

## DEBIT CARD AND CREDIT CARD SECURITY (AND THEIR USE IN ALBANIA)

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### Përmbledhje

Kartat e debitit dhe të kreditit kanë të dyja përparësitë e tyre, por njëra duhet dalë fituese kur bëhet fjalë për dobinë financiare dhe sigurinë. Ato përdoren për shpejtësinë e transaksioneve, koston, komoditetin dhe natyrisht, sigurinë. Kartat e debitit janë më të thjeshta – njerëzit kryejnë një blerje dhe paratë e tyre ikin nga llogaria. Nga ana tjetër, kartat e debitit janë më vulnerabël për sa i përket sigurisë. Të dy kartat, të debitit dhe të kreditit ofrojnë mbrojtje solide për mbajtësit e llogarive, por kartat e kreditit ofrojnë një shtesë shtesë mbrojtjeje sepse ato nuk janë të lidhura drejtpërdrejt me llogarinë rrjedhëse ose të kursimit. Në këtë punim ne analizojmë përdorimin e kartave të debitit dhe kreditit në Shqipëri dhe shpjegojmë argumentimet pro dhe kundrat të përdorimit të kartave të debitit dhe të kreditit në kuadër të përfitimeve financiare dhe sigurisë. Duke u përqëndruar më shumë te siguria, pasi kemi eksploruar pikat më të dobëta, ne rendisim masat që mbajtësit e kartave duhet të marrin për të mbajtur të sigurt kartat e debitit dhe kartat e kreditit. Çështja dhe gjetjet për këtë punim janë përqëndruar në përdorimin e kartave të debitit dhe të kreditit në Shqipëri, duke u fokusuar në zhvillimet e 10 viteve të fundit, dhe cilat masa sigurie duhet të merren në lidhje me përdorimin e tyre, por këto masa sigurie mund të kenë një spektër më të gjerë dhe të përgjithësohen. Ne gjithashtu shikojmë se çfarë mbart e ardhmja për transaksionet dixhitale, duke përfshirë kartat e debitit dhe të kreditit, si Inteligjenca Artificiale (AI) dhe Machine Learning (ML) për menaxhimin e mashtrimeve dhe zbulimin e anomalive.

**Fjalëkyçe:** Kredit, debit, kartë, siguri, rrezik kibernetik.

### Abstract

Debit and credit cards both have their advantages, but one must win when it comes to financial usefulness and security. They are used for their transaction speed, cost, convenience and of course, security. Debit cards are simpler – people buy something and their money goes away. On the other hand debit cards are more vulnerable in terms of security. Both debit and credit cards offer solid protection to account holders, but credit cards provide an extra layer of defense because they're not directly tied to the checking or savings account. In this paper we analyze the use of debit and credit cards in Albania and explain the pros and cons of using each of them in terms of financial benefits and security. Focusing more on security, after exploring the weakest points, we list the measures the card holders should take to keep both credit cards and debit cards secure. The case for this article and the findings is focused for the use of debit and credit cards

in Albania, focusing in the developments of last 10 years, and what security measures should be taken regarding their use, but these security measures can have a broader spectrum and be generalized. We also look at what the future holds for digital transactions including debit and credit cards, that is Artificial Intelligence (AI) and machine Learning (ML) for fraud management and anomaly detection.

**Key words:** credit, debit, card, security, cyber risk.

### **Introduction**

Long ago, people actually walked into their bank branches to obtain cash from their accounts. Debit and credit cards offer more than a way to access money without having to carry around cash or a check book, making them a necessity in today's world. They can be used now almost everywhere: receiving money from ATM's, setting automated payments, at the supermarkets, local stores, gas pumps, restaurants, online purchases etc. All these benefits and easy ways to use money do not come without some risks that credit and debit cards hold.

**The main difference** between these cards is that **debit cards** are linked to the holder's bank account and money is withdrawn from the account as soon as the transaction occurs. **Credit cards** on the other hand, offer a line of credit that is interest-free if the monthly credit card bill is paid on time. A credit card is not connected to a personal bank account, but it is connected to the bank or financial institution that issued the card. So, when someone uses a credit card, the issuer pays the merchant and the card holder goes into debt to the card issuer.

In Albania, the use of credit and debit cards has been going upwards every year recently. According to statistics from Bank of Albania, in 2010 there were 694,848, meanwhile in the 2020 there are around 1,272,377 debit and credit cards in use: VISA and MasterCard being the most popular, followed by American Express and local cards. According to General Secretary of Albanian Association of Banks, in 2020, for 1000 adults in Albania there are around 483 debit and credit cards. The majority of transactions performed via such cards though, is receiving cash from ATM's. This classifies Albania as being far from developments in area regarding electronic systems and payments comparative to the region and Europe.

Also, in **Table 1**, we have estimated how many cards per person were in several European countries in 2019. Cards data are taken from statistics portal ([www.statista.com](http://www.statista.com)) and the numbers of population per country are taken from UN's World Population Prospects as of 2019.

