include the step of: moving deposit funds in the sub-profile deposit accounts to offset borrowings in the plurality of master profile loan accounts to minimise interest paid.

The method may further include the steps of: receiving a request to withdraw funds from one of the sub-profile deposit accounts; consolidating the available balance of funds in the sub-profile deposit accounts; and if the available balance of funds in the sub-profile deposit accounts exceeds the amount of funds requested to be withdrawn, posting the request.

The method may further include the steps of: receiving a request withdraw funds from one of the master profile accounts; consolidating the available funds in the master profile account; and if the available balance of funds in the master profile accounts exceeds the amount of funds requested to be withdrawn, posting the request.

The master profile and the sub profile may relate to two different account holders, or to the same account holder.

The method may further include the step of: paying bonus interest to the linked deposit accounts.

A further aspect of the invention provides a system for managing funds between linked accounts. The funds management system including an account management engine and transaction processing system, the account

management engine including a series of instructions for causing the transaction processing system to carry out a method as described hereabove.

The account management engine may include a plurality of financial modules, each financial module being selectively operable to perform a financial operation on the linked accounts. The financial operations may includeany one of available balance consolidation, interest optimisation, shared drawing of funds, payment of bonus interest, normal interest offset and bonus interest offset.

Yet another aspect of the invention provides computer software for use in a system for managing funds between linked accounts. The funds management system including an account management engine and transaction processing system, the computer software forming at least part of the account management engine and including a series of instructions for causing the transaction processing system to carry out the method as described here above.

BRIEF DESCRIPTION OF THE INVENTION

The invention will now be described in further detail by reference to the accompanying drawings illustrating exemplary forms of the invention. It is to be understood that the particularity of the drawings does not supersede the generality of the preceding description of the invention.

In the drawings:

Figure 1 is a schematic diagram of one embodiment of a funds management system;

Figure 2 is a schematic diagram of an account management engine forming part of the funds management system of Figure 1;

Figures 3 and 4 are schematic diagrams of profile structure linking accounts managed by the funds management system of Figure 1;

Figure 5 is a schematic diagram showing selected attributes of an exemplary profile linking accounts managed by the funds management system of Figure 1;

Figures 6 to 9 and 12 to 15 are fund movement diagrams showing exemplary funds movement between linked accounts caused by the funds management system of Figure 1;

Figures 10, 11 and 16 to 20 are flow charts showing the operation of various financial modules forming part of the account management engine of Figure 2; and

Figures 21 to 23 are schematic diagrams of different computer implemented operating environments of the funds management system of Figure 1.

DETAILED DESCRIPTION

Referring now to Figure 1, there is shown generally a computerised funds management system 10 for managing funds between linked accounts of customers or account holders. The customers or account holders may be actual persons or legal entities, such as a company. In this figure, exemplary accounts 12 to 18 are illustrated. Each of these accounts are linked to each other and all accounts are held in the name of one or more customers 20. One or more of the accounts 12 to 18 may be client liability accounts, such as a property loan account, an automobile loan account, a personal loan account, a security margin lending account, credit card account, mortgage account or overdraft account. Each of these types of accounts representing a customer liability are referred to as a "loan account" herein. One or more of the accounts 12 to 18 may be representative of client assets such as a cheque account, a current account, savings account, term deposit account, structured deposit and securities account. Each of these client asset accounts are referred to herein as a "deposit account".

In the funds management system 10, deposits are made into and withdrawals made from a transaction processing system 21. The transaction processing system 21 is responsible for verification of the amounts of funds held in each of the accounts 12 to 18, the deposit of funds into or withdrawal of funds from the accounts 12 to 18 and the movement of funds between each of the accounts 12 to 18. The transaction processing system 21 includes deposit

transaction processing logic 22 and loan transaction processing logic 23. Transactions effected by the loan transaction processing logic 23 include loan repayments made to loan accounts, top-ups from loan accounts, interest offset to loan accounts, deposit balance sweep to loan accounts as float balance and float balance withdrawal from loan accounts. Transactions effected by the deposit transaction processing logic 22 include cheque clearing, executing standing instructions and account transfers.

The transaction processing system 21 operates under the control of an account management engine 24, shown in more detail in Figure 2.

The account management engine 24 includes a series of financial modules 26 to 44 selectively operable to perform various financial operations on the linked accounts 12 to 18. A funds management unit 46 causes selective activation of each of the functional units 26 to 44 according to fund allocation criteria 48 and user profiles 50. The user profiles 50 maintain a series of profile attributes 52 to 56 for each of the one or more customers 20 having linked accounts. The account management engine 24 also includes an interest rate table 58 recording the interest to be paid or to be earned before funds withdrawn or funds deposited into each of the accounts 12 to 18.

