

DANMARKS NATIONALBANK

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Danes primarily opt for electronic payment solutions



Both young people and senior citizens pay electronically

In 2019, 84 per cent of payments in physical trade were electronic, among other reasons because Danes over the age of 60 paid electronically in eight out of 10 transactions.

[Read more](#)

Mobile payments have gained momen- tum in recent years

In 2019, one in 10 payments in physical trade was a mobile payment. Online, one in three payments was a mobile payment.

[Read more](#)

Payment card fraud has been reduced

Fraud using Danish payment cards was reduced by kr. 188 million from 2016 to 2019, equivalent to a 44 per cent reduction.

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Digitalisation

The digital transformation is progressing rapidly in these years, and Denmark and the other Nordic countries are currently among the most digitalised countries in the world.

Digitalisation brings changes. Obvious changes are in the way we purchase and pay for goods and the way we transfer funds to each other. But increased digitalisation and new digital technologies may also affect the growth potential of the economy and labour market developments. Prices of goods, trade, financial sector stability and the way we calculate the digital economy are also impacted by digitalisation.

In a series of publications, Danmarks Nationalbank focuses on the digital development and its significance for the economy.

ABOUT THIS ANALYSIS

Danes opt for electronic payment solutions

In Denmark, citizens typically pay for goods and services using payment cards or mobile phones.

Our position as one of the world's most digitalised societies is also reflected in our payment behaviour. This analysis presents the most important insights into the development of Danes' electronic payment habits based on Danmarks Nationalbank's detailed household survey from 2019.

Online users globally

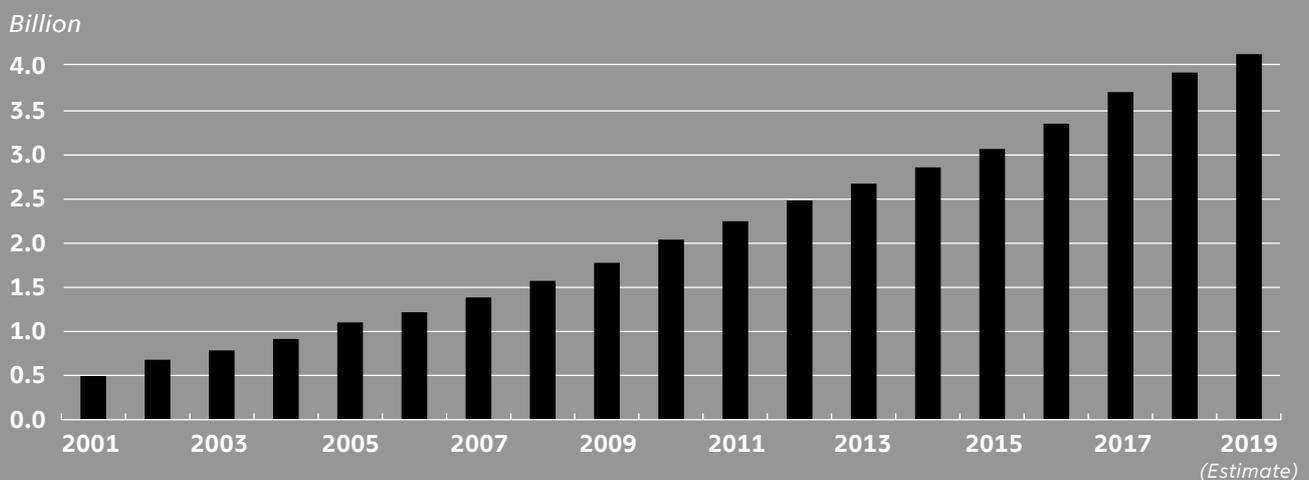
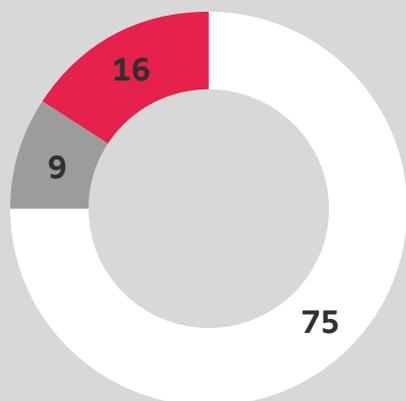


