Claims

1. A method for point of sale (POS) transaction data management, comprising

providing a set of POS machines, each POS machine comprising:

a processing unit;

a memory coupled to the processing unit; and

underlying POS machine software executable by the processing unit and configured for outputting POS transaction summary data as part of conventional operations performed by the underlying POS machine software;

coupling a set of input devices including an item scanner to each POS machine;

coupling a set of receipt generation devices to each POS machine;

for each POS machine within the set of POS machines, associating a POS transaction data management module (TDCMM) with the POS machine by way of installing the TDCMM on (a) the POS machine such that the TDCMM is distinct from, not integrated with, and operates outside of the execution context of the underlying POS machine software of the POS machine on which the TDCMM is installed, (b) a print server to which the POS machine is coupled, such that the TDCMM is distinct from, not integrated with, and operates outside of the execution context of underlying print server software of the print server on which the TDCMM is installed, or (c) a network capable device such that the TDCMM presents itself as a network printer to the POS machine, wherein each TDCMM is configured for (i) capturing POS transaction summary data output by the underlying POS machine software of each POS machine with which the TDCMM is associated before such POS transaction summary data can be communicated to the set of receipt generation devices coupled to each POS machine with which the TDCMM is associated, and (ii) controlling the provision of POS transaction receipt data to the set of receipt generation devices coupled to any given POS machine from which the TDCMM captures POS transaction summary data;

providing a POS transaction data management server remote from each TDCMM and operable for network communication with each TDCMM;

outputting by the underlying POS machine software of a first POS machine first POS transaction summary data for which a corresponding individual receipt has not yet been generated;

capturing with a first TDCMM associated with the first POS machine the first POS transaction summary data, such that the first TDCMM temporarily withholds provision of the first POS transaction summary data to the set of receipt generation devices coupled to the first POS transaction machine;

communicating or attempting to communicate the captured first POS transaction summary data from the first TDCMM to the POS transaction data management server;

generating by way of the first TDCMM final POS transaction receipt data, wherein the final POS transaction receipt data comprises the captured first POS transaction summary data augmented with adjunctive POS transaction data distinguishable from the first POS transaction summary data; and

communicating the final POS transaction receipt data from the first TDCMM to at least one receipt generation device within the set of receipt generation devices coupled to the first POS machine.

2. The method of claim 1, wherein for each TDCMM, the operation of the TDCMM is transparent with respect to the underlying POS machine software of each POS machine with which the TDCMM is associated, and the generation of POS transaction summary data by the underlying POS machine software of each POS machine with which the TDCMM is associated is unaffected by the presence and operation of the TDCMM.

3. The method of claim 1 or 2, wherein the operation of the TDCMM is transparent with respect to underlying print server software executing on the print server, and operation of the underlying print server software is unaffected by the presence and operation of the TDCMM.

4. The method of any one of claims 1 - 3, further comprising producing at least one of a paper receipt and an e-receipt corresponding to the final POS transaction receipt data by way of the at least one receipt generation device to which the final POS transaction receipt data was communicated.

5. The method of any one of claims 1 - 4, further comprising:

receiving at the POS transaction data management server the first POS transaction summary data;

identifying by way of the POS transaction data management server first adjunctive POS transaction data, wherein the data content of the first adjunctive POS transaction data is dependent upon one or more POS transactions identified within the first POS transaction summary data; and

communicating the first adjunctive POS transaction data to the first TDCMM,

wherein the adjunctive POS transaction data of the final POS transaction receipt data comprises the first adjunctive POS transaction data.

6. The method of any one of claims 1 - 5, further comprising identifying by way of the first TDCMM second adjunctive POS transaction summary data relevant to the first POS transaction summary data, wherein the second adjunctive POS transaction summary data locally resides in the memory of the first POS machine and/or a data storage unit thereof prior to communication or attempted communication of the first POS transaction summary data to the POS transaction data management server, and wherein the adjunctive POS transaction data of the final POS transaction receipt data comprises the second adjunctive POS transaction data.

7. The method of claim 6, wherein the second adjunctive data comprises at least one of a business name, a business logo, a business operating schedule corresponding to a business at which the first POS machine is located, a promotional / advertising message, and a set of images.

8. The method of any one of claims 1 - 7, further comprising:

receiving by the first TDCMM first redeemable certificate data corresponding to a first redeemable certificate presented by a buyer in association with a current set of POS purchase transactions, wherein the first redeemable certificate data was captured or input by a first input device coupled to the first POS machine;

communicating the first redeemable certificate data to the POS transaction data management server;

validating the first redeemable certificate data by the POS transaction data management server; and

returning to the first TDCMM a first authorization code corresponding to the first redeemable certificate data.

9. The method of claim 8, wherein returning the first authorization code occurs prior to communication or attempted communication of the first POS transaction summary data to the POS transaction management server.

10. The method of any one of claims 1 – 9, further comprising:

capturing with the first TDCMM second POS transaction summary data, the second POS transaction summary data comprising reporting data corresponding to multiple distinct sequences of POS transactions handled by the first POS machine across separate purchase transactions with respect to a particular time period; and

communicating the second POS transaction summary data to the POS transaction data management server.