The first of the financial modules 26 consolidates the available balance of funds in all linked accounts 12 to 18. A second of the financial modules 28 provides a shared drawing function to manage the withdrawal of funds, to an amount up to the consolidated available balance determined by the module 26 from the linked accounts 12 to 18. An interest optimisation module 30 acts to move deposit funds placed in the linked deposit accounts to optimise interest earned or minimise interest paid by an account holder. This functionality is enabled in two ways, the first way being controlled by a "bonus" module 42 in which deposit balances are moved between deposit accounts and the second way being controlled by a "sweeping" module 44 in which deposit balances are moved amongst deposit and loan accounts.

A further module 32 controls the manner in which normal interest earned in the linked deposit accounts is to offset the outstanding balances of the loan accounts linked to those deposit accounts. A bonus interest module 36 determines additional or bonus interest earned on top of the normal interest

as a reward for having linked a number of deposit accounts. The bonus interest offset module 40 determines the manner in which the bonus interest earned is used to offset the linked loan accounts. A swept amount return module 34 determines the conditions under which funds that have been used to offset the loan accounts are returned to the deposit account in which the funds where originally placed.

The user profiles 50 define a structure which will now be explained with reference to Figures 3 to 5. As can be seen in Figure 3, a master profile 60 and one or more sub-profiles, here referenced 62 to 66, may be maintained for the one or more customers 68 having linked accounts 70 to 84. The master profile and sub-profile may relate to different account holders, or alternatively may relate to the same account holder. In this exemplary configuration, the master profile 60 links accounts 70 to 76. One or more of these accounts may be deposit accounts and one or more of these accounts may be loan accounts. The sub-profiles 62 and 64 respectively define single deposit accounts 78 and 80. The sub-profile 66 links two deposit accounts 82 and 84. In one or more embodiments, each of the sub-profiles 62 to 66 may relate to one or more separate customers to the customer of the master profile 60. For example, the sub-profile 62 to 66 may be maintained in the name of family members of a primary customer 68 for whom the master profile 60 is maintained.

The linked accounts include a first plurality of loan accounts and a first plurality of deposit accounts linked under a master profile and a second plurality of deposit accounts linked under a sub-profile. In this structure, deposit funds in the sub-profile deposit accounts are moved to offset borrowings in the plurality of master profile loan accounts to minimise interest paid. When a request to withdraw funds from one of the sub-profile deposit accounts is received; the available balance of funds in the sub-profile deposit accounts is consolidated; and if the available balance of funds in the sub-profile deposit accounts exceeds the amount of funds requested to be withdrawn, the request is posted. Similarly, when a request to withdraw funds from one of the master profile accounts is required; the available balance of funds in the master profile accounts is consolidated, and if the available

balance of funds in the master profile accounts exceeds the amount of funds requested to be withdrawn, the request is posted.

This profile structure enables funds to be compartmentalised under each profile or sub-profile. In this way, funds that have been contributed to a group of accounts listed under one profile or sub-profile are able to be used, for example, to offset borrowings in another profile, but can be taken back into the originating profile without mixing funds from other profiles or sub-profiles.

A number of different profiles may be maintained for one or more customers having linked accounts. As shown in Figure 4, one or more customers may have four accounts 88 to 94 maintained within a financial institution. A first master profile 96 may be maintained for a primary account holder. A sub-profile 98 may be maintained for a family member of the primary account holder in relation to two deposit accounts 100 and 102. In this example, accounts 88 and 90 are loan accounts whilst accounts 92 and 94 are deposit accounts. The master profile 96 and sub-profile 98, in this example, define that the account balance in deposit accounts 100 and 102 are moved or "swept" into the loan accounts 88 and 90 of the master profile, so that the primary account holder is able to benefit from interest saved in the deposit accounts 100 and 102 of a family member to offset interest that must be paid in the loan accounts 88 and 90. Accordingly, it can be seen that the master profile 96 and sub-profile 98 cause the fund management unit 46 to selectively enact the available balance consolidation module 26 shared drawing module 28 and interest optimisation module 30 in the management of the linked accounts 88 to 94 and 100 to 102. In this option, the "sweeping" module 44 is operated by the interest optimisation module 30.

However, a further master profile 104 may also be maintained for the same primary customer. In this example, the master profile 104 links loan accounts 106 and 108 to deposit accounts 110 and 112. This master profile 104 may cause the fund management unit 46 to selectively operate the bonus interest module 36 so that positional interest is paid into the deposit accounts 110 and 112 as a reward for these accounts being linked.

Yet another master profile 114 may be defined for additional loan accounts 116 and 118 and deposit accounts 120 and 122. A sub-profile 124

has been established in this example for a family member of the primary customer and links two deposit accounts 126 and 128 to each other and to the accounts 116 to 122. The master profile 114 and sub-profile 124 causes the fund management unit 46 to selectively activate the available balance consolidation module 26, shared drawing module 28 and interest optimisation module 30 so that deposits made into the deposit accounts 126 and 128 are used to offset funds owed in the loan accounts 116 and 118.

