A method and program product for conducting business transactions and avoiding inadvertent overdrafts. First, the value of an intended purchase is estimated and an electronic receipt is generated for the estimate. An account identified for payment (e.g., a checking account or a credit card account) is analyzed for sufficient funds and, alerts may be provided whenever the analysis indicates that the account has insufficient funds. As a result of the alert, the purchase may be halted or another form of payment may be selected. Also, total in-store purchases may be estimated and other accounts may be analyzed to determine if, in addition to being overdrawn for the selected account, the transaction is over budget.
PURCHASE ESTIMATE

SCAN CHECK/CREDIT CARD

GENERATE ELECTRONIC RECEIPT

ANALYZE ACCOUNT

Funds AVAILABLE?

ALERT CUSTOMER

ALERT PURCHASER: REQUEST ANOTHER FORM OF PAYMENT

COMPLETE PURCHASE

Fig. 2
122 PURCHASE
ESTIMATE?

126 Y

128 ESTIMATE IN-STORE
PURCHASES

128 ESTIMATE TO
REAL-TIME
ANALYSIS

130 RETURN
ANALYSIS
RESULTS

130 N

132 FUNDS
AVAILABLE?

134 Y

134 USE ALTERNATE
FORM OF
PAYMENT

124 COMPLETE
PURCHASE

122 N

Fig. 3
PURCHASES ESTIMATED?

ESTIMATE IN-STORE PURCHASES

ESTIMATE TO REAL-TIME BUDGET ANALYSIS

RETURN ANALYSIS RESULTS

OVER BUDGET TOTAL/SUB-CAT?

REDUCE/HALT PURCHASES

COMPLETE PURCHASE

Fig. 4
SYSTEM AND METHOD OF AUTOMATIC INSUFFICIENT FUNDS NOTIFICATION AND OVERDRAFT PROTECTION

CROSS REFERENCE TO RELATED APPLICATIONS


BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention generally relates to business transactions and more particularly to in-store business transactions and payment of such in-store business transactions and self service transactions at electronic Point of Sale kiosks, such as at automated gas pumps and the like.

[0004] 2. Background Description

[0005] Frequently, new businesses fail because of cash flow problems and under capitalization. Often this is because a new business person finds it difficult tracking business expenses. Also, the typical 30-90 day lag time between invoicing and payment can cause budgeting problems, even when accounts receivable sufficiently cover ordinary expenses. Bad or bounced checks further deplete business resources and are not reflected on the balance sheet until marked as a loss. So, while the balance sheet may indicate that the business is in the black, a large accounts receivable may leave the business cash poor and unable to meet payroll or pay creditors on time.

[0006] Moreover, tracking bills, payments and receipts can be a very time consuming process. A business may have multiple employees on expense accounts or otherwise spending company money, each too busy to take time to promptly account for expenditures. Even if business promptly entered expenditures and receipts in the books, many businesses only balance their financial books/checkbooks once a month. There are a number of commercially available accounting software packages to assist small businesses in these complicated and time-consuming accounting tasks. Unfortunately, these off-the-shelf packages depend upon either manually entering the data or periodically downloading checking account and credit card information from multiple accounts.

[0007] These types of expenditure problems are not limited to new businesses; individuals and families frequently encounter similar cash flow problems as well. Financial difficulties arising from these types of monetary issues can stress a marriage to the breaking point. For example, couples may use a joint bank account and have joint credit card accounts; individually drawing on the same account and independently charging purchases to their joint accounts. When one or both of the partners is lax about recording joint account transactions, the charges may reach the credit card limit and/or the account may become overdrawn without either party realizing the problem. Consequently, outstanding checks can exceed available funds and some may even bounce for insufficient funds. Without available funds, credit card payment due dates may pass without payment, leaving the credit cards unpaid. Bounced checks and missed credit card payments injure both partners’ credit rating. Unfortunately, these bounced checks and missed credit card payments incur large penalties that further exacerbate the problem, potentially stretching an already tight budget past the breaking point. If, for example, one partner is susceptible to “impulse buying,” spontaneously making unplanned purchases, the couples’ budget may be blown before the other partner is aware of the problem. For these and other reasons, marital finances have been named, consistently, the top source of marital strife.

