ON CARD-BASED PAYMENTS DURING PROLONGED DISRUPTIONS

Geopolitical uncertainty has prompted discussion on the need to strengthen the resilience of card-based payments also in Finland.

Finance Finland conducted an assessment on how the continuity of card transactions can be secured during disruptions that occur under normal conditions.

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Card Payments Committee

FINANCE FINLAND

Contents

1 Executive summary

During a payment service disruption, the range of existing payment methods makes it possible for payments to continue. There is no single solution or definitive answer that would cover all sudden and unforeseen disruptions.

The information, observations and recommendations presented in this report are based on stakeholder meetings held between May and November 2025, and they reflect the circumstances prevailing at the time. The circumstances have since evolved to some extent. It is standard procedure that the rules and guidelines of card schemes, for example, are regularly reviewed and updated to match the operating environment. Mid-2025, major international card schemes announced rule changes aimed at facilitating payments during disruptions.

This report does not contain detailed information on the market or its participants. All scenarios are discussed on a general level.

Summary of the recommendations

I) Each participant must prepare independently for all potential operational disruptions. Securing real-time information exchange is key to ensuring payment continuity. The operability of telecommunication networks and systems is critical.

II) During disruptions, the sale of essential goods such as groceries, medicines and fuel is secured with backup solutions that allow payments with physical cards and mobile payment methods. Other payment methods can also be used alongside card-based payment.

III) Market-driven preparedness is a more flexible and effective approach than legislation: legislative solutions can only influence the operators within the legislator's reach, and regulating an individual operator or sector at the local level will not resolve problems in payment during disruptions. Securing the supply of electricity and maintaining the operability of communication networks are of paramount importance.

Emergency conditions

If disruptions become prolonged and the situation escalates, emergency conditions may be declared.

The definition of emergency conditions is laid down in the Emergency Powers Act. The decision to declare them is made by the Finnish Government.

Emergency conditions are not included in the scope of this assessment.

National Emergency Account System (NEAS)

The National Emergency Account System (NEAS) is not dependent on or connected to backup payment arrangements. The backup arrangements are likewise independent of the NEAS.

The NEAS is not included in the scope of this assessment.

RECOMMENDATIONS FOR DISRUPTION PREPAREDNESS

I) The foundation for emergency resilience is laid during everyday routine operations and incident management under normal conditions

The more resilient operations are during disruptions occurring under normal conditions, the easier and more efficient it is to implement supplementary or alternative service channels and payment processes during severe or prolonged disruptions.

The diagram below depicts some of the parties in the card payment process. It does not include subcontractors, which are used by many operators. Message forwarding and the interrelated connections between different parties may vary.

Examples of parties commonly involved in the card payment process

- card scheme
- merchant's payment service provider/acquirer
- payment terminal vendor
- software vendor
- payment processor
- merchant
- card issuer
- cardholder

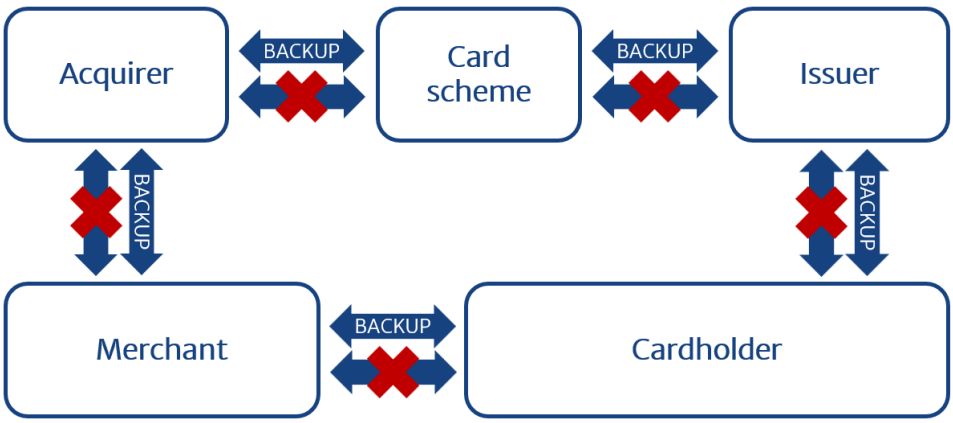

Figure 1. Some of the parties in the card payment process

The operability of card payments depends on every link in the chain. If the operations of one party are disrupted, this disrupts the entire chain unless the party has adequately prepared for the scenario. For each party, it is possible to build a backup solution to ensure the continuity of payments during disruptions.

