payment (contactless) systems is an extensive and costly undertaking by all stakeholders (merchants, financial institutions, etc.). As a result, consumers with contactless payment cards / devices are unable to benefit from the relative security and convenience associated with contactless payment schemes.

[006] A need therefore exists to provide methods and system for digital payment transactions that seek to address at least some of the above problems.

SUMMARY

[006a] According to a first aspect, the present disclosure refers to a method for encoding data for use in a digital payment transaction between a cardholder and a merchant, the method comprising: prior to initiating the digital payment transaction between the cardholder and the merchant, receiving, from the cardholder at a cardholder electronic device associated with the cardholder, a selection of i) a digital payment card of a digital wallet application previously stored in a data storage module of the cardholder electronic device and ii) the merchant, the merchant being one of a plurality of different merchants previously stored in the data storage module of the cardholder electronic device, the cardholder being at a premise associated with the merchant; transmitting a token request from the cardholder electronic device to a token service computer server in communication with the cardholder electronic device, the token request including information associated with the selected digital payment card, the token service computer server being different from the cardholder electronic device; in response to transmitting the token request, receiving a token by the cardholder electronic device from the token service computer server; generating, by the cardholder electronic device based on the received token, dynamic magnetic stripe data associated with the digital payment card of the digital wallet application; retrieving, by the cardholder electronic device in response to the selection of the merchant by the cardholder, merchant-related data associated with the merchant, the merchant-related data previously stored in the data storage module of the cardholder electronic device; encoding, by the cardholder electronic device, the generated dynamic magnetic stripe data and the retrieved merchant-related data in a machine-readable visual code for use in the digital payment transaction; and initiating, by the cardholder electronic device, the digital payment transaction by displaying, on the cardholder electronic device, the machine-readable visual code to the merchant.

[006b] According to a second aspect, the present disclosure refers to a cardholder electronic device for use in a digital payment transaction between a cardholder and a merchant, the cardholder electronic device comprising: a mobile device processor module; a communications module for transmitting and receiving data, the communications module operably connected to the mobile device processor module; and a data storage module operably connected to the mobile device processor module and having stored therein a digital wallet application, merchant-related data, and instructions configured to cause the mobile device processor module to: prior to initiating the digital payment transaction between the cardholder and the merchant, receive, from the cardholder associated with the cardholder electronic device, a selection of i) a digital payment card of the digital wallet application previously stored in a data storage module of the cardholder electronic device and ii) the merchant, the merchant being one of a plurality of different merchants previously stored in the data storage module of the cardholder electronic device, the cardholder being at a premise associated with the merchant; transmit a token request from the cardholder electronic device to a token service computer server in communication with the cardholder electronic device, the token request including information associated with the selected digital payment card, the token service computer server being different from the cardholder electronic device; in response to transmitting the token request, receive a token by the cardholder electronic device from the token service computer server; generate, in based on the received token, dynamic magnetic stripe data associated with the digital payment card of the digital wallet application; retrieve, in response to the selection of the merchant by the cardholder, the merchant-related data associated with the merchant, the merchant-related data previously stored in the data storage module; encode the generated dynamic magnetic stripe data and the retrieved merchant-related data in a machine-readable visual code for use in the digital payment transaction; and initiate the digital payment transaction by displaying, on the cardholder electronic device, the machine-readable visual code to the merchant.

[006c] According to a third aspect, the present disclosure refers to a merchant device for use in a digital payment transaction between a cardholder and a merchant, the merchant device comprising: a visual code scanner module for reading and extracting a machine-readable visual code generated by a cardholder electronic device, wherein the visual code scanner module is configured to: scan the machine-readable visual code displayed by the cardholder electronic device to initiate the digital payment transaction, wherein the machine-readable visual code includes dynamic magnetic