[0008] Thus, there is a need for notifying individuals and business of potential budgetary problems in real time; more particularly, for notifying the appropriate individual(s) of such potential budgetary problems based on estimated spending that accounts are in danger of being overdrawn; and, optionally, preventing parties from overdrawing the account(s).

SUMMARY OF THE INVENTION

[0009] It is therefore a purpose of the invention to reduce inadvertent overdrafts and unbudgeted/over-budget expenditures;

[0010] It is another purpose of this invention to selectively allow business transactions to go forward even with insufficient funds in an account initially selected for payment;

[0011] It is yet another purpose of the invention to reduce inadvertent overdrafts in point-of-sale terminal purchases.

[0012] The present invention is related to a method and program product for conducting business transactions and avoiding inadvertent overdrafts. First, the value of an intended purchase is estimated and an electronic receipt is generated for the estimate. An account identified for payment (e.g., a checking account or a credit card account) is analyzed for sufficient funds and alerts may be provided whenever the analysis indicates that the account has insufficient funds. As a result of the alert, the purchase may be halted or another form of payment may be selected. Also, total in-store purchases may be estimated and other accounts may be analyzed to determine if, in addition to being overdrawn for the selected account, the transaction is over budget.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The foregoing and other objects, aspects and advantages will be better understood from the following detailed description of a preferred embodiment of the invention with reference to the drawings, in which:

[0014] FIG. 1 shows an example of a preferred point-of-sale (POS) terminal electronic receipt generation environment, for customer transacting business at POS terminals.
FIG. 2 shows a flow chart example of notifying a business/merchant that an account is becoming overdrawn by a purchaser/customer in the environment of FIG. 1.

FIG. 3 shows a flow chart example providing optional consumer purchase estimates, wherein a customer estimates the availability of funds.

FIG. 4 shows another flow chart example of an over total budget estimate based on a purchase estimate.

FIG. 5 shows a flow chart example of optionally providing over-budget alerts based on the itemized electronic receipt, e.g., as a result of an over total budget estimate.

DESCRIPTION OF PREFERRED EMBODIMENTS

Turning now to the drawings, and more particularly, FIG. 1 shows an example of a preferred point-of-sale (POS) terminal electronic receipt generation environment, customer location (i.e., identified with a client business) and point-of-sale terminal 14 (hereinafter “POS terminal 14”), such as described in published U.S. patent application Ser. No. 10/430,824 (Attorney Docket No. BLD920030021US1), entitled “Point-Of-Sale Electronic Receipt Generation” to Joan L. Mitchell et al., filed May 6, 2003, published Nov. 11, 2004, publication No. 2004/0225567 A1, assigned to the assignee of the present invention and incorporated herein by reference. Customer locations 12, e.g., a wallet that includes, for example, cash 16, a check 18, a credit card 20 and/or a smart card 22, or any other suitable well known payment mechanisms for paying for merchandise, e.g., gift certificates or store credits. Customer location 12 may also communicate with POS terminal 14 using a personal digital assistant (PDA) 24 or any other suitable handheld computer or communication system, with an appropriately communicating port (not shown), e.g., infrared (IR) or radio frequency identification (RFID). POS terminal 14 conducts each sales transaction and generates an electronic receipt 26 for each and, optionally, a conventional paper receipt 28. According to a preferred embodiment of the present invention, individuals, families, and businesses receive real time cash-flow and budget analysis, and as a byproduct of each transaction, improved financial health.