11. The method of any one of claims 1 – 10, further comprising:

providing a POS transaction database accessible to the POS transaction data management server, wherein the POS transaction database stores historical POS transaction data corresponding to POS transaction summary data received from one or more TDCMMs;

analysing the historical POS transaction data in accordance with particular criteria; and

communicating results corresponding to an analysis of historical POS transaction data to one or more external computing systems or devices.

12. The method of claim 11, wherein the external computing systems or devices include one or more of a seller electronic / computing device, a loyalty / rewards system, a customer relationship management system, a third party POS transaction information consumer system, subsystem, or device, a payment system, a big data analytics system, and a credit scoring system.

13. A system for point of sale (POS) transaction data management, comprising:

a set of POS machines, each POS machine comprising:

a POS machine processing unit;

a memory coupled to the POS machine processing unit; and

underlying POS machine software executable by the POS machine processing unit and configured to output POS transaction summary data as part of standard operations performed by the underlying POS machine software;

a set of input devices including an item scanner coupled to each POS machine;

a set of receipt generation devices coupled to each POS machine;

optionally, a print server coupled to at least one POS machine within the set of POS machines, the print server coupled to a printer operable as a receipt generation device coupled to the at least one POS machine, the print server comprising:

a print server processing unit;

a memory coupled to the print server processing unit; and

underlying print server software executable by the print server processing unit and configured for performing conventional print server operations;

a POS transaction data management module (TDCMM) associated with each POS machine within the set of POS machines by way of installation of the TDCMM on (a) the POS machine such that the TDCMM is distinct from, not integrated with, and operates outside of the execution context of the underlying POS machine software of the POS machine on which the TDCMM is installed, or (b) the print server, such that the TDCMM is distinct from, not integrated with, and operates outside of the execution context of the underlying print server software, or (c) a network capable device such that the TDCMM presents itself as a network printer to one or more POS machines, wherein each TDCMM comprises program instructions that when executed (i) capture POS transaction summary data output by the underlying POS machine software of each POS machine with which the TDCMM is associated before such POS transaction summary data can be communicated to the set of receipt generation devices coupled to each such POS machine, and (ii) control the provision of POS

transaction receipt data to the set of receipt generation devices coupled to the particular POS machine; and

a POS transaction data management server remote from each TDCMM and operable for network communication with each TDCMM.

14. The system of claim 13, wherein each TDCMM comprises program instructions which when executed:

temporarily withhold the provision of POS transaction summary data output by each POS machine with which the TDCMM is associated to the set of receipt generation devices coupled to such POS machines;

communicate or attempt to communicate POS transaction summary data captured from each POS machine with which the TDCMM is associated to the POS transaction data management server; and

for any particular POS machine with which the TDCMM is associated:

generate final POS transaction receipt data as a combination of captured POS transaction summary data output by the particular POS machine plus adjunctive POS transaction data distinguishable from the captured POS transaction summary data;

provide the final POS transaction receipt data to one or more receipt generation devices within the set of receipt generation devices coupled to the particular POS machine; and

communicates the final POS transaction receipt data to the POS transaction data management server.

15. The system of claim 14, wherein the POS transaction data management server comprises:

a processing unit;

a memory coupled to the processing unit; and

an adjunctive POS transaction data generation module comprising program instructions resident within the POS transaction data management server memory, which when executed determine whether first adjunctive POS transaction data corresponding to

POS transaction summary data received from any particular TDCMM exists, and communicate or attempt to communicate such first adjunctive POS transaction data to the particular TDCMM.

16. The system of claim 15, wherein each TDCMM further comprises program instructions which when executed:

receive from an input device coupled to each POS machine with which the TDCMM is associated redeemable certificate data corresponding to a redeemable certificate presented by a buyer in association with a current set of POS transactions; and

communicate received redeemable certificate data to the POS transaction data management server.

17. The system of claim 16, wherein the POS transaction data management server further comprises a redeemable certificate validation module comprising program instructions which when executed (i) determine whether redeemable certificate data received from a particular TDCMM is valid, (ii) return an authorization code to the particular TDCMM if the redeemable certificate data is valid, and (iii) designate validated redeemable certificate data as used.

18. The system of any one of claims 13 – 17, further comprising a POS transaction database accessible to the POS transaction data management server, wherein the POS transaction database stores historical POS transaction data corresponding to POS transaction summary data received from one or more TDCMMs, and wherein the POS transaction data management server comprises program instructions which when executed analyze the historical POS transaction data in accordance with particular criteria, and communicate results corresponding to analysis of historical POS transaction data to one or more external computing systems or devices.

19. The system of claim 18, wherein the one or more external computing systems or devices include one or more of a seller electronic / computing device, a loyalty / rewards system, a customer relationship management system, a third party POS transaction

information consumer system, sub-system, or device, a payment system, a big data analytics system, and a credit scoring system.