The user profiles 50 include a number of profile attributes used by the fund management unit 46 to manage funds within and control the movement of funds between the various linked accounts. Exemplary types of profile attributes of sweeping order 52, sweeping cap 54 and sweep return criteria 56 are shown in Figure 2. By way of illustration, Figure 5 shows an exemplary configuration in which a master profile 130 and sub-profiles 140 to 144 have been established for one or more customers 138.

The master profile 130 links loan accounts 146 and 148 with deposit accounts 150 and 152. The sub-profile 140 links deposit accounts 154 and 156. Sub-profile 142 includes deposit account 158, whilst the sub-profile 144 includes a deposit account 160. The master profile 130 and sub-profiles 140 to 144 define that deposits made into the deposit accounts 154 to 160 are "swept" into the master profile accounts. That is, deposits made into the deposit accounts 154 to 160 are used to offset outstanding amounts owed in the loan accounts 146 to 148.

The sweeping order 52, that is the order in which funds from the deposit accounts 154 to 160 are "swept" into the loan accounts 146 to 148 are defined by the sweeping order attributes 162, 164 and 166 respectively associated with sub-profiles 140 to 144. These sweeping order attributes define that, in this example, available funds in the deposit account 160 are firstly swept into the loan accounts 146 to 148, followed by available amounts deposited in deposit accounts 154 and 156, and then finally followed funds available in deposit account 158. The amount of money able to be swept into the loan accounts defined under any master profile may be limited by a sweeping cap limit attribute 54. In the example shown in Figure 5, a maximum sweeping cap attribute 168 sets that amount at 70 percent (or $1M) for the loan account 146.

A user profile 50 may also include a sweep return criteria 56 to determine when funds swept into an outstanding loan account to offset interest to be paid in that account are to be returned to the deposit account from where the funds were swept. Accordingly, in Figure 5 the master profile 130 includes a return of float figure, or aging code, attribute to define a predetermined loan arrears age beyond which funds that have been swept into the loan account will be returned to the originating deposit accounts.

It is to be appreciated that various other profile attributes defining the manner in which funds may be managed within or moved between each of the accounts linked in a master profile and/or various related sub-profiles may be defined in other implementations of the funds management system 10. The operation of the various financial function modules 26 to 44 will now be explained with reference to Figures 6 to 20. Figure 6 shows an exemplary master profile 172 linking mortgage accounts 174 and 176, a personal loan account 178, an overdraft account 180 and deposit accounts 182 and 184. A sub-profile 186 links deposit accounts 188 and 190 to each other and to the accounts 174 to 184. As indicated in Figure 6, each of the accounts has an interest rate, varying between 0% for deposit account to 8% for personal loan account 178.

Figures 7 to 9 illustrate the movement of funds between the various accounts 174 to 190 in the case of the master profile 172 and sub-profile 186 causing selective operation of the available balance consolidation module 26 and interest optimisation module 30. Firstly, the available balance consolidation module 26 consolidates the available balance of funds in the deposit accounts 182 and 184 within the master profile 172. Deposit account 182 has an outstanding balance of $5,000 whereas deposit account has an outstanding balance of $70,000, resulting in a total consolidated total balance of $75,000. Although not illustrated in the case shown in Figures 6 to 9, if any of the loan accounts were in arrears, the consolidated available balance of the deposit accounts would firstly be used to match those arrears, and any excess funds would then be used to offset the remaining loan accounts.

However, in this example, funds are swept from the deposit accounts 182 and 184 into the loan account having the highest interest rate, namely the

personal loan account 178. Accordingly, $5,000 from deposit account 182 is firstly swept into the personal loan account 178 at step 194, and then $5,000 from deposit account 184 is then swept into the personal loan account 178 at step 196. Now that the outstanding balance of the personal loan account is zero, a further $50,000 is then swept from the deposit account 184 into the loan account having the next highest interest account, namely the overdraft account 180 having an interest rate of 7%. This step is referenced 198 in Figure 8. The remaining outstanding balance of $15,000 in deposit account 184 is then swept into the loan account having the next highest interest rate, namely the mortgage account 176.

As can be seen in Figure 9, the remaining $15,000 outstanding balance in deposit account 182 is swept into the mortgage account 172 at step 200. Accordingly, the interest required to be paid by the primary customer 192 has been minimised by the interest optimisation module 30 within those accounts 174 to 184 linked under the master profile 172. In this example though, the deposit accounts 188 and 190, which may be in the name of a family member related to the primary customer 192, may also be swept into the loan accounts 174 to 180 in order to further minimise interest paid by the primary customer 192. In this example, the outstanding balance of $50,000 in the lowest interest bearing deposit account under sub-profile 186, namely deposit account 190, is firstly swept into the mortgage account 176 at step 202. At step 204, a portion of the funds available in deposit account 188 are then used to offset the remaining outstanding balance in mortgage account 176. At step 206, the funds remaining in deposit account 188 are then used to offset the remaining mortgage account 174.