As used herein for example only, a customer, shopper or purchaser (used interchangeably) at a customer location 12 is identified with a private or public concern such as conducting a transaction with a merchant or other business concern. The private concern may be, for example an individual household, a business or other organization or business. Similarly, a public concern may be, for example, a business or a non-profit organization. Thus, a customer/purchaser may be a member of the household, a business employee or a member of the organization. The POS 14 is located with the business concern 30, e.g., in a bank, on the premises of a department or grocery store or is, suitably located for electronic purchases (e-purchases). Further, either or both of the customers to the business concern and the private/public concern are proactively alerted or notified of budgetary problems, even from available downloadable information that normally does not include sufficient budgetary detail, e.g., to automatically assign each purchase to a budget category. Thus, the present invention facilitates budget compliance, even when a particular customer is not paying attention to the effects of individual purchases during shopping, to mitigate the effects of impulse-buying and other extra-budgeted purchases.

Each POS terminal 14 may be located on customer premises 30, e.g., a bank, or be remotely located and include an imager 40, a check/currency inserter 42, a receipt instruction receiver 46 with a receipt destination retriever 62, an electronic receipt generator (ERG) 48 with an authenticating data generator (ADG) 50, a transmitter 52 and any other components (OC) 54. Imager 40 converts cash (paper currency or bills) 16, and/or checks 18 into images 58 that may be inserted by check/currency inserter 42 into a paper receipt, 28 an electronic receipt 26 or both for recordation. Electronic receipt generation and storage is also described, for example, in published U.S. patent application Ser. No. 10/446,204 (Attorney Docket No. BLD92003001US1) entitled “Expense Accounting Data Management Based on Electronic Expense Document” to Joan L. Mitchell et al., filed May 27, 2003, published Dec. 2, 2004, publication No. 2004/0243489 A1, assigned to the assignee of the present invention and incorporated herein by reference. Receipt instruction receiver (RIR) 46 may include a destination retriever (DR) 62 and receive receipt instructions (RI) 60. Each receipt instruction 60 includes a Receipt Destination Identifier (RDI) 64 and a content instruction (CI) 66. A receipt instruction 60 reflects communicated customer preferences, e.g., provided verbally and manually entered to POS terminal 14 or electronically generated. Electronically generated customer preferences may be gathered, for example, from an electronic payment from, for example, a credit card 20, a smart card 22, a PDA 24 or any other suitable electronic payment mechanism.
authentication system, a smart card authentication system, a PDA communications system, RFID detection modules and/or a cash drawer.

[0023] Preferably, receipt destination 65 includes an expense accounting system 80 such as a customer employer expense reporting system, a customer personal expense tracking system (e.g., Quicken®, Microsoft Money®, TurboTax® or a spreadsheet application) and/or a customer accountant expense tracking system. Each electronic receipt 26 provides immediate information for cash flow and budget purposes to expense accounting system 80. Also, the expense account system 80 may include an expense categorizer (FC) 82 categorizing each electronic receipt 26 into an expense category, e.g., clothing, food, or entertainment. A tax data collector (TDC) 84 gathers tax related data in electronic receipts 26, e.g., sales tax, deductible expenses, deductible donations, and medical expenses. A tax authority (TA) 86 (e.g., the US Internal Revenue Service (IRS), a state tax department, or foreign equivalent thereof) may provide tax related information or, tax related information may be otherwise provided. Also, the receipt destination 65 may include appropriate receipt storage 88 for long term archiving.

[0024] FIG. 2 shows a flow chart example 100 of notifying a business concern according to a preferred embodiment of the present invention that an account may be under-funded and so, not have sufficient funds to cover a current transaction, e.g., a purchase or purchases by a purchaser in the environment 10 of FIG. 1. Prior to making a purchase, in step 102 the business/merchant may obtain an estimate of each customer’s purchases, e.g., at POS terminal 14. In step 104 the POS terminal 14 scans the selected form of payment, e.g., check 18, credit card 20, smart card 22 and/or PDA 24. In step 106 the POS 14 generates a temporary electronic receipt 26, which the POS 14 forwards to the receipt destination 65. In step 108 the Expense Account System 80, for example, analyzes the corresponding bank or credit account to determine if the account is under-funded and, as a result of the current purchase, it may become overdrawn in step 108. A suitable example of using electronic receipts for real-time analysis of cash-flow and budgeting is disclosed in published U.S. patent application Ser. No. 10/430,824 (Attorney Docket No. BLD920030021US1) entitled “Point-of-Sale Receipt Generation” to Joan L. Mitchell et al., filed May 6, 2003 and published Nov. 11, 2004, publication No. 2004/0255567 A1.