Chart 1

Most payments in physical trade are made using electronic payment solutions

Proportion of payment solutions in physical trade in 2019

Per cent



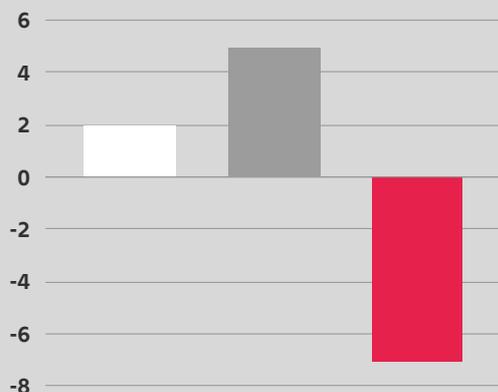
Card payments

Mobile payments

Cash payments

Change in payment solutions since 2017

Percentage point



Note: The chart illustrates the type of payment in physical trade, from a user perspective. This means that payments made using mobile phones are recorded as mobile payments, whether made by MobilePay, Apple Pay or another solution.
Source: Danmarks Nationalbank.

Electronic payments play a key role in physical trade

When paying for goods and services in stores, most Danes use electronic payments. In 2019, 84 per cent of all payments in physical trade were made using electronic payment solutions, primarily payment cards.

Card payments accounted for three out of four payments in physical trade, while mobile payments accounted for 9 per cent of total payments in 2019, see Chart 1, left. This appears from Danmarks Nationalbank's detailed survey of the payment behaviour of Danish households, conducted for the second time in autumn 2019, see Box 1.

The proportion of card payments in physical trade has increased slightly since Danmarks Nationalbank's first survey of the payment behaviour of Danish households from 2017. The 2019 survey also showed a notable increase in the number of mobile payments in stores, from 4 per cent to 9 per cent of payments, equivalent to an increase of 5 percentage points, see Chart 1, right.

This analysis presents the most important insights from the survey of Danes' electronic payment behaviour and lists key figures from the survey in the appendix.¹

¹ Key findings from the survey concerning the use of cash are presented in Danmarks Nationalbank's analysis on cash, see Jakob Mølgaard Heisel, Cash payments are declining, *Danmarks Nationalbank Analysis*, No. 3, February 2020 ([link](#)).

Senior citizens used payment cards more frequently than previously

Opting out of cash in favour of electronic payment solutions is not new – but over recent years, especially Danes over the age of 60 have helped drive the trend towards more electronic payments. Among Danes over the age of 60, seven in 10 payments in physical trade were made using a payment card in 2019.

The overall trend towards increased use of card payments is driven mainly by the change of behaviour among senior citizens. Among young Danes, on the other hand, the proportion of card payments in physical trade decreased in favour of mobile payments, see Box 2. These two parallel trends in the population have helped to narrow the previous gap in the frequency of the use of payment cards by young people and senior citizens. In 2019, the gap was 6

Danmarks Nationalbank's survey of the payment behaviour of Danish households

Box 1

In 2019, in cooperation with Kantar Gallup, Danmarks Nationalbank conducted its second survey of the payment behaviour of Danish households. The survey was conducted in the second half of 2019 and is based on responses from a representative selection of 1,136 Danes aged 15-79 years.¹

The selected Danes entered all their payments for an entire day in a payment diary. For each payment, the respondent stated several details, including the type of payment, e.g. payment card, mobile payment, etc. In addition to the payment diary, each respondent answered a number of questions regarding their payment preferences, e.g. their preferred payment solution in physical trade. The payment diary and other survey information were collected during one month from 19 August to 22 September 2019.

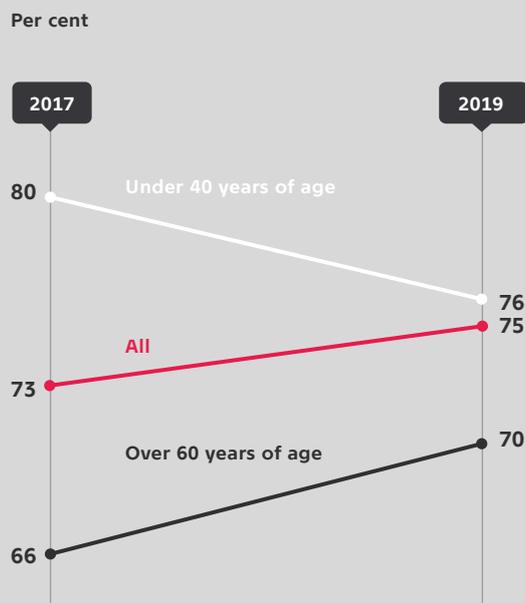
The survey is associated with a +/- 3 percentage point uncertainty for questions covering the entire group of respondents. The uncertainty is greater when the survey is broken down into age groups and sub-questions, where the number of responses is lower.