Country	Credit Cards	Debit Cards	Number of population	Cards per person
Luxembourg	2,047,908	1,038,177	633,366	4.87
Belgium	6,096,165	33,830,149	11,625,587	3.43
Turkey	69,825,826	159,078,497	85,090,996	2.69
Iceland	496,000	374,000	342,538	2.54
Switzerland	7,218,251	14,239,873	8,690,948	2.47
United Kingdom	60,616,000	102,083,000	68,117,123	2.39
Norway	5,297,000	7,309,000	5,440,788	2.32
Croatia	2,206,833	6,877,816	4,091,460	2.22
Netherlands	6,573,021	27,818,564	17,153,640	2
Portugal	7,735,014	12,643,133	10,181,343	2
Russia	37,184,000	248,648,000	146,079,829	1.96
Sweden	8,033,458	10,695,213	10,134,279	1.85
Spain	37,960,479	48,416,322	46,802,730	1.85
Germany	37,272,331	115,626,708	84,109,465	1.82
Finland	4,694,808	5,235,682	5,546,557	1.79
Slovenia	836,428	2,776,324	2,079,880	1.74
Malta (2016)	183,986	698,887	514,564	1.72
Denmark	1,737,000	7,916,000	5,801,628	1.66
Greece	2,551,128	13,818,520	10,400,692	1.57
Austria	3,617,516	10,129,535	9,051,530	1.52
Estonia	328,999	1,554,270	1,329,751	1.42
Ireland (2017)	1,741,286	5,288,322	4,979,790	1.41
Italy	27,077,186	57,206,746	60,434,435	1.39
Ukraine	10,953,000	48,437,000	43,617,561	1.36

France	30,010,120	54,475,952	65,339,113	1.29
Czechia	1,568,866	11,390,972	10,724,604	1.21
Lithuania	334,594	2,883,926	2,698,329	1.19
Latvia	276,281	1,955,783	1,874,627	1.19
Poland	5,998,135	36,856,094	37,837,089	1.13
Cyprus	277,072	931,387	1,193,833	1.01
Hungary	1,278,176	8,114,984	9,650,550	0.97
Serbia	1,209,483	7,281,932	8,726,655	0.97
Slovakia (2017)	796,388	4,503,604	5,463,017	0.97
Bosnia & Herzegovina	245,573	1,728,040	3,266,909	0.6
Moldova	44,563	1,968,003	4,030,276	0.5
<b>Albania</b>	113,775	1,092,635	2,878,185	0.42
Bulgaria	1,245,182	1,245,182	6,923,590	0.36

**Table 1.** Evidence of number of debit and credit cards per person in European countries in 2019

As we can see, Albania ranks low in this table. Still, in the recent years, the number of POS terminals and transactions has risen significantly, but according to Albanian Council of Investments (ACI), the number of POS terminals is one of the lowest in the region. Also, according to ACI, encouraging payments through POS-es would have a positive effect in economic informality in Albania.

In order to increase the use of debit and credit cards, the population should be widely informed of their risks and benefits and educated in how to mitigate the risks that they carry. In this paper we will perform a research about the use of debit and credit cards in Albania, what are they mostly used for and the financial benefits of using each type of card. Also, we will analyze their biggest risks, the security that credit and debit cards offer, how to prevent fraud, and where it is best to use (or to not use) credit or debit cards.

### **Materials and methods**

Our methodology is based mostly on data, statistics and publications from Bank of Albania as well as other publications regarding the use of debit and credit cards.

Based on Bank of Albania statistics, in Albania, in the last 10 years we can see a significant rise in the use of debit and credit cards. From 10 406 955 of total cards transactions in 2010, 9 877 583 of them were cash withdrawal from ATM's and only 527 411 POS payments. Meanwhile in 2020, in a total of more than 18 682 490 transactions, around 13 236 170 were cash withdrawal from ATM's and around 4 699 001 were POS payments. This means that in 10 years, the number of transactions via cards has almost doubled. In 2010, POS payments were 5% of total transactions and in 2020 were 25% of total transactions. In the near future it is expected that these numbers will increase, and cards will be used more often, which makes the security of debit and credit cards a priority in the measures that should be taken from institutions to prevent fraud.

This can be further validated by the increase of home banking in Albania: from 162 385 home banking transactions in 2010, there are 3 337 447 home transactions for January-October 2020. Although home banking does not only mean transactions via cards, they play a significant role.

This leads us to consider that a big part of the security of debit and credit cards relies in the education of the users: when to use what.

**Credit and debit card security** relies on the physical security of the plastic card as well as the privacy of the credit card number. Therefore, whenever a person other than the card owner has access to the card or its number, security is potentially compromised. Once, merchants would often accept credit card numbers without additional verification for mail order purchases. It's now common practice to only ship to confirmed addresses as a security measure to minimize fraudulent purchases.