stripe data and merchant-related data encoded by the cardholder electronic device, wherein the dynamic magnetic strip data is generated by the cardholder electronic device based on a token received from a token service computer server i) in communication with the cardholder electronic device and ii) being different from the cardholder electronic device, the token received by the cardholder electronic device in response to transmitting a token request from the cardholder electronic device to the token service computer server, the token request including information associated with a selection of a digital payment card by the cardholder at the cardholder electronic device, the digital payment card associated with a digital wallet application previously stored in a data storage module of the cardholder electronic device, and wherein the merchant-related data is retrieved by the cardholder electronic device from the data storage module in response to a selection of the merchant by the cardholder at the cardholder electronic device, the merchant being one of a plurality of different merchants previously stored in the data storage module, the merchant-related data associated with the merchant, the merchant associated with the merchant device; a processor module operably connected to the visual code scanner module configured to separate the dynamic magnetic stripe data from the merchant-related data in response to the visual code scanner module reading and extracting the machine-readable visual code; and a transmitter module operably connected to the processor module configured to: transmit the merchant-related data to a merchant payment device such that transaction data can be generated by the merchant payment device based on the merchant-related data; and transmit the dynamic magnetic stripe data to the merchant payment device for authorizing the digital payment transaction.

[007] According to a first example, there is provided a method for encoding data for use in a digital payment transaction between a cardholder and a merchant, comprising: generating, by a cardholder electronic device, dynamic magnetic stripe data associated with a digital payment card of a digital wallet application stored in a data storage module of the cardholder electronic device; retrieving merchant-related data stored in the data storage module of the cardholder electronic device; and encoding, by the cardholder electronic device, the generated dynamic magnetic stripe data and the retrieved merchant-related data in a machine-readable visual code for use in the digital payment transaction.

[008] The merchant-related data may comprise one or more of: merchant loyalty-program data; discount data; and coupon data, for use within the digital payment transaction. The machine-readable visual code may comprise a Quick Response Code

(QR-code). The dynamic magnetic stripe data may comprise one or more of: ISO 7813 Track 1, Track 2 and Track 3 data.

[009] The method may further comprise: transmitting a token request from the cardholder electronic device to a token service computer server that is in communication with the cardholder electronic device; receiving a token by the cardholder electronic device from the token service computer server in response to the token request; and generating the dynamic magnetic stripe data based on the received token. The dynamic magnetic stripe data may comprise dynamic CVC data.

[0010] The method may further comprise displaying, by a display module of the cardholder electronic device, the machine-readable visual code.

[0011] The merchant-related data stored in the data storage module of the cardholder electronic device may comprise data associated with a plurality of different merchants, and wherein the method may further comprise: receiving, at the cardholder electronic device, a selection of one of the plurality of different merchants; and retrieving the merchant-related data that is related to the selected one of the plurality of different merchants.

[0012] According to a second example, there is provided a cardholder electronic device for use in a digital payment transaction, comprising: a mobile device processor module; a communications module for transmitting and receiving data, the communications module operably connected to the mobile device processor module; and a data storage module operably connected to the mobile device processor module and having stored therein a digital wallet application, merchant-related data and instructions configured to cause the mobile device processor module to: generate dynamic magnetic stripe data associated with a digital payment card of the digital wallet application; retrieve the merchant-related data stored in the data storage module; and encode the generated dynamic magnetic stripe data and the retrieved merchant-related data in a machine-readable visual code for use in the digital payment transaction.

[0013] The merchant-related data may comprise one or more of: merchant loyalty-program data; discount data; and coupon data, for use within the digital payment transaction. The machine-readable visual code may comprise a Quick Response Code (QR-code). The dynamic magnetic stripe data may comprise one or more of: ISO 7813 Track 1, Track 2 and Track 3 data.

[0014] The mobile device processor module may be further caused to: transmit a token request to a token service computer server that is in communication with the cardholder electronic device; receive a token from the token service computer server in response to the token request; and generate the dynamic magnetic stripe data based on the received token. The dynamic magnetic stripe data may comprise dynamic CVC data.

[0015] The cardholder electronic device may further comprise a display module operably connected to the mobile device processor module, wherein the display module may be configured to display the machine-readable visual code.