¹ The age group is assumed to represent all Danes' payments made last year, and payments made by Danes not covered by the above-mentioned age range have therefore not been included in the analysis.

Chart 2

Senior citizens are using payment cards much more frequently than previously

Proportion of payment card payments in physical trade



Source: Danmarks Nationalbank.

When is a payment a mobile payment?

Box 2

Consumers have a number of options to choose from when paying for goods, for instance card payments, mobile payment solutions such as MobilePay or in-app mobile purchases (in-app payments). From the consumer's perspective, these represent different options, while from a technical perspective, this is not necessarily so. In the Danish payments infrastructure, i.e. the IT systems facilitating the transfer of funds from one account to another, all consumer payments are executed as either credit transfers or card transactions.

MobilePay payments at the checkout will usually be executed as credit transfers, while online MobilePay payments will be executed as card payments. Similarly, in-app payments may technically be executed either as card payments or as credit transfers in the underlying payments infrastructure.

As this analysis is based on a household survey, payment types are classified based on a consumer perspective. This means that payments made using mobile phones are recorded as mobile payments, whether made by MobilePay, Apple Pay, in physical trade or online.

percentage points compared with 14 percentage points back in 2017, see Chart 2.

Mobile payments have gained momentum in recent years

Last year, about one in 10 payments in physical trade was a mobile payment. This means that the proportion of mobile payments in physical trade more than doubled in a matter of just two years from 2017 to 2019.

Mobile payments are used across all age groups, but mobile payments in physical trade were adopted mainly by younger generations. Among Danes under the age of 40, 13 per cent of payments in physical trade were mobile payments in 2019, about double the number in 2017 and far more than in the rest of the population, see Chart 3.

With the gradual increase in the number of mobile payments, the use of payment cards in physical trade among Danes under the age of 40 also declined from 80 per cent of payments in 2017 to 76 per cent in 2019. This is the result of a transition from card payments to mobile payments since 2017.

In Denmark, the most popular mobile payment solutions in physical trade are Apple Pay, the Dankort app (app under the national card scheme, Dankort), Google Pay, MobilePay and PayPal.

Danes found new payment solutions easy to use

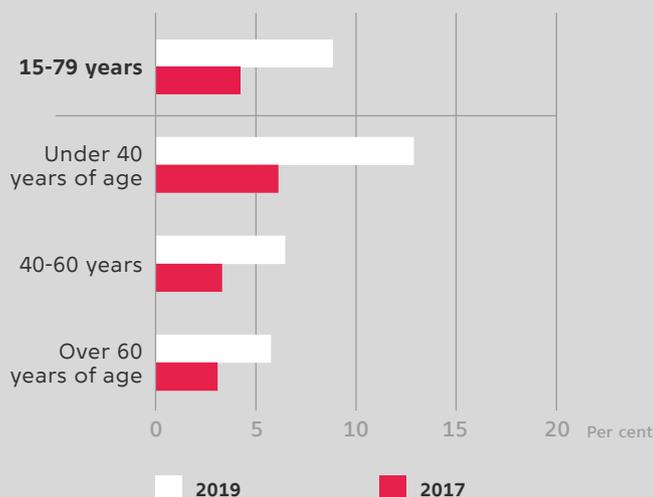
Respondents in Danmarks Nationalbank's survey were questioned about their preferred payment solutions for payments of kr. 50, kr. 500 and kr. 5,000, respectively. Respondents emphasised that new payment solutions were easy to use – especially for lower-value payments. For instance, one fourth of the Danes cited mobile payments as one of their preferred payment solutions for payments of kr. 50 in physical trade last year.

Almost half of the survey respondents pointed out that advantages such as 'easy to use', 'fast payment method' and 'always have my mobile phone with me' are important qualities of mobile payments. The

Chart 3

Mobile payments have become more prevalent in physical trade – especially among younger generations

Proportion of mobile payments in physical trade



Source: Danmarks Nationalbank.

same important qualities were emphasised for card payments.