[0025] If in step 110 the corresponding account has sufficient funds or remaining credit to complete the current purchase, then the purchase proceeds in step 112, e.g., by finalizing the temporary electronic receipt for the current customer. Otherwise, if the customer is under-funded in step 108, such that the current purchase exceeds customer funds and the corresponding account will be overdrawn or a credit limit will be exceeded; then in step 114 the business/merchant is alerted, e.g., by a POS terminal message. Thus, the business/merchant receives an application alert or another notification when a customer has exceeded his/her purchasing authority, e.g., is exceeding the budget or an account will be overdrawn. Then, optionally, in step 116 the customer also is notified, e.g., by a message displayed on the credit card smart card scanner, or on the PDA 24, and the customer may select another form of payment, e.g., cash 16 instead of credit card 20 or a different credit card. Thus, overdraft notification enables purchasers to switch the method of payment or transfer funds on-the-fly and in real time to avoid incurring bounced check and/or overdraft fees. Moreover, the business/merchant avoids the aggravation of collecting bad or bounced checks. Optionally, the respective bank creditor may offer additional account protection services, e.g., verifying that the customer has subscribed to the service in step 108 and only providing an indication for subscribers. For example, services may be offered to help individuals, families and businesses to avoid insufficient funds or over-credit situations that would otherwise arise.

[0026] FIG. 3 shows a flow chart example 120 of providing optional consumer purchase estimates, wherein a customer estimates or calculates the purchase cost and the availability of funds according to a preferred embodiment of the present invention. In step 122 the purchaser decides whether to check for sufficient funds or remaining available credit to cover current purchases in one or more accounts. If an estimate is unnecessary, then the purchase proceeds in step 124. Otherwise, in step 126 the customer calculates or estimates a total for current purchases. The result is forwarded to the receipt destination 65 and in step 128 the Expense Account System 80, for example, analyzes the corresponding bank or credit account in real time. In step 130 the results of the real-time analysis are returned to the customer to determine if the current purchase exceeds available funds in step 132. If sufficient funds are available to complete the current purchase in step, then the purchase proceeds in step 124. Otherwise, if in step 132 the current purchase exceeds the available funds such that the corresponding account will be overdrawn or the credit limit exceeded; then in step 134 the customer is notified, e.g., by a message displayed on the credit card/smart card scanner, or on the PDA 24, and the customer may select another form of payment to complete the purchase in step 124, e.g., using cash 16 instead of credit card 20. Thus, these alerts enable purchasers to switch the method of payment or transfer funds on-the-fly and in real time to avoid incurring the bounced check and overdraft fees.

[0027] So, for example, upon entering the cashier’s line and deciding to request a purchase estimate in step 122; then in step 126, the customer can forward an expected purchase amount, e.g., an estimate or a calculated amount. For example, the customer can access a bank or credit account by cell phone, PDA, or other handheld device (or use a merchant’s kiosk such as an ATM machine in a store or on an automated gas pump) and, enter the expected amount for purchasing the merchandise in step 128. Multiple responses can be returned in step 130 including “OK,” “Borderline” (e.g., within $200 or a certain minimum funding limit), and “insufficient funds.” Once the purchase is complete in step 124, the expected amount is replaced with the final purchase amount from the electronic detailed receipt. Meanwhile other purchasers using the same account are warned based on the updated available funds, to have current data and avoid secondary over-credit or insufficient funds instances. Thus, the public/private concern avoids having compounded the problem, and may avoid it altogether.

