What is claimed is:

1. A computer-implemented method of detecting associated payment devices, the method comprising:

receiving, by a processor from a payment network, transaction data representing a plurality of transaction records, each transaction record comprising a payment device identifier, a transaction amount, a transaction time, a terminal identifier, and a result code indicating success or failure of a transaction;

searching said transaction records, by said processor, to identify a declined transaction associated with a first payment device identifier, and determining a terminal identifier and transaction amount associated with the declined transaction;

searching said transaction records, by said processor, to identify a subsequent transaction occurring within a predetermined time window of the declined transaction, the subsequent transaction being associated with the same terminal identifier and the same transaction amount as the declined transaction, the subsequent transaction being associated with a second payment device identifier that is different from the first payment device identifier; and

storing, in a database, an association between the second payment device identifier and the first payment device identifier, wherein the association reflects an association strength between the associated payment devices.

2. A computer-implemented method according to claim 1, wherein the predetermined time window is dependent on one or more criteria selected from: merchant; merchant category; time of day; day of week; mode of transaction; and terminal type.

3. A computer-implemented method according to claim 2, comprising determining the predetermined time window by: identifying, using said processor, transaction records satisfying the one or more criteria; and determining, using said processor, from the time and date fields of the transaction records satisfying the one or more criteria, an average or median time between transactions; whereby the predetermined time window is the average or median time between transactions.

4. A computer-implemented method according to any one of claims 1 to 3, comprising generating from the transaction data, using said processor, a list of merchants for which more than a predetermined percentage of the transaction amounts are the same.

5. A computer-implemented method according to claim 4, wherein the predetermined percentage is 50%.

6. A computer-implemented method according to claim 4 or claim 5, further comprising determining, using said processor, whether the terminal identifier is associated with a merchant in said list of merchants.

7. A computer-implemented method according to claim 6, further comprising updating the database to remove or downweight said association.

8. A computer-implemented method according to claim 4 or claim 5, further comprising, prior to identifying the declined transaction, filtering the transaction data using said processor to remove transaction records corresponding to merchants in said list of merchants.

9. A system for detecting associated payment devices, comprising an association detection component which is configured to:

receive, from a payment network, transaction data representing a plurality of transaction records, each transaction record comprising a payment device identifier, a transaction amount, a transaction time, a terminal identifier, and a result code indicating success or failure of a transaction;

search said transaction records to identify a declined transaction associated with a first payment device identifier, and determine a terminal identifier and transaction amount associated with the declined transaction;

search said transaction records to identify a subsequent transaction occurring within a predetermined time window of the declined transaction, the subsequent transaction being associated with the same terminal identifier and the same transaction amount as the declined transaction, the subsequent transaction being associated with a second payment device identifier that is different from the first payment device identifier; and

store, in a database, an association between the second payment device identifier and the first payment device identifier, wherein the association reflects an association strength between the associated payment devices.

10. A system according to claim 9, wherein the predetermined time window is dependent on one or more criteria selected from: merchant; merchant category; time of day; day of week; mode of transaction; and terminal type.

11. A system according to claim 10, wherein the association detection component is configured to determine the predetermined time window by: identifying transaction records satisfying the one or more criteria; and determining, from the time and date fields of the transaction records satisfying the one or more criteria, an average or median time between

transactions; wherein the predetermined time window is the average or median time between transactions.

12. A system according to any one of claims 9 to 11, further comprising a false positive detection component which is configured to generate, from the transaction data, a list of merchants for which more than a predetermined percentage of the transaction amounts are the same.

13. A system according to claim 12, wherein the predetermined percentage is 50%.

14. A system according to claim 12 or claim 13, wherein the false positive detection component is configured to determine whether the terminal identifier is associated with a merchant in said list of merchants.

15. A system according to claim 14, wherein the false positive detection component is configured to update the database to remove or downweight said association.

16. A system according to claim 12 or claim 13, wherein the false positive detection component is configured to filter the transaction data to remove transaction records corresponding to merchants in said list of merchants.

17. A non-transitory computer-readable medium for detecting associated payment devices, the computer-readable medium having stored thereon program instructions for causing at least one processor to:

receive, from a payment network, transaction data representing a plurality of transaction records, each transaction record comprising a payment device identifier, a transaction amount, a transaction time, a terminal identifier, and a result code indicating success or failure of a transaction;

search said transaction records to identify a declined transaction associated with a first payment device identifier, and determining a terminal identifier and transaction amount associated with the declined transaction;

search said transaction records to identify a subsequent transaction occurring within a predetermined time window of the declined transaction, the subsequent transaction being associated with the same terminal identifier and the same transaction amount as the declined transaction, the subsequent transaction being associated with a second payment device identifier that is different from the first payment device identifier; and

store, in a database, an association between the second payment device identifier and the first payment device identifier, wherein the association reflects an association strength between the associated payment devices.

18. A non-transitory computer-readable medium according to claim 17, wherein the predetermined time window is dependent on one or more criteria selected from: merchant; merchant category; time of day; day of week; mode of transaction; and terminal type.

19. A non-transitory computer-readable medium according to claim 18, further comprising program instructions for causing the at least one processor to determine the predetermined time window by: identifying transaction records satisfying the one or more criteria; and determining, from the time and date fields of the transaction records satisfying the one or more criteria, an average or median time between transactions; whereby the predetermined time window is the average or median time between transactions.

20. A non-transitory computer-readable medium according to any one of claims 17 to 19, further comprising program instructions for causing the at least one processor to: generate, from the transaction data, a list of merchants for which more than a predetermined percentage of the transaction amounts are the same.

21. A non-transitory computer-readable medium according to claim 20, wherein the predetermined percentage is 50%.

22. A non-transitory computer-readable medium according to claim 20 or claim 21, further comprising program instructions for causing the at least one processor to determine whether the terminal identifier is associated with a merchant in said list of merchants.

23. A non-transitory computer-readable medium according to claim 22, further comprising program instructions for causing the at least one processor to update the database to remove or downweight said association.

24. A non-transitory computer-readable medium according to claim 20 or claim 21, further comprising program instructions for causing the at least one processor to, prior to identifying the declined transaction, filter the transaction data to remove transaction records corresponding to merchants in said list of merchants.