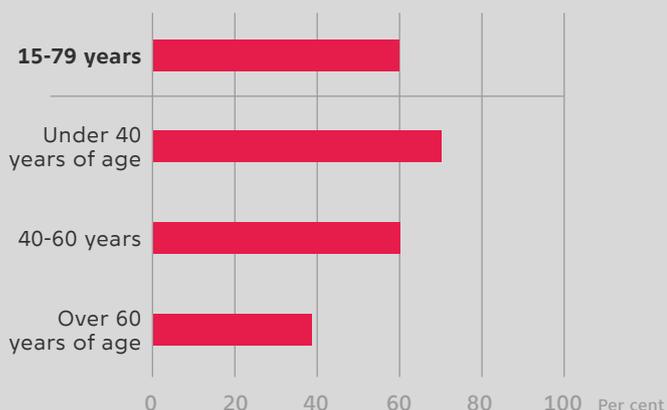
Today, the vast majority of stores accept a number of mobile and card payment solutions. This has provided the basis for a gradual increase in the prevalence of electronic solutions in line with more people adopting the solutions – including senior citizens.²

² See Jakob Mølgaard Heisel, Cash payments are declining, *Danmarks Nationalbank Analysis*, No. 3, February 2020 ([link](#)).

Chart 4

Most person-to-person payments were mobile payments

Proportion of person-to-person mobile payments



Source: Danmarks Nationalbank.

Chart 5

Danes are enthusiastic users of mobile bill sharing

27%

Bill sharing accounted for 27% of the total value of mobile payments in 2019



Source: Danmarks Nationalbank.

Most person-to-person (P2P) payments in Denmark are mobile payments

Mobile payments are the Danes' preferred payment solution for person-to-person payments. In 2019, six in 10 person-to-person payments were mobile payments³ – the vast majority by MobilePay.

Mobile payments were used to a great extent by both younger and older generations for person-to-person payments. For instance, almost four in 10 person-to-person mobile payments in 2019 were made by Danes over the age of 60, see Chart 4.

In addition to mobile payments, person-to-person payments were made primarily in cash or as credit transfers using online or mobile banking.

Mobile payments were used for a wide range of person-to-person payments

According to the survey, the reason for the popularity of mobile payments is that they can be used for a wide range of person-to-person purposes. Gifts, pocket money, person-to-person payments and loans accounted for a large proportion of total transactions, but digital bill sharing featured particularly high on the list of purposes.

In fact, more than one in four person-to-person mobile transactions were bill sharing transactions, see Chart 5. Danes under 40 were particularly avid users of bill sharing, accounting for more than half of the

³ Person-to-person mobile payments include MobilePay, PayPal and other mobile payment solutions.

transactions made as mobile bill sharing transactions last year. Person-to-person mobile payments have been growing rapidly over recent years.

Credit transfers are still used for high-value person-to-person payments

Respondents in Danmarks Nationalbank's survey were also questioned about their preferred payment solutions for person-to-person payments of kr. 50, kr. 500 and kr. 5,000, respectively. For high-value person-to-person payments, a large number of citizens preferred using credit transfers. For instance, half of the population preferred using online or mobile banking for transfers of amounts of kr. 5,000. For lower-value payments, this figure was below 10 per cent.⁴

According to the survey, in addition to higher-value payments, credit transfers were used mainly for large gifts and pocket money. Last year, 34 million person-to-person credit transfers were made, the vast majority of these by citizens over the age of 40. So, the survey indicates that the type of payment played a role in the type of person-to-person payment chosen by Danes last year. Mobile payments were widely used for bill sharing, payments and pocket money, while online banking credit transfers are used mainly for recurring transactions, large gifts and high-value payments.

⁴ For payments of kr. 50, 3 per cent of the Danes preferred using online banking, while 9 per cent preferred online banking for payments of kr. 500.

Danes are frequent users of online payments

Danes are among the most frequent users globally of online payments. The reason is that all age groups, including Danish senior citizens, are frequent Internet users. This impacts on the way citizens pay. According to the household survey, Danes over the age of 60 accounted for one in five online payments in 2019, see Chart 6. In the survey, online payments include website payments and in-app mobile purchases.⁵

However, the way in which the age groups used the Internet for payments differed. According to the survey, the youngest generations made frequent but lower-value transactions, while Danes over the age of 60 made few but higher-value online transactions.⁶ Last year, Danish households made 231 million online payments, worth kr. 133 billion.