[0028] FIG. 4 shows a flow chart example 140 of an overall budget estimate based on a purchase estimate, substantially similar to the example of FIG. 3 with like elements labeled identically. Again in step 122 the purchaser decides whether to check for sufficient funds to cover current pur-
chases in one or more accounts. If an estimate is unnecessary, then in step 124, the purchase proceeds. Otherwise, in step 126 the customer estimates the total for current purchases. The estimate is forwarded to the receipt destination 65 and in step 142 the Expense Account System 80, for example, analyzes the customer’s budget in real time. In step 144 the results of the real-time analysis are checked to determine if the budget will be exceeded as a result of the current purchase. If sufficient budgetary resources are available to complete the current purchase in step 144, then the purchase proceeds in step 124. Otherwise, if in step 144 the budget or a budget sub-category will be exceeded; then, in step 146 the purchase is halted, e.g., by a message displayed on the credit card/Smart card scanner, or on the PDA 24. Optionally, the customer may be allowed to select another form of payment to complete the purchase in step 124, e.g., using cash 16 instead of credit card 20, or replenish necessary funds before close-of-business, to prevent excessive insufficient funds situations. Optionally, the customer may elect to override the budget warning, provided that sufficient funds exist. For example, it may be unavoidable to exceed fuel budget limits, causing the customer to make other adjustments to cover the purchase and avoid a bounced check, an overdraft or a rejected credit card. Thus, over-budget notification enables individuals/businesses to stop such purchases on-the-fly and in real-time, also to avoid incurring the results of an under-funded account, e.g., a bounced check, overdraft fees or an over-credit situation. Also, the customer may adjust budgeted amounts to prevent generating budget alerts.

FIG. 5 shows a flow chart example 150 of optionally providing over-budget alerts based on the itemized electronic receipt, e.g., as a result of an over total budget estimate 140 of the example of FIG. 4. When the results of account analysis indicate that a current purchase exceeds a total budget for the private/public concern, in step 152 a budget alert is generated. In response to the alert, in step 154 recent receipts are scanned. Then, in step 156 the concern’s accounts are analyzed to identify any purchases that have exceeded budget. Finally in step 158, the receipt destination 65 alerts the customer of any identified purchases, e.g. to stop or alter the purchases.

Advantageously, purchases can be halted before bouncing checks, incurring overdraft penalties, exceeding credit limits, exceeding budgetary guidelines or otherwise injuring negatively affecting credit scores and reports. Customers have an accurate, up-to-date accounting of available funds relative to the respective budget. The accounting may be used, for example, for education regarding monthly living expenses. Further, such an accurate up-to-date accounting reduces the likelihood of inadvertently creating debt by exceeding available funds (e.g., by check, credit card, or e-purchase) and may encourage personal responsibility. With notification provided by the present invention customers can avoid otherwise inadvertent overdrafts and resulting bounced checks, e.g., by aborting purchases or transferring money into a depleted account. A customer can query bank accounts even before initiating a transaction and while waiting in line, e.g., from a PDA, handheld computer, or cell phone and confirm that an estimated or calculated amount will not exceed available funds. Moreover, merchants can accept checks verified at a preferred POS terminal according to a preferred embodiment of the present invention without concern that such checks may bounce.

Also, the present invention provides immediate purchase verification for an additional level of overdraft protection, e.g., banks may institute an “instant overdraft” option whereby banking customers receive proactive notice of potentially overdrawn situations. Many banks currently offer “overdraft insurance,” that allows individuals to replenish overdrawn funds, rather than allowing protected accounts to be overdrawn, bouncing a check. Instead, banks offering “instant overdraft” protection can allow customers to OK an overdraft on-the-spot, e.g., for an appropriate interest charge. Thus, purchases may complete with otherwise rejected checks (even checks that would cause the account to be overdrawn), e.g., with the customer’s promise to replenish the account before close-of-business or by the customer funding the purchase from another account. Further, such an “instant overdraft” protection option provides banks with a new revenue service opportunity, allowing a real-time funds-balance-verification, that may be marketed as a fee-based value-add offering, or services related to such an offering.