Adequate electricity supply, working telecommunications networks and operational systems are paramount for card-based payments.

II) There are existing solutions that enable payments during disruptions

If the payment terminal is disconnected from the authorisation network, card payments can still continue in a limited fashion using the existing methods of contactless card or mobile payment and chip-and-PIN card payment (block 1 in Figure 2 below). Each card scheme has its own rules and guidelines that apply during incidents. It is highly important to prepare

for disruptions in advance. A rough estimate is that payments could remain operational for approximately one week during a prolonged disruption.

During a connection outage, transactions are stored locally on the merchant's payment terminal until connection is re-established, at which point the information can be sent to the card issuer for authorisation.

The longer the disruption continues, the bigger the risk of financial losses grows. In some cases, the merchant can independently assess for how long and with which methods it is able to accept payments. Accepting card payments during a service disruption carries the risk of financial losses for both merchants and banks.

Liability during offline situations can be allocated in different ways.

For example, the risk is carried by the card issuer when the payer uses a physical card with PIN authentication and the card permits the payment.

The risk is carried by the merchant when it accepts an offline transaction using:

- mobile payment,
- contactless payment with card, or
- physical card and PIN, if the card's parameters do not permit the purchase.

Accepting payments at the issuer's risk requires that the purchase is made using a physical card, that the card's chip is read on the payment terminal and authenticated with the payer's PIN, and that the parameters of the card permit the purchase (block 3 in the diagram). Transactions are authorised by the card's chip parameters, stored locally by the merchant and sent to the issuer once the connection is re-established. When the chip card's offline payment limit is reached, further payments at the issuer's risk cannot be made.

If payment during a disruption is limited to physical cards only (block 3), payments with the other card payment methods (e.g. contactless payment, block 2) is ruled out. This will make the effects of the disruption more widespread.

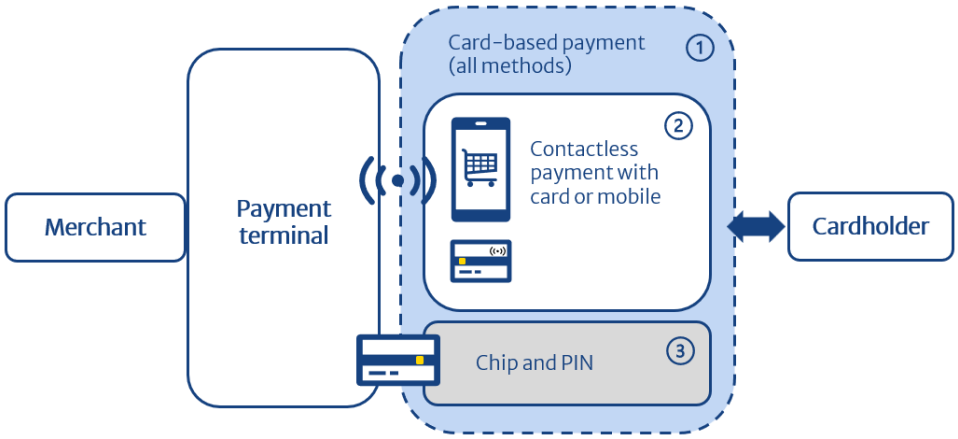

Figure 2. On card-based payment on a payment terminal

If the disruption becomes prolonged or the situation otherwise escalates, it is necessary to consider how merchants and issuing banks can be financially supported in case of potential financial losses. If technical requirements, such as the capacity of the merchant's payment terminal, reach their limits, it is necessary to evaluate how card payments can be maintained during the disruption.

Payment continuity during disruptions is best ensured when both merchants and banks support the existing card payment solutions (blocks 2 and 3 in the diagram) and prepare for disruptions as laid out in recommendation 1 above. Alternative payment methods such as cash or credit transfer will also be available during a payment service disruption.

III) The development of payment services in Finland should be continued with a market-driven approach and through legislation that allows flexibility in different types of payment situations

In Finland, the operational reliability of payment services has mainly been developed on a market-driven basis, and cooperation between authorities and market participants has been transparent and efficient.

Legislation is often rigid and its amendment is a slow process. Incidents that require a rapid response may arise both during disruptions and under normal conditions.

Due to the international nature of payment services, local legislation can only impact a limited number of actors. Unilateral or inflexible regulation may even undermine a well-functioning payments ecosystem and lead to an unequal playing field.