Most online transactions were made by payment cards, with the Dankort or a co-branded Dankort accounting for close to half of all online payments in 2019. But for high-value payments, consumers typically used credit cards. According to the survey, access to credit and financial benefits such as insurance were considered important parameters in the choice of payment instrument for high-value purchases such as travel and concert tickets.

Far more online mobile payments

Although most online payments in 2019 were made by payment cards, mobile payments accounted for a substantially higher proportion of total payments than just two years ago. Since Danmarks Nationalbank conducted its first survey in 2017, a wide range of mobile payment solutions have been launched, including Apple Pay, the Dankort app and Google Pay. According to the survey, existing mobile payment solutions accounted for about one fifth of all online transactions in 2017. Last year, about one in three online payments was a mobile payment.

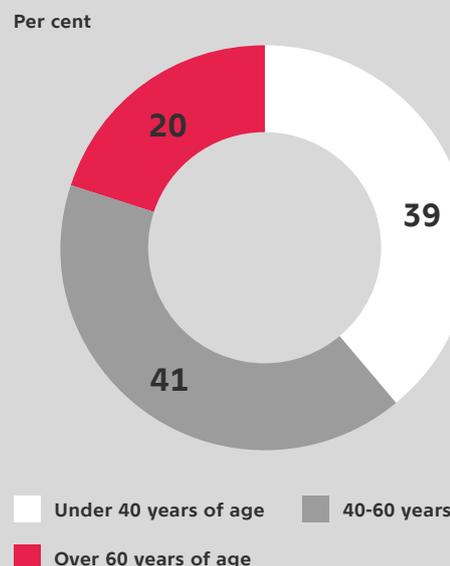
⁵ Debits and payment of bills via online banking, known as 'other remote trade', are not included in online payments.

⁶ In 2019, the average value of online payments for Danes under the age of 40 was kr. 340, while the value for Danes over the age of 60 was kr. 609.

Chart 6

All Danes are frequent users of online payments

Proportion of total online payments



Source: Danmarks Nationalbank.

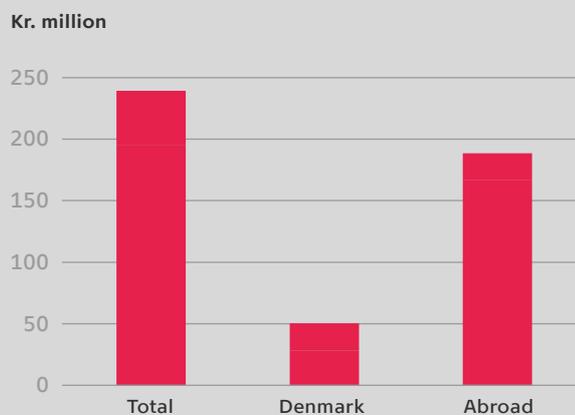
The increase in online mobile payments was driven, among other factors, by a significant increase in in-app mobile purchases, 'in-app payments'.⁷ In-app payments accounted for 33 million transactions, equivalent to 43 per cent of total online mobile payments last year.

The survey shows a general trend towards more mobile payments among younger generations, both in physical trade and online. In 2019, almost half of all online payments among Danes under the age of 40 were mobile payments.

⁷ In-app payments are purchases using a mobile app, for instance a gaming app.

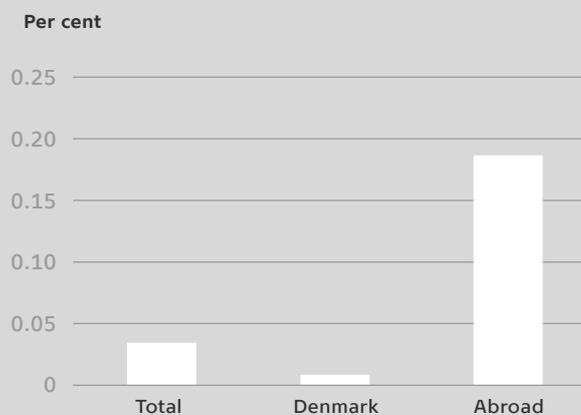
Most card fraud is committed abroad

Total volume of card fraud, 2019



Note: Includes only Danish payment cards
Source: Danmarks Nationalbank.

Card fraud, proportion of total card turnover, 2019



Fraud using Danish payment cards is declining

Paying by payment card is safe and efficient, but occasionally cards are used without the cardholder's authorisation. For instance, if a card has been lost or if the card details have been exposed in an online transaction.