From the foregoing it can be seen that initially deposit funds are received into one of deposit or loan accounts. The deposit funds are then moved to offset borrowings in the loan accounts to minimise interest paid in the plurality of loan accounts. Up to a first predetermined limit of the deposit funds are moved into a first loan account with up to a second predetermined limit of any excess funds being moved into a second loan account. The first and second loan accounts are determined according to predetermined fund allocation criteria. The predetermined limit may be an outstanding loan

amount, a maximum offset cap or other suitable limit. The predetermined fund allocation criteria may include an indication of whether a loan account is in arrears, a loan account interest rate (the first loan account having a higher interest rate than the second loan account) or other suitable criteria.

Once deposit funds having been moved to offset one or more outstanding loan accounts, the remaining funds may be moved into the plurality of deposit accounts to optimise interest earned. The remaining funds can then be moved into one or more of the deposit accounts according to the fund allocation criteria.

When a request to withdraw funds is made, after the request has been posted, funds are moved to offset borrowings in the loan accounts to minimise interest paid. Up to a first predetermined limit of the deposit funds is moved into the first loan account with up to a second predetermined limit of any excess funds being moved into the second loan account. The first and second loan accounts are determined according to predetermined fund allocation criteria.

The process described in relation to Figures 6 to 9 is illustrated generically in Figure 10. This figure shows exemplary loan accounts 208 and 210 and deposit accounts 212 to 216. Each of the loan accounts 208 and 210 and deposit accounts 212 to 216 are linked under a common master profile. At step 218, the available balance in the deposit accounts 212 to 216 is consolidated.

At step 220, balance coverage is performed. In this operation, the account management engine 24 uses the consolidated balance to cover any unauthorised debit balance in a deposit account to avoid any debit interest being charged or to cover any arrears balance of linked loan accounts. Again, this is to minimise the interest charge to be paid or delinquency "bad" status of the loan customer.

At step 222, a determination is made as to whether any of the loan accounts 208 or 210 is in arrears. If so, funds available from the consolidated available balance of the deposit accounts 212 to 216 are used to meet the loan in arrears.

If there are two or more loan accounts in arrears, the account management engine 24 determines a sequence in which the loan account arrears are to be settled. That sequence may be determined by loan settlement criteria such as aging of arrears, loan outstanding amount, arrears balance, fund allocation priority and loan interest rate. The loan settlement criteria may be user-selectable.

At step 224, a determination is made as to whether excess consolidated funds are available. If so, these excess funds are used to offset an outstanding loan account. If excess funds are still determined to be available at step 228 once loan arrears have been made and loan offsets have been applied, then these excess funds are moved to the deposit account paying the highest interest rate at step 230.

Figure 11 illustrates the generic process followed when the same financial function modules are caused to be operated by the fund management unit under the control of the user profile in question, when funds are withdrawn from the accounts 208 to 216. It can be seen that after a request to withdraw funds from one of the linked accounts, funds are moved into the deposit accounts to optimise interest earned. The remaining funds are moved into one of the deposit accounts according to predetermined fund allocation criteria.

The available funds for withdrawal may include a deposit amount put in and the amount of interest that has been saved from the reduced mortgage loan principal. This is illustrated by the following example. Because the deposit offsets the loan principal, monthly loan interest is saved. The interest saved will become the available limit for withdrawal by the master profile, in addition to the deposit put into the account.

In the example shown in Figure 11, funds are requested to be withdrawn at step 232 from exemplary deposit account 228. At step 234, a determination is made as to whether the requested amount is greater than the consolidated available balance from the deposit accounts 212 to 216. If the requested withdrawal amount is greater than the consolidated available balance, then the transaction is rejected at step 236. Otherwise, the requested withdrawal amount is deducted at step 236 from the aggregate available balance and from the current account balance.

Most of the time, the deposit account current balance will be zero as everything has been swept to loan account. Whenever there is a withdrawal, the current balance will become negative (debit balance). With an account in debit balance, the deposit transaction processing system 22 will charge debit interest. In order to minimize the interest to be charged/paid by the customer, the balance coverage will be carried out at step 238 will try to find funds from the consolidated account balance to cover the debit balance so that there will be no debit interest to be charged. In order to perform balance coverage, the system will firstly use the consolidated balance left at step 240, if any. If this exists, it will be used to cover the debit balance, namely credit amount to the debit balance account and deduct the same amount from the consolidated balance at step 242.

After using up all consolidated balance, if there is still arrears/debit balance at step 244, the system will use the available Preset Safety Limit (PSL) of the loan, increasing the loan outstanding balance at step 246. The PSL is the difference between the original loan balance schedule and the actual loan balance schedule, namely the accelerated loan balance reduction due to sweeping.

After the balance coverage completes, if there is still debit balance/loan arrears at step 248, the system will behave as usual to charge debit interest in case of deposit account or late charge in case of loan account at step 250. Funds previously swept to offset loan account borrowings are returned back into the account from where the withdrawal was requested, if the account has used for the consolidation of available balance.