International card schemes play a decisive role in card payments – their rules and guidelines enable swift and uniform implementation across the entire network. The rule changes published by international card schemes mid-2025 support the continuity of card-based payments in Europe. These rules must always comply with local legislation.

2 About the report

In this report, *offline payment* refers to situations in which the merchant's payment terminal is temporarily disconnected from the card network's authorisation system but the merchant wants to continue accepting card payments.

The authorisation system is a key component of real-time payment. If message traffic in the system is disrupted, payments cannot be processed without the use of backup measures.

Boundaries of the assessment

- There is adequate electricity supply.
- The merchant's cash register is functional.
- The length of the disruption is unspecified.
- There are no specific euro amount payment limits in effect.
- There are connection problems between the merchant and the authorisation network. Telecommunication issues disrupt the authorisation of card payments.
- Customers must be able to pay for at least groceries, medicines and fuel.

The authorisation system consists of several actors and elements. The diagram below illustrates the system in very broad terms and does not include all actors or all alternative message transfer methods. The most essential element of authorisation is ensuring that messages are transmitted to the card issuer and back, because all transactions must be authorised by the issuer.

The disruption in authorisation is not necessarily located in the merchant's or the issuer's system. The merchant's and issuer's systems may be fully operational, but a failure in another part of the chain, such as at the payment processor, can prevent the authorisation request from being transmitted from the merchant to the issuer.

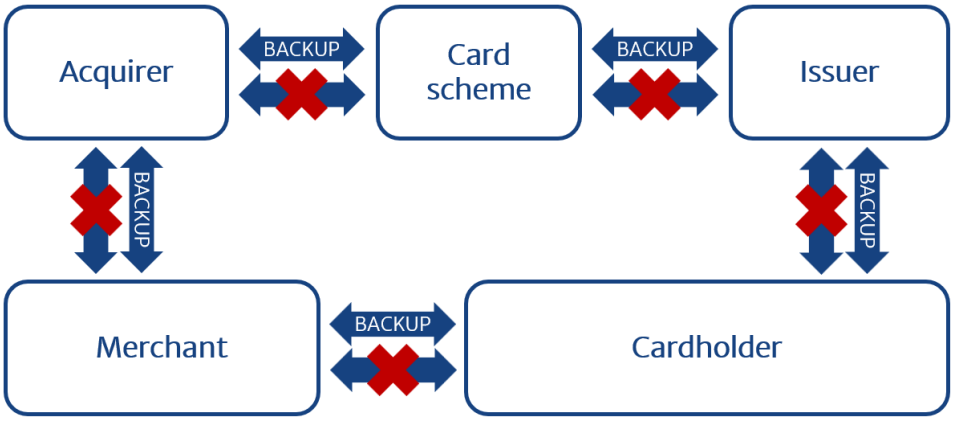

Figure 3. Some of the parties in the card payment process

It is essential to ensure that payment on the payment terminal is possible during a disruption even without a connection to the authorisation network.

Due to the extent of the card payments ecosystem, the scope of this assessment excluded areas such as settlement, emergency conditions and the National Emergency Account System. The aim of the report is to strengthen the resilience of card-based payments. The Card Payments Committee encourages discussion and sees a need for further in-depth assessments.

3 Situational picture and developments in the Finnish payments sector

Up to 78% of all payments made on a payment terminal are nowadays contactless. A continuously growing proportion of contactless payments are made using a mobile device.

Some customers pay primarily with mobile methods, some with card, some with cash, and some use all methods side by side.

According to Nexi's latest European survey, **50% of Nordic consumers had used mobile wallets in a physical store within the last six months.**

Idemia's 12-country survey (2024) revealed **71% of consumers had a virtual payment card** (card added on a mobile device).

Finnish card payments infrastructure is based on real-time message transmission, and it has been updated to support future payment methods. All payments are increasingly dependent on up-to-date and functional telecommunications.

The field of payments is changing: tokenisation enhances security by replacing card numbers with a unique code, software-based products are becoming more common and traditional payment hardware is going through a transformation. Smartphones can be utilised in many ways in both making and receiving payments.

European actors are motivated to introduce payment services that are not based on international card schemes such as Visa and Mastercard. Credit transfers, for example, can be complemented and partially replaced by instant payments. Instant payments are pushed as an alternative or even substitute for the international cards across all payment interfaces.