According to Danmarks Nationalbank's payments statistics, fraud using Danish payment cards amounted to kr. 240 million in 2019, see Chart 7, left.⁸ This should be seen in the context that Danes made payment card payments totalling kr. 684 billion in the course of 2019. This means that fraud using Danish payment cards totalled kr. 0.35 for each kr. 1,000 paid by a Danish payment card last year, equivalent to 0.035 per cent of total card turnover, see Chart 7, right.

Most card fraud takes place outside Denmark or online

Danes are frequent users of their payment cards both in Denmark and abroad. But most fraud using Danish payment cards takes place when cards are used

Payment card fraud liability rules

Box 3

Generally, the card issuer, i.e. typically a bank, is liable for card fraud, but the type of fraud and a lack of caution may increase the cardholder's degree of liability.

If a payment is a contactless payment, the card issuer generally covers the loss. But if the PIN was used, the cardholder must cover kr. 375 of the total fraud.

If cardholders have disclosed their PIN, SMS code or otherwise acted irresponsibly, the card issuer may claim compensation for up to kr. 8,000. In such cases, evidence must be submitted by the card issuer.

In exceptional cases where cardholders were aware of the fraud, they may have unlimited liability. Nevertheless, the card issuer is liable from the time the cardholder made the issuer aware of the fraud or blocked the relevant payment card.

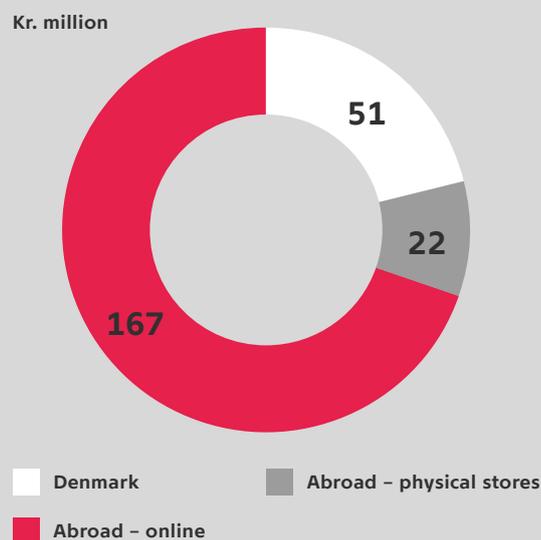
outside Denmark. In 2019, the vast majority of fraud took place when cards were used abroad. For each kr. 1,000 paid by Danish payment cards abroad, fraud amounted to kr. 1.87, see Chart 7, right. Most of this amount could be attributed to e-commerce fraud.

⁸ Danmarks Nationalbank keeps official statistics of payment card fraud. Other types of financial payment fraud, for instance in relation to online banking, are not included in these statistics.

Chart 8

Most card fraud takes place online and abroad

Value of fraud using Danish payment cards



Source: Danmarks Nationalbank.

In 2019, fraud using Danish payment cards abroad amounted to kr. 167 million, equivalent to 70 per cent of the total volume of card fraud last year, see Chart 8. By way of comparison, card fraud in physical trade abroad amounted to just kr. 22 million.

In Denmark, e-commerce fraud was the most common type of fraud, totalling kr. 29 million of the total card fraud of kr. 51 million last year, see Chart 8.

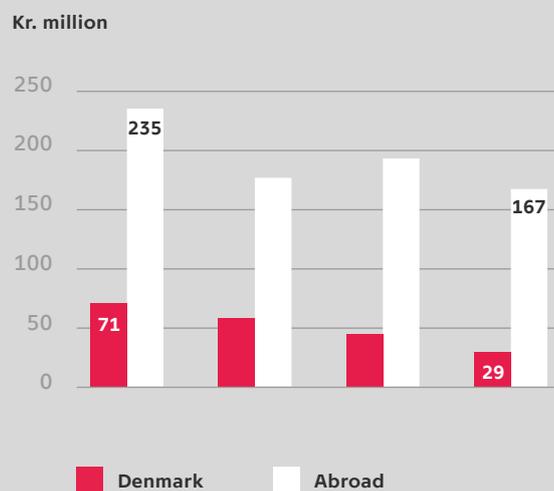
The extent of e-commerce fraud has declined over the past four years

Payment providers and authorities have a strong focus on preventing payment card fraud. A stronger focus on prevention and the launch of several initiatives in recent years may have helped to reduce fraud using Danish payment cards. Total online fraud using Danish payment cards has been reduced by kr. 110 million since 2016.