[0016] The merchant-related data stored in the data storage module may comprise data associated with a plurality of different merchants. The cardholder electronic device may further comprise a user input module operably connected to the mobile device processor module, the user input module configured to receive a user selection of one of the plurality of different merchants; and wherein the mobile device processor module may be further caused to retrieve the merchant-related data that is related to the user selected one of the plurality of different merchants.

[0017] According to a third example, there is provided a merchant device for use in a digital payment transaction between a cardholder and a merchant, comprising: a visual code scanner module for reading a machine-readable visual code having encoded therein dynamic magnetic stripe data and merchant-related data; a processor module operably connected to the visual code scanner module for separating the dynamic magnetic stripe data from the merchant-related data; and a transmitter module operably connected to the processor module for: transmitting the merchant-related data to a merchant payment device such that transaction data can be generated by the merchant payment device based on the merchant-related data; and transmitting the dynamic magnetic stripe data to the merchant payment device for authorizing the digital payment transaction.

[0018] The merchant-related data may comprise one or more of: merchant loyalty-program data; discount data; and coupon data, for use within the digital payment transaction. The machine-readable visual code may comprise a Quick Response Code (QR-code). The dynamic magnetic stripe data may comprise one or more of: ISO 7813 Track 1, Track 2 and Track 3 data.

[0019] The transaction data may comprise a price of a product to be purchased by the cardholder from the merchant, and wherein the price of the product may be adjusted by the merchant payment device based on the discount data or coupon data.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] Embodiments will be better understood and readily apparent to one of ordinary skill in the art from the following written description, by way of example only, and in conjunction with the drawings, in which:

CLAIMS

1. A method for encoding data for use in a digital payment transaction between a cardholder and a merchant, the method comprising:

prior to initiating the digital payment transaction between the cardholder and the merchant, receiving, from the cardholder at a cardholder electronic device associated with the cardholder, a selection of i) a digital payment card of a digital wallet application previously stored in a data storage module of the cardholder electronic device and ii) the merchant, the merchant being one of a plurality of different merchants previously stored in the data storage module of the cardholder electronic device, the cardholder being at a premise associated with the merchant;

transmitting a token request from the cardholder electronic device to a token service computer server in communication with the cardholder electronic device, the token request including information associated with the selected digital payment card, the token service computer server being different from the cardholder electronic device;

in response to transmitting the token request, receiving a token by the cardholder electronic device from the token service computer server;

generating, by the cardholder electronic device based on the received token, dynamic magnetic stripe data associated with the digital payment card of the digital wallet application;

retrieving, by the cardholder electronic device in response to the selection of the merchant by the cardholder, merchant-related data associated with the merchant, the merchant-related data previously stored in the data storage module of the cardholder electronic device;

encoding, by the cardholder electronic device, the generated dynamic magnetic stripe data and the retrieved merchant-related data in a machine-readable visual code for use in the digital payment transaction; and

initiating, by the cardholder electronic device, the digital payment transaction by displaying, on the cardholder electronic device, the machine-readable visual code to the merchant.

2. The method according to claim 1, wherein the merchant-related data comprises at least one of:

merchant loyalty-program data;

discount data; and

coupon data, for use within the digital payment transaction.

3. The method according to claim 1, wherein the machine-readable visual code comprises a Quick Response Code (QR-code).

4. The method according to claim 1, wherein the dynamic magnetic stripe data comprises at least one of: ISO 7813 Track 1, Track 2, and Track 3 data.

5. The method according to claim 1, wherein the dynamic magnetic stripe data comprises dynamic CVC data.

6. A cardholder electronic device for use in a digital payment transaction between a cardholder and a merchant, the cardholder electronic device comprising:

a mobile device processor module;

a communications module for transmitting and receiving data, the communications module operably connected to the mobile device processor module; and

a data storage module operably connected to the mobile device processor module and having stored therein a digital wallet application, merchant-related data, and instructions configured to cause the mobile device processor module to:

prior to initiating the digital payment transaction between the cardholder and the merchant, receive, from the cardholder associated with the cardholder electronic device, a selection of i) a digital payment card of the digital wallet application previously stored in a data storage module of the cardholder electronic device and ii) the merchant, the merchant being one of a plurality of different merchants previously stored in the data storage module of the cardholder electronic device, the cardholder being at a premise associated with the merchant;