Figure 12 illustrates an example of a master profile 252 linking mortgage account 254, overdraft account 256 and statement savings account 258. A sub-profile 260 links the statement savings account 262 and current account 264 to each other and to accounts 254 to 258. This figure illustrates operation of the shared drawing module 28 and available balance consolidation module 26 of the account management engine 24.

The shared drawing module 28 manages the withdrawal of funds from linked accounts within the consolidated available balance as determined by the available balance consolidation module 26. By balancing funds within the

linked accounts, a customer is often able to avoid additional borrowing from the institution at which the linked accounts are maintained. In the shared drawing function, all cleared funds are made available to the customer from the linked accounts upon withdrawal from any one of the accounts. Figure 12 illustrates the case in which $2,000 is requested to be withdrawn from one of the two deposit accounts linked by the sub-profile 260. In this case, $2,000 is requested to be withdrawn from the current account 264. Prior to the withdrawal, the current balance in both the statement savings account 262 and the current account 264 is zero whilst the available balance from either account (consolidated) is $2,500. Upon a request being made to withdraw $2,000 from the current account 264, the available balance from either account is reduced from $2,500 to $500.

A further example is provided in Figure 13 following withdrawal of the $2,000 from one of the deposit accounts linked by the sub-profile 260, a request is then made to withdraw $21,000 from the overdraft account 256. It can be seen in Figure 13 that after this withdrawal is made, the available balance from the overdraft account 256 and statement savings account 258 is reduced from $25,000 to $4,000. In other words, the available balance indicated in Figures 12 and 13 for any one of the accounts is representative of the aggregate available balance available across all accounts linked by either the master profile 252 or the sub-profile 260.

A further example is shown in Figure 14, in which - after withdrawal of the $21,000 from the overdraft account 265 - a further $1,500 is requested to be withdrawn from the master profile 252. In this case, it can be seen that the available balance in either of the overdraft account 256 and statement savings account 258 are reduced after the withdrawal is made to $2,500.

Figure 15 illustrates an example of the sweeping caps 54 maintained by the account management engine 24. In the illustrated example, a master profile 270 and related sub-profiles 272 to 276 are established for a primary customer 278. Master profile 270 links deposit and loan accounts 280 to 286, sub-profile 272 links deposit accounts 288 and 290, respectively link deposit accounts 292 and 294 to the remaining accounts in the master profile. In this figure, deposit accounts 282 to 286 in the master profile 270 are deposit

accounts. The current balance of these accounts as illustrated is $0.5M. The current balance in accounts forming part of sub-profile 272, 274 and 276 are respectively $0.7M, $0.4M and $0.3M.

When sweeping is carried out, namely when the interest optimisation module 30 acts to move funds between the various linked accounts 280 to 294, funds from the deposit accounts 282 to 286 within the master profile 270 are firstly swept into the outstanding loan account 280 within that same master profile at step 304. The amount able to be swept into the loan account 280 in order to offset the loan balance so as to minimise loan interest to be paid is set by a maximum sweeping cap 54 maintained by the account management engine 24.

The maximum sweeping cap is referenced 296 and is set to a value of $1.0M. Once the entire current balance of $0.5M from the deposit accounts 282 to 286 is swept to offset interest paid on the loan in the loan account 280, the interest optimisation module 30 then examines the sweeping order flags to 298, 300 and 302 respectively associated with the sub-profiles 272 to 276. In this case, funds available from the deposit account 294 associated with sub-profile 276 are firstly swept into the master profile 270 at step 306. Once the $0.3M is swept from deposit account 294, the funds available from deposit account 292 under sub-profile 274 are next swept into the master profile at step 308. Although $0.4M are currently available to be swept into the master profile 270, the maximum sweeping cap of $1.0M is reached when only half of that amount, namely $0.2M is swept into the master profile. Accordingly, the float balance in the deposit account 292 maintained within sub-profile 274 remains at $0.2M after the sweeping operation.

It is to be appreciated that the available balance from the deposit accounts linked under each of the sub-profiles remains unchanged from before the sweeping operation. In other words, the funds that have been swept to offset the outstanding amounts owed from the loan accounts under the master profile remain available to be withdrawn by the account holders associated with each of the sub-profiles 272 to 276. The same is also true for the master profile 270.

Figure 16 illustrates the generic operation of the interest optimisation module 30 together with the bonus interest module 36. In this figure, exemplary loan accounts 310 and 312 are illustrated, together with exemplary deposit accounts 314 to 318. Each of these accounts are linked together under a same master profile (a sub-profile setup is not required for the bonus interest function). This example illustrates the operation of the account management engine in dealing with bonus interest earned in the various deposit accounts as a reward for having linked several accounts together under the same master profile and/or sub-profiles.