While the invention has been described in terms of preferred embodiments, those skilled in the art will recognize that the invention can be practiced with modification within the spirit and scope of the appended claims. It is intended that all such variations and modifications fall within the scope of the appended claims. Examples and drawings are, accordingly, to be regarded as illustrative rather than restrictive.

We claim:
1. A method of conducting business transactions, said method comprising the steps of:
   a) estimating the value of an intended purchase;
   b) generating an electronic receipt for said intended purchase from the estimate;
   c) analyzing an account for payment for sufficient funds; and
   d) selectively providing an alert responsive to an indication that said account has insufficient funds.
2. A method as in claim 1, wherein the step (a) of estimating comprises estimating the total value of in-store purchases for an identified customer.
3. A method as in claim 2, wherein the analyzing step (c) further comprises analyzing a plurality of accounts to determine whether said intended purchase exceeds a current total budget.
4. A method as in claim 3, wherein the step (d) of selectively providing an alert comprises halting said intended purchase.
5. A method as in claim 1, wherein the analyzing step (c) further comprises analyzing a plurality of accounts to determine whether said intended purchase exceeds a current total budget.
6. A method as in claim 1, wherein the analyzing step (c) further comprises analyzing a plurality of accounts to determine whether said intended purchase exceeds a current total budget.
7. A method as in claim 1, wherein the step (b) of generating said electronic receipt comprises scanning an intended form of purchase.
8. A method as in claim 7, wherein said intended form of purchase is selected from one of a check, a credit card and a Smart card.
9. A method as in claim 8, further comprising the step of:
e) identifying another form of purchase responsive to a
generated said alert.

10. A method as in claim 1, further comprising the step of:
e) identifying another form of purchase responsive to a
generated said alert.

11. A method as in claim 1, wherein said account is a bank
account, said method providing overdraft protection, said
method further comprising the step of:
e) identifying another form of purchase responsive to a
generated said alert.

12. A method of providing overdraft protection as in claim 1,
wherein the step (c) of analyzing further comprises
verifying that the account is identified with a customer
subscribed to an overdraft protection service, alerts being
provided in step (d) only for overdraft protection service
subscribers.

13. A computer program product for conducting business
transactions, said computer program product comprising a
computer usable medium having computer readable pro-
gram code thereon, said computer readable program code
comprising:
  computer program code means for receiving estimates of
  intended purchases;
  computer program code means for generating electronic
  receipts for each received estimate;
  computer program code means for analyzing payment
  accounts for sufficient funds for covering said each
  received estimate; and
  computer program code means for providing alerts
  responsive to an indication that an account has insuffi-
cient funds.

14. A computer program product for conducting business
transactions as in claim 13, wherein said computer program

code means for estimating comprises computer program
code means for receiving estimates of the total value of
in-store purchases for an identified customer.

15. A computer program product for conducting business
transactions as in claim 13, wherein the computer readable
program code means for analyzing comprises:
  computer program code means for analyzing a plurality of
  accounts; and
  computer program code means for determining whether
  said intended purchase exceeds a current total budget.

16. A computer program product for conducting business
transactions as in claim 13, wherein the computer program
code means for providing an alert comprises computer
program code means for halting said intended purchase.

17. A computer program product for conducting business
transactions as in claim 13, wherein the computer program
code means for generating said electronic receipts comprises
computer program code means for receiving scans of
intended forms of purchase.

18. A computer program product for conducting business
transactions as in claim 17, wherein said intended forms of
purchase include checks drawing on a checking account, a
credit card for a credit card account and a smart card.

19. A computer program product for conducting business
transactions as in claim 13, further comprising:
  computer program code means for identifying an alternate
  payment account.

20. A computer program product for conducting business
transactions as in claim 13, wherein the computer program
code means for analyzing verifies that bank accounts are
identified with customers subscribed to an overdraft protec-
tion service, and said computer program code means for
providing alerts provides alerts only for overdraft protection
service subscribers.

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