transmit a token request from the cardholder electronic device to a token service computer server in communication with the cardholder electronic device, the token request including information associated with the selected digital payment card, the token service computer server being different from the cardholder electronic device;

in response to transmitting the token request, receive a token by the cardholder electronic device from the token service computer server;

generate, in based on the received token, dynamic magnetic stripe data associated with the digital payment card of the digital wallet application;

retrieve, in response to the selection of the merchant by the cardholder, the merchant-related data associated with the merchant, the merchant-related data previously stored in the data storage module;

encode the generated dynamic magnetic stripe data and the retrieved merchant-related data in a machine-readable visual code for use in the digital payment transaction; and

initiate the digital payment transaction by displaying, on the cardholder electronic device, the machine-readable visual code to the merchant.

7. The cardholder electronic device according to claim 6, wherein the merchant-related data comprises at least one of:

merchant loyalty-program data;

discount data; and

coupon data, for use within the digital payment transaction.

8. The cardholder electronic device according to claim 6, wherein the machine-readable visual code comprises a Quick Response Code (QR-code).

9. The cardholder electronic device according to claim 6, wherein the dynamic magnetic stripe data comprises at least one of: ISO 7813 Track 1, Track 2, and Track 3 data.

10. The cardholder electronic device according to claim 6, wherein the dynamic magnetic stripe data comprises dynamic CVC data.

11. The cardholder electronic device according to claim 6, wherein the merchant-related data stored in the data storage module comprises data associated with a plurality of different merchants,

wherein the cardholder electronic device further comprises a user input module operably connected to the mobile device processor module, the user input module configured to receive a cardholder selection of one of the plurality of different merchants.

12. A merchant device for use in a digital payment transaction between a cardholder and a merchant, the merchant device comprising:

a visual code scanner module for reading and extracting a machine-readable visual code generated by a cardholder electronic device, wherein the visual code scanner module is configured to:

scan the machine-readable visual code displayed by the cardholder electronic device to initiate the digital payment transaction, wherein the machine-readable visual code includes dynamic magnetic stripe data and merchant-related data encoded by the cardholder electronic device,

wherein the dynamic magnetic strip data is generated by the cardholder electronic device based on a token received from a token service computer server i) in communication with the cardholder electronic device and ii) being different from the cardholder electronic device, the token received by the cardholder electronic device in response to transmitting a token request from the cardholder electronic device to the token service computer server, the token request including information associated with a selection of a digital payment card by the cardholder at the cardholder electronic device, the digital payment card associated with a digital wallet application previously stored in a data storage module of the cardholder electronic device, and

wherein the merchant-related data is retrieved by the cardholder electronic device from the data storage module in response to a selection of the merchant by the cardholder at the cardholder electronic device, the merchant being one of a plurality of different merchants previously stored in the data storage module, the merchant-related data associated with the merchant, the merchant associated with the merchant device;

a processor module operably connected to the visual code scanner module configured to separate the dynamic magnetic stripe data from the merchant-related data in response to the visual code scanner module reading and extracting the machine-readable visual code; and

a transmitter module operably connected to the processor module configured to:

transmit the merchant-related data to a merchant payment device such that transaction data can be generated by the merchant payment device based on the merchant-related data; and

transmit the dynamic magnetic stripe data to the merchant payment device for authorizing the digital payment transaction.

13. The merchant device according to claim 12, wherein the merchant-related data comprises at least one of:

merchant loyalty-program data;
discount data; and
coupon data, for use within the digital payment transaction.

14. The merchant device according to claim 13, wherein the transaction data comprises a price of a product purchased by the cardholder from the merchant, and wherein the price of the product is adjusted by the merchant payment device based on one of the discount data and coupon data.

15. The merchant device according to claim 12, wherein the machine-readable visual code comprises a Quick Response Code (QR-code), and wherein the dynamic magnetic stripe data comprises at least one of: ISO 7813 Track 1, Track 2, and Track 3 data.