At step 320, bonus interest is accrued to each account. When it is determined at step 322 that an appropriate interest cycle has occurred, then the bonus interest is credited to each account at step 324. If it is determined by the fund management unit 46 that the interest is to be offset to the loan accounts 310 and 312 at step 326, then, at step 328 a determination is made as to whether any of the outstanding loans are in arrears. If this is the case, then the interest is used to cover at least a portion of those arrears. If excess funds remain after that operation, as determined at step 330, then excess funds are used to offset one or both loan accounts 310 and 312 according to fund location criteria 48 at step 332. Steps 320 to 332 correspond to the functionality performed by the bonus interest module 36. The operations illustrated in Figure 16 cause interest optimisation to occur only between the deposit accounts 314 to 318 (according to the bonus interest module 42).

Accordingly, at step 334, the available balance consolidation module 26 determines the consolidated available balance from all of the deposit accounts 314 to 318. This consolidated available balance is then transferred at step 336 to whichever of the deposit accounts 314 to 318 is determined to have the highest interest rate according to the interest rate table 58 maintained in the account management engine 24. Conversely, when a request is made to withdraw funds from the deposit account 318, as illustrated in Figure 17, the available consolidated balance is determined at step 338 by the available balance consolidation module 26. If a debit balance is determined to exist at step 340, the system will check at step 344 whether consolidated balance is still available. If so, balance coverage is performed at step 346 to cover the

debit balance of deposit account 318 by crediting the amount to account 318 to avoid any debit interest being charged.

Figures 18 and 19 illustrate the operation of the interest optimisation module 30 alone in the case of a deposit being made and in the case of a withdrawal being made.

When funds are received into one of the deposit or loan accounts, the funds are moved into the deposit accounts to optimise interest earned. The funds are moved into one of the deposit accounts according to predetermined fund allocation criteria, such as a deposit account interest rate, the deposit funds being moved into the deposit account having the highest interest rate. In some embodiments, the fund allocation criteria can be set by an account holder.

Conversely, when a request to withdraw funds from one of the linked accounts is made, the available balance of funds in all linked accounts is consolidated and if the available balance of funds in all linked accounts exceeds the amount of funds requested to be withdrawn, the request is posted. After the request has been posted, the funds are moved into the deposit accounts to optimise interest earned. The remaining funds are moved into one of the deposit accounts according to predetermined fund allocation criteria.

As shown in Figure 18, when a deposit is made into any one of the deposit accounts 314 to 318, then the available balance is consolidated at step 348 and the deposited funds are placed in the deposit account (in this case deposit account 318) paying the highest interest. Figure 19 shows that when a withdrawal is requested to be made from any one of the deposit accounts 314 to 318, the account balance is firstly consolidated at step 350. If it is determined at step 352 that sufficient funds are available to cover the withdrawal request 354, then the withdrawal is posted. If there is still a positive available balance, as determined at step 354, after the withdrawal is made, then balance coverage is performed at step 356 to return those excess funds to the deposit account paying the highest interest.

Finally, the operation of the bonus interest module 36 is illustrated generically in Figure 20 in relation to the same loan accounts 310 and 312, together with the same deposit accounts 314 to 318. At step 358 the bonus interest that is to be paid to the accounts of the primary customer as a reward for having linked several accounts together is accrued to each account. When it is determined that at step 360 that the next interest cycle has occurred, then the bonus interest is credited to each account at step 362. If the relevant user profile 50 indicates that the interest earned in the deposit account is to be used to offset outstanding amounts from the loan accounts 310 to 312 at step 364, then a check is firstly made at step 368 as to whether any of the loan accounts are in arrears. If this is the case, then the bonus interest accrued is used to pay the arrears. If any excess funds are determined to be subsequently available at step 370, then those funds are used at step 372 to offset one or both of the loan accounts 310 and 312 according to the fund allocation criteria 48.

The funds management engine 24 allows a cap to be set of the amount of deposit earning bonus interest. The cap can be set at account level at a percentage of an outstanding loan where the aggregate of the percentage is within 100%. The bonus interest and/or the normal interest earned by each deposit account can be used to offset the loan principal every month on the statement cycle date. Alternatively, it can be kept at deposit account as available balance for withdrawal.

Table 1 set out below lists exemplary fund allocation criteria 48 used by the fund management unit 46 and the financial function modules 26 to 44 to determine the source and destination of funds within the various linked accounts when the functionality of the various modules 26 to 44 is implemented. In one or more embodiments, the fund allocation criteria can be set by an account holder. For example, when funds are to be transferred from a first account into one of two accounts that have the same interest rate, an account holder can set the fund allocation criteria to ensure that money is moved into a predetermined account.

