

— Point of Sale (POS) and Payment Processing

How better connectivity could increase
transaction revenue by 30%



– Point-Of-Sale (POS) devices make payments easier for everyone

There's no need for the customer to withdraw cash or find the right coins, no need for the merchant to handle money or worry about forgeries, or for their bank to arrange a secure collection of that money.

But the biggest opportunities are for card issuers and payment processing companies, who get a small fee from billions of global transactions. In the US alone, \$52 billion of interchange fees were collected from merchants in 2019 – a 10 percent increase from the previous year.¹

This overall opportunity is likely to grow significantly as the world shifts away from cash, and late adopting countries embrace card and contactless payments. However, gaining market share will probably become tougher; rapid innovation in the payments market will increase competition, and new regulations may limit more lucrative fees.

As the market grows, but also becomes more challenging, how can those processing POS transactions gain market share and increase revenue?

1. <https://cardflash.com/news/2020/01/card-fee-income-slips/>

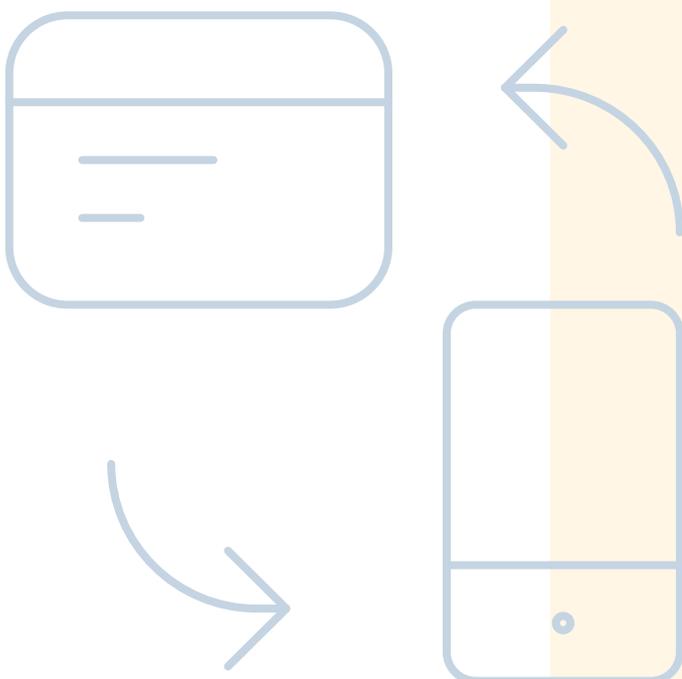


– POS in the time of COVID-19

As consumer-facing industries, such as retail and hospitality, cautiously reopen after lockdowns, they must minimise the risk of infection between customers and employees. Contactless payments are a key measure for doing that.

Contactless payments remove handling cash or cards, whose surfaces may carry virus particles. Contactless also speeds transaction times, and so reduces time spent in queues. Research suggests that SARS-CoV-2 spreads in enclosed spaces, and the risk increases when more time is spent near an infected person. Faster payments, and fewer payment problems, allow for customers to move out of enclosed spaces quickly.

This report discusses the many advantages that reliable connectivity brings to POS payments in terms of improved speed and customer experience. Whilst coronavirus remains a problem, and fast contactless payments are a key tool for slowing the spread, these benefits are greatly amplified.



– How to increase payments and revenue through POS devices

The POS payment device itself feels to many like a commodity, but there are things that can be done to optimise the number of transactions through it. This is good for those taking a fee from those transactions, but also good for the merchants and customers who have a more pleasant payment experience. That is a rare thing in business: a win for all.

Speed is of the essence. Once the price is entered, the payment should happen as soon as possible and go through the first time. This means the device needs to start up quickly, connect to a mobile network, transmit payment data to the bank, which in turn authorises the transaction and confirms it back to the terminal. This should all happen in a few seconds.

A short delay or a payment which doesn't go through may not sound like a big deal, but scaled up across all the world's transactions, it adds up. Connectivity is therefore critical.



We discuss below some of the ways transactions are lost, before moving on to how we can minimise these types of situations.

1. Lost payments to alternatives

A customer pays for their taxi journey back to their countryside home. The driver starts up the POS device. It takes a while to connect. They wave their card and the transaction doesn't process the first time. The taxi driver offers to try again but the customer is rushing and decides it's easier to pay in cash.

Outcome: The potential transaction revenue is lost.

2. Lost payments to competitors

A restaurant owner has three POS devices from different banks. They use one device until it has a problem processing a transaction, at which point they apologise to the customer, and grab the next one. The problem device is thrown to the back of the drawer, where it won't be picked up again until the other two experience problems.