Chart 9

Online fraud has been significantly reduced over the last four years

Value of fraud using Danish payment cards



Source: Danmarks Nationalbank.

The decline in fraud using Danish payment cards is seen both abroad and in Denmark. According to Danmarks Nationalbank's payments statistics, the value of fraud abroad was reduced by kr. 68 million in 2019, equivalent to about 30 per cent since 2016. Similarly, fraud using Danish payment cards in Denmark was reduced by approximately 60 per cent during this period, from kr. 71 million in 2016 to kr. 29 million in 2019, see Chart 9.

Payment security has been tightened in recent years, which may have helped to reduce the extent of card fraud. One initiative is the introduction of two-factor authentication for the authorisation of payments. Two-factor authentication means that two security factors are required to authorise a payment, for instance card details and an SMS code for e-commerce.⁹

⁹ SMS codes for online payments were introduced for the Dankort in 2016, while this feature was introduced for international payment cards back in 2013.

Another initiative is the possibility of geo-blocking payment cards. Geo-blocking enables consumers to restrict the use of their payment cards to specific geographical locations and places of use such as physical trade or online trade. This may help to reduce fraud using Danish payment cards abroad and online.

In Denmark, geo-blocking is offered mainly by MasterCard in partnership with a number of banks. This solution was introduced in Denmark back in 2014.

Contactless payment cards may have helped to reduce fraud in physical trade

Although fraud using Danish payment cards takes place mainly online or abroad, the use of contactless payment methods may also have played a role in the overall reduction of card fraud. The contactless payment feature helps to reduce the value of card fraud in physical trade due to two main factors. Firstly, contactless payments reduce the risk of having the

PIN compromised because it is used less frequently. Secondly, the limit of kr. 350 per contactless payment transaction reduces the potential fraud amounts. Moreover, an overall limit applies to the value of purchases that can be made before the user must be identified using the PIN.

This limit has helped to curb fraud using contactless cards, although a contactless card can be used several times for low-value payments. Although contactless transactions account for 58 per cent of total fraud incidents involving lost and stolen cards, card fraud using lost and stolen cards has been reduced by kr. 1,300 per fraud incident since 2016. This means that contactless payments may have helped to reduce card fraud in physical trade in monetary terms.

From 2016 to 2019, payment card fraud in physical trade in Denmark declined by 62 per cent. This is equivalent to a reduction of fraud in physical trade from kr. 58 million in 2016 to kr. 22 million last year.

Appendix – Payments

Number of payments broken down by place of use and payment method in 2019

Table 1

Million transactions	Cash	Payment card	Mobile payment	Credit transfer	Other	Total
Physical trade	342	1,641	193		21	2,197
P2P payments	120		243	34	6	403
E-commerce		144	77		10	231
Other remote trade				29	5	34
Total	462	1,786	512	63	41	2,865

Note: The table shows the main findings of Danmarks Nationalbank's survey of the payment behaviour of Danish households from 2019 in which payment types are classified based on a consumer perspective. This means that payments made using mobile phones are recorded as mobile payments, whether made by MobilePay, Apple Pay or another solution. This means that data is not directly comparable with Danmarks Nationalbank's payments statistics.

Source: Household survey 2019, Danmarks Nationalbank.

Value of payments broken down by place of use and payment method in 2019

Table 2

Million transactions	Cash	Payment card	Mobile payment	Credit transfer	Other	Total
Physical trade	48.7	383.3	28.5		5.9	466.4
P2P payments	27.2		61.1	99.4	1.7	189.4
E-commerce		93.1	26.1		14.0	133.2
Other remote trade				130.5	0.4	130.9
Total	75.9	476.4	115.7	229.9	22.0	919.8

Note: The table shows the main findings of Danmarks Nationalbank's survey of the payment behaviour of Danish households from 2019 in which payment types are classified based on a consumer perspective. This means that payments made using mobile phones are recorded as mobile payments, whether made by MobilePay, Apple Pay or another solution. This means that data is not directly comparable with Danmarks Nationalbank's payments statistics.

Source: Household survey 2019, Danmarks Nationalbank.

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The analysis consists of a Danish and an English version. In case of doubt regarding the correctness of the translation the Danish version is considered to be binding.

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