From Products	To Products	Allocation Criteria
Saving/Current Account	Saving/Current Account	Fund sweep to deposit account with highest Credit Interest

From Products	To Products	Allocation Criteria
		Rate
Saving/Current Account	Overdraft Account	- Fund swept to cover debit bal on OD
Saving/Current Account	Mortgage Loan (SWEEPING package)	Allow to Swept as Float Balance and cover loan arrears
Saving / Current Account	Mortgage Loan (Non-SWEEPING package)	Only allowed for normal loan repayment, or to cover loan arrears.
Overdraft Account	Saving/Current Account	Only the credit bal on OD will sweep to Deposit a/c with highest credit int rate
Overdraft Account	Overdraft Account	Sweep debit bal to OD with lower dr interest rate
Overdraft Account	RLA account (SWEEPING package)	Only the credit bal is allowed to swept as Float Balance and cover loan arrears.
Overdraft Account	RLA Account (Non-SWEEPING package)	Only the credit bal is allowed to use to cover loan arrears.
Mortgage Loan (SWEEPING package)	Saving/Current Account	Only allow to use available PSL (top-up) and Float bal to cover casual OD in Deposit Account caused by auto-borrow
Mortgage Loan (Non-SWEEPING package)	Saving/Current Account	Only allow to use available PSL (top-up) to cover casual OD in Deposit Account caused by auto-borrow
Mortgage Loan (SWEEPING package)	Overdraft Account	Only allow Float bal to cover debit bal in OD accounts. Top-up against available PSL is not allowed to used to cover utilized limit.
Mortgage Loan (Non-SWEEPING package)	Overdraft Account	Top-up against available PSL is not allowed to cover utilized limit, but allowed to cover the dr bal in excess of the limit
Mortgage Loan (Non-SWEEPING package)	Mortgage Loan	Available PSL is not allowed to swept among loans. But available PSL can be used to settle the arrears of another mortgage loan
Mortgage Loan (SWEEPING package)	Mortgage Loan	Float balance is allowed to swept among loans.

Table 1

Figure 21 is a schematic diagram illustrating the implementation of the funds management system 10 in a stand-alone, locally-run environment. This figure shows a personal computer or other computing device 400 connected to database 402. The account management engine 24 and transaction processing unit 22 are executed or run on the computing device 400, relying upon data maintained in the database 402. During its operation, users interact with the computing device 400 via a graphic user interface 404.

Figure 22 illustrates a distributed network environment representing an alternative implementation of the funds management system 10. The account management engine and transaction processing unit are implemented on a remote server 406 associated with a database 408. Access to the account management engine and transaction processing unit is provided from remote terminals 410 and 412 via a data network 414, such as the Internet. The terminal 410 is connected to a database 416 for local data storage. Operation of the terminal 410 is facilitated by provision of graphic user interfaces 418. Similarly, a database 420 is connected to the terminal 412 and interaction with the terminal 412 is provided by means of graphic user interfaces 422.

One or more entities or functions of the funds management system 10 may be implemented by using hardware, software or a combination thereof and may be implemented in one of the environments illustrated in Figures 21 and 22 or in one or more other stand-alone or distributed computer environments or architectures. An example of a computer system suitable for this purpose is shown in Figure 23. After reading this description, it will become apparent to a person skilled in the relevant art how to implement the invention using other computer systems and/or other computer architectures.

The computer system 430 shown in Figure 23 includes one or more processors, such as processor 432. The processor 432 is connected to a communication infrastructure 434. The computer system may include a display interface 436 that forwards graphics, text and other data from the communications infrastructure 434 for display on a display unit 438. The computer system 430 may also include a main memory 440, for example random access memory, and may also include a secondary memory 442.

The secondary memory 442 may include, for example, a hard disc drive 444, representing a floppy disc drive, magnetic tape drive, optical disc drive, etc. The removable storage drive 446 reads from and/or writes to a removable storage unit 448 in a well known manner. The removable storage unit 448 represents a floppy disc, magnetic tape, optical disc etc which is read by and written to by the removable storage drive 446.

As will be appreciated, the removable storage unit 448 includes a computer usable storage medium having stored the computer software in the

form of a series of instructions to cause the processor 210 to be carried out desired functionality. In alternative embodiments, the secondary memory 442 may include other similar means for allowing computer programs or instructions to be loaded into the computer system 430. Such means may include, for example, a removable storage unit 450 and associated interface 452.

The computer system 430 may also include a communications interface 454. The communications interface 454 allow software and data to be transferred between the computer system 430 and other external devices. Examples of communications interface 454 may include a modem, a network interface, a communications port, a PCMCIA slot and card, etc. Software and data transferred via a communications interface 454 may be in the form of signals which may be electromagnetic, electronic, optical or other signals capable of being received by the communications interface 454. The signals are provided to communications interface 454 via a communications path for 456 such as a wire or cable, fibre optics, phone line, cellular phone link, radio frequency link or other communications channel.

Although the above described embodiments of the invention are implemented primarily using computer software, in other embodiments may be implemented primarily in hardware using, for example, hardware components such as an application specific integrated circuit (ASIC). Implementation of a hardware state machine so as to perform the functions describe herein will be apparent to persons skilled in the relevant art. In other embodiments, the invention may be implemented using a combination of both hardware and software.