European market-driven instant payment initiatives such as the European Payments Initiative and EuroPA aim to bring instantaneous euro transfers to EU-wide use in peer-to-peer payments, online payments and physical stores alike. The initiatives are making good progress.

4 Chip card parameters enable payments during a disruption

Card schemes offer merchants the option to accept transactions based on the card's chip parameters. However, this option is only available when the connection to the network is disrupted. Not all cards permit offline parameter-based transactions, and the parameters are defined by the issuer. As a general rule, a payment terminal should always be connected to the authorisation network.

Payment terminals and payment card chips both have various limits on transactions, and if any of these limits are reached, the transaction is declined. The merchant's limits are decided by the merchant, and the chip limits by the issuer. Both are non-public information. When

The University of Helsinki Centre for Consumer Society Research, the Guarantee Foundation, the Martha Association and the Bank of Finland's Financial Literacy Centre prepare reference budgets for the decent minimum standard of living.

In 2025, for example, the decent minimum budget per month for a single woman aged under 45 included €256 in food expenses, €30 in health expenses, and €96 in transport expenses (in the Helsinki region).

This amounts to about €100/week.

a transaction is approved by the chip parameters, the issuer carries the liability.

For the cardholder to use a physical payment card during a disruption, the card must be of the type that allows offline transactions. Which card types allow it is defined by the card schemes. Prepaid products and some debit cards, for example, do not support payments during disruptions.

Issuers decide who they deem eligible to get a card that during disruptions enables card-present offline transactions within the pre-established limits. The majority of customers can be granted such cards, but some are not qualified because of their young age, previous customer conduct or prior payment instrument-related fraud. Payments during disruptions involve a risk of misuse.

Credit and charge cards usually have higher limits than debit cards and therefore enable longer payment continuity than debit cards.

Chip parameter-based payment precludes the use of payment terminals and devices that are not equipped with a chip-reading function, PIN input capability and the ability to authenticate the PIN. The model only supports transactions made with a physical card and PIN verification.

In a prolonged disruption, parameter-based payment ends once the pre-established limits are reached. The parameters also cannot be amended if the disruption continues and there is no access to the authorisation network.

5 Use of the delayed payment authorisation model during a disruption

Finnish authorities seek to ensure citizens can purchase and pay for essential goods such as groceries, medicines and fuel also during severe disruptions.

As a general rule, all payments should take place in real time over a telecommunication network. If the merchant does not have access to the authorisation network despite all preparedness measures and backup systems, card schemes offer an alternative solution that enables payments for essential goods such as groceries, medicines and fuel to continue.

In the delayed authorisation model, transaction authorisation messages are stored locally in a buffer and sent to the issuer once the connection to the authorisation network is restored.

The structure and rules of the service are decided by the card scheme, and the service is provided by the merchant's payment service provider.

Issuers are prepared to receive and process the delayed batches of transactions on their cardholders' accounts.

If the card is blocked, for example, or the account has insufficient funds, the transaction is declined, and the merchant is liable for the charge. However, the majority of delayed card payments are authorised without issue.

The transactions pending authorisation can be sent in multiple sets over a period of time. The merchant can also limit the maximum euro amount of payments or restrict shopping cart contents, for example.

Card schemes have informed their customers of the different payment methods and rule changes. The implementation and adoption of the changes is up to the merchants, acquirers, issuers and other relevant parties.

A merchant must separately agree on the use of delayed authorisation with its acquirer or payment service provider. The merchant must also have a solution in case of disruptions that enables it to store transactions locally until connection to the authorisation network is re-established.

The delayed authorisation model is compatible with a wide range of payment instruments: payment is possible with physical chip-and-PIN as well as with contactless and mobile methods.

The model is also compatible with chip parameter-based transactions. The transactions are approved by chip parameters and logged in the merchant's authorisation buffer, and the issuer carries liability for the charge.

6 Risk and liability

Risks and liabilities are governed contractually. Liability for damages and abuses is defined in the agreements concluded between the parties. The liability of a relevant party cannot be delegated to a third party. Each party must independently prepare for and ensure the continuity of its own operations in all situations, both under normal conditions and during disruptions.

Brief payment disruptions should not necessitate changes in payment services. The liabilities of cardholders and merchants are no different during a disruption than under normal conditions. Both consumers and merchants are liable for their payments and the potential abuse of payment instruments during normal conditions as well as during disruptions. There is no 'open tab' for charges during a disruption, and liability cannot be shifted to the other party.