Outcome: A single dropped connection leads to weeks of lost transactions.

3. Lost customers

A market trader is selling fast food with a high turnover. The mobile network is congested and every transaction is taking three times as long: 12 seconds instead of 4. The small delays add up and the queue gets longer. People who planned to eat there give up on the slow-moving queue and visit the stall next door which is processing payments quickly on another network.

Outcome: Both the merchant and the payment processor lose out.

2. https://en.wikipedia.org/wiki/Peak%E2%80%93end_rule



4. Negative customer experiences impacting repeat business and reputation

After a long queue, a customer has to wait while the terminal tries to connect three times. Payment providers anecdotally report that transactions taking longer than seven seconds make customers visibly frustrated, even if it is not the merchant's fault. Furthermore, the way that an experience ends disproportionately impacts how we remember it.²

Outcome: The customer decides to shop elsewhere in future and may even leave a bad review, deterring others from doing business with you.

5. Complaints, downtime and reissues

A merchant is frustrated by slow processing times, which they blame on the device. They complain to the issuer. Irrespective of whether the problem is a fault with the terminal, network or merchant, time and money are then spent handling and investigating complaints and reissuing devices.

Outcome: During this period the device is left unused.

– The anatomy of a POS transaction



- An Acquiring Processor or Payment Solution Provider provides the service and/or device that allows merchants to accept cards.
- The cardholder swipes or taps their card on the device.
- Card details are sent to the merchant's bank (acquiring bank) via an internet connection (either Wi-Fi or cellular). The details are forwarded to the customer's bank (issuing bank), either directly for debit cards, or via a credit card network.
- The issuing bank validates the card details and checks available funds. It approves or declines the transaction and sends the response back to the merchant through the same channels.
- All being well, this process takes 2-3 seconds.
- Following the transaction, the issuing bank will transfer the funds to the merchant, via the credit card network and acquiring processor, who take their respective fees.

– The anatomy of a POS device

- **Hardware:** The physical device (card machine) which processes the card payment. It will usually have a Chip & PIN and NFC technology to interact with the card.
- **Software:** The terminal's operating system consists of software which registers, processes and stores transaction details. The frontend interface initiates the connection to communicate with the issuing bank.
- **Connectivity:** The technology to enable this connectivity and secure communication. This may be a SIM card to allow data sharing over mobile networks, a transmitter to share data over Wi-Fi, and/or a cable to connect to an internet or phone connection.

– Improving the POS experience means more revenue for all

Ensuring the POS device works quickly and consistently means more transactions on that device, ultimately resulting in more revenue.

This means doing everything possible to ensure that when the transaction is entered, the device is ready to take the payment as quickly as possible, and that payment goes through the first time.

What can be done to optimise such devices?

1. Works everywhere

A standard POS device may be used to make payments anywhere in the world and might have to move around. Connectivity may not be a problem in a New York City restaurant, but it may be more challenging when the same device is used at a rural music festival or the end of a taxi journey.

Many devices use consumer SIM cards from mobile network operators, tied to one network. Each mobile network has different coverage levels depending on where its base stations are, and devices that rely on a single network will not work in 15-25% of locations. For one-off events, such as festivals, a partner mobile operator may setup a dedicated network to cope with increased usage, and those not on that network will struggle to do business there.

A convenient solution is to use a Multi-IMSI SIM, which has agreements with all the major global mobile network operators and can connect to whichever network has the best capacity at the time and place the device is used.

A single 'intelligent' SIM is inserted into the device before it is shipped, and then programmed to switch network depending on where it is being used, as well as being able to accept over the air (OTA) network switches as required.

This becomes even more important if the device is being used across multiple countries, each with their own mobile networks and data rules.



2. Rapid, reliable connectivity

Connecting quickly is key to rapid transactions, so the device should always be ready to go.

Most mobile network SIM cards are designed for consumer devices. The networks deliberately drop connections to idle devices, so operators can maximise utilisation of networks, which is why there is a short wait for the connection to re-establish when you turn your phone on. When networks are congested, they sometimes drop connections that are in use to help manage capacity.

But for IoT devices whose profitability benefits from continuous connectivity, this is a poor solution. It is far better to use a connectivity solution that allows continuous connectivity without dropping, so that when a payment is entered, the POS device will be immediately ready.

This is clearly important to users. Eseye found that some POS devices were implementing software configurations to ping Google as frequently as every 30 seconds so that the connection didn't drop. That's a lot of unnecessary data being used to maintain a connection and ensure the device is ready. A better solution would be to use a SIM that doesn't drop the connection.