While the present invention has been described in conjunction with a limited number of embodiments. It will be apparent to those skilled in the art that many alternatives, modifications and variations in light of the foregoing description are possible. Accordingly, the present invention is intended to embrace all such alternatives, modifications and variations as may fall within the spirit and scope of the invention as disclosed.

CLAIMS:

1. A method of managing funds between linked accounts, the linked accounts including a plurality of loan accounts and a plurality of deposit accounts, the method including the steps of:

receiving deposit funds into one of the deposit or loan accounts; and

moving the deposit funds to offset borrowings in the plurality of loan accounts to minimise interest paid in the plurality of loan accounts, up to a first predetermined limit of the deposit funds being moved into a first loan account with up to a second predetermined limit of any excess funds being moved into a second loan account, the first and second loan accounts being determined according to one or more predetermined fund allocation criteria.

2. A method according to claim 1, wherein one or both of the first and second predetermined limit is an outstanding loan amount.

3. A method according to claim 1, wherein one or both of the first and second predetermined limit is a maximum sweeping cap.

4. A method according to any one of the preceding claims, wherein the predetermined fund allocation criteria include an indication of whether a loan account is in arrears.

5. A method according to claim 4, and further including the step of:

when two or more loan accounts are in arrears, determining a sequence in which the two or more loan accounts are to be settled according to predetermined loan settlement criteria.

6. A method according to any one of the preceding claims, wherein the predetermined fund allocation criteria include a loan account interest rate, the first loan account having a higher interest rate than the second loan account.

7. A method according to any one of the preceding claims, and further including the step of:

once deposit funds have been moved to offset one or more outstanding loan accounts, moving remaining funds into the plurality of deposit accounts to optimise interest earned, the remaining funds being moved into one or more of the deposit accounts according to the fund allocation criteria.

8. A method according to claim 7, wherein the fund allocation criteria include a deposit account interest rate, the remaining funds being moved into the deposit account having the highest interest rate.

9. A method according to any one of the preceding claims, wherein the fund allocation criteria can be set by an account holder.

10. A method according to claim 8, wherein the fund allocation criteria can only be set by an account holder where two accounts have the same interest rate.

11. A method according to any one of the preceding claims, and further including the steps of:

receiving a request to withdraw funds from one of the linked accounts;

consolidating the available balance of funds in all linked accounts; and

if the available balance of funds in all linked accounts exceeds the amount of funds requested to be withdrawn, posting the request.

12. A method according to claim 11, and further including the step of:

after the withdrawal request has been posted, returning funds previously moved to offset loan account borrowings back into the account from where the withdrawal was requested.

13. A method according to claim 11 and further including the step of:

returning funds previously moved into the highest interest rate account back into the account from where the withdrawal was requested after the withdrawal request has been posted.

14. A method according to any one of the preceding claims, wherein the linked accounts include a first plurality of loan accounts and a first plurality of deposit accounts linked under a master profile and a second plurality of deposit accounts linked under a sub-profile, the method including the step of:

moving deposit funds in the sub-profile deposit accounts to offset borrowings in the plurality of master profile loan accounts to minimise interest paid.

15. A method according to claim 14, and further including the steps of:

receiving a request to withdraw funds from one of the sub-profile deposit accounts;

consolidating the available balance of funds in the sub-profile deposit accounts; and

if the available balance of funds in the sub-profile deposit accounts exceeds the amount of funds requested to be withdrawn, posting the request.

16. A method according to either one of claims 14 or 15, and further including the steps of:

receiving a request to withdraw funds from one of the master profile accounts;

consolidating the available balance of funds in the master profile accounts; and

if the available balance of funds in the master profile accounts exceeds the amount of funds requested to be withdrawn, posting the request.

17. A method according to any one of claims 14 to 16, wherein the master profile and the sub-profile relate to two different account holders.

18. A method according to any one of claims 14 to 16, wherein the master profile and the sub-profile relate to the same account holder.

19. A method according to any one of the preceding claims, and further including the step of:

paying bonus interest to the linked deposit accounts.

20. A system for managing funds between linked accounts, the funds management system including an account management engine and transaction processing system, the account management engine including a series of instructions for causing the transaction processing system to carry out a method according to any one of the preceding claims.

21. A system according to claim 20, wherein the account management engine includes a plurality of financial modules, each financial module being selectively operable to perform a financial operation on the linked accounts.

22. A system according to claim 21, wherein the financial operations include any one of the available balance consolidation, interest optimisation, shared

drawing of funds, payment of bonus interest, normal interest offset and bonus interest offset.

23. Computer software for use in a system for managing funds between linked accounts, the funds management system including an account management engine and transaction processing system, the computer software forming at least part of the part of account management engine and including a series of instructions for causing the transaction processing system to carry out a method according to any one of claims 1 to 19.