All transactions are recorded and are traceable also during disruptions. Liability for transactions is assigned on the basis of predetermined practices, agreements and rules. However, these cannot fully prevent consumers or merchants from misusing the payment system during a disruption. The risk and the potential financial losses that this involves fall on merchants and issuers.

7 International comparison

In Estonia, payment disruption preparedness has been expedited with legislation, which has not been an optimal or problem-free solution. Legislation can only impact the actors that it concerns. Successful disruption management depends heavily on the measures and support of all parties involved. The support and preparedness of issuers, for example, is not enough if payment acceptance or processing does not support them with matching measures, and vice versa.

In Sweden, the matter has not been addressed through legislation. Instead, the central bank and the market actors have jointly committed to promote offline payments.

Out of the Nordic card payment markets, the Finnish market has the most in common with the Swedish market. Both use international payment cards and have dispensed with local payment cards.

In Norway and Denmark, local solutions and national infrastructure can be utilised in disruption preparedness. Local infrastructure provides leeway and independent solutions to preparedness differently from markets that rely only on international payment card infrastructures.

Finland should continue the development of disruption preparedness with a market-driven approach and through legislation that allows flexibility in different types of payment situations. It should support as diverse a range of payment methods as possible. Card-based payments must support both physical and mobile methods where possible.

8 Recommendations

The individual preparedness of all parties is key in disruption preparedness.

The principal aim of incident management is to support operations and relevant means of paying and accepting payments under normal conditions. Service channels and payment services may require re-examination if disruptions become prolonged, the circumstances escalate, or emergency conditions are declared due to a severe crisis. In any case, the solutions to be used under extreme disruptions and crises are built upon the practices established under normal conditions. If the backbone of payment services is not in order under normal conditions, the probability of successful performance under disrupted conditions is weaker.

During a disruption in card payment services, it is possible for merchants to continue accepting payments even without a connection to the authorisation network.

In the future, payments will be less dependent on mechanical solutions such as needing to insert a chip card in the payment terminal. All payments will be increasingly based on software solutions. The importance of maintaining functional IT systems and telecommunications will become pronounced. During a disruption, the availability of alternative payment methods such as cash or credit transfer must not be forgotten. There are plans to introduce digital money alongside coins and banknotes, and the use of instant payments is encouraged through regulation.

The best way to ensure smooth payment services both under normal conditions and during disruptions is to support a wide range of different payment methods and technologies. If payments during disruptions are limited to a single infrastructure solution, it will slow down market development and rule out other methods that could offer additional solutions. Limiting the selection of payment methods in disruption management guidelines will also impact payments under normal conditions.

Various fintech companies provide payment products and services which are used for example by many small enterprises. Payments can also utilise mobile solutions, such as smartphone payment terminals. Legislatively limiting payment methods during a disruption could constrict healthy competition in the provision and development of payment services.

Modern payment solutions and new applications of existing infrastructure can offer new ways to pay. Contactless payments work everywhere. There are considerable advantages in having a broad range of payment instruments, acceptance methods, backup systems and operating models operating in parallel: the likelihood that at least one payment method will function is significantly higher.

Mobile wallets may be very useful in terms of preparedness. If the physical payment card is damaged, lost or stolen, the replacement card's details can be immediately added in the mobile wallet and used for mobile payments before the physical card arrives. Cardholder verification is also possible through mobile means and can be carried out on the same device. Mobile thus provides an excellent additional element to preparedness.

Further examination of payment disruptions is beneficial and advisable. For example, a merchant that has adopted a multichannel retail strategy (e.g. both in-store and online service and payment) could potentially utilise the other service channels and payment methods during disruptions.

The payment situation in Finland is good. There is active, open and transparent discussion on various forums, and communication between the public and private sectors works well. Instead of legislation, it is better to continue the development of payment with a market-driven approach. Amending legislation is a slow process, and steering the market through legislation is challenging. Especially in situations that call for a rapid response, legislation is of little use. Furthermore, legislation only has local effect and thus no impact on cross-border actors in the card payments ecosystem.

Payments should function just as smoothly during a disruption as under normal conditions. Customers prefer to pay using the same payment instruments they already use daily under normal conditions. Payments must also be secure. It is very challenging for all parties across the payments ecosystem to implement and train for the use of alternative payment methods that differ from the regular payment methods.

In all circumstances, the method of payment is ultimately decided by the consumer.

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