3. Works out-of-the-box

Getting a customer to use a POS device for their transactions is vital to it delivering value. If it requires even simple setups – entering Wi-Fi passwords on awkward keypads or waiting for a technician to come and work out the best mobile network – some customers will not bother to set it up, especially if they have other devices that already work. A good device is designed so that it connects and works the moment the merchant turns it on.



4. Analyses usage patterns to intelligently respond to problems and reduce call outs and replacements

All devices will have problems sometimes... Whatever the problem, if the customer says it is not working, it is in the issuer's interest to get it resolved so the device can start transacting again.

Understanding how the device is being used, which can be achieved for example by processing usage data through a cloud service such as AWS or Azure and applying analytics, can allow better responses to complaints. By looking at the data around transaction events, we can understand what happened. If the merchant believes it is a network problem, that can be checked. If not, we can explore what the real problem is and develop a solution, rather than just replacing devices or sending engineers on unnecessary callouts.

It may be that the merchant is switching the device off, leading to slow start-up times, in which case the solution may be training or better information. Or it may be a software problem, in which case the solution is to work with software suppliers to understand what can be done to improve it.

Doing this needs reliable connectivity to capture the data, expertise to look at the data and understand what it is telling us, and software knowledge to talk to the software supplier at the right level.



– Increasing revenues by 30% through connectivity: a worked-through use case

The figures below are based on a real use case but converted from their original currency and rounded to whole numbers to preserve customer anonymity. Contact Eseye to discuss further.

Company X has 1.5 million POS devices in the field. It wants to understand network access across its devices.

If every device always connected the first time, network access would be 100%. If every device connected every second time, it would be 50%. Eseye estimates industry average at 80-85%, which means 15-20% of attempts to connect are lost. Company X has an average connectivity of 88%.

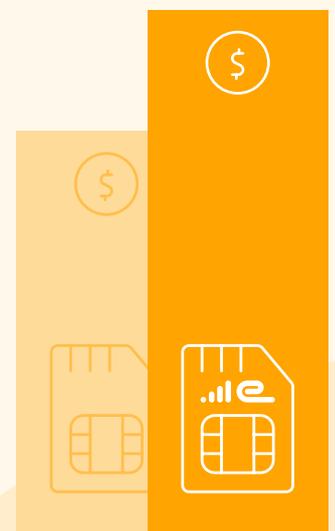
We carried out a modelling exercise for Company X on which devices performed best and found a correlation between network access and revenue per device. On average its devices had a revenue per device of \$50 per month. But devices with over 95% network access, made an average of \$63 per month.

If it could take its average to above 95% that's a potential average revenue increase of \$13 average per device, or \$19.5 million per month across all its devices. Changing its SIM could therefore increase revenues by about 30%. A solid business case.

There is also an added value in terms of setup. Its engineers needed to perform site surveys to determine the best network, and carry around surplus activated SIMs so they can setup the best network. These cost money, and even more so if they get lost and the person who finds them decides to take advantage of free data.

For Company X, installation of SIMs was costing \$30 per device per year (\$45m altogether). Maintaining spare SIMs worked out about \$1.50 per device per year (\$2.25m). By working with Eseye, they reduced these combined costs of \$31.50 per device per year, down to just \$2.50.

Across their 1.5 million devices this would result in a saving of \$43.5 million over a 12-month period.



Changing SIM could increase revenues by about

30%

– How Eseye can help improve your POS connectivity and profitability

Eseye helps POS companies improve their connectivity and maximise the number of successful transactions to increase revenue.

Our **AnyNet Secure SIM** card delivers weeks of continuous connectivity without dropping because we have built a global network connectivity platform to provide a high quality of service.

Our market-leading **Multi-IMSI SIM** works across over 700 mobile networks – which Eseye has negotiated deals with – and can be switched between them over the air, allowing us to provide the best possible coverage wherever the device is located, even if that changes over time. This also allows ongoing optimisation in the field, should terminals move, or networks have faults or congestion issues.

Eseye's relationships with global mobile networks, and understanding of local connectivity and data processing challenges, mean we can help businesses build connectivity into POS devices rather than installing it locally. Devices with Eseye connectivity work out-of-the-box anywhere in the world, reducing the need to maintain large local setup teams.

All resulting in easy setup, easy to use devices, faster processing times, and fewer dropped connections. It means merchants can process transactions faster, and lost transactions are avoided.

Where there is a choice, the better-connected device is the preferred one, the one that transacts the most, and the one that generates the most revenue.



No Limits.



To talk to Eseye about the issues raised in this whitepaper or discuss POS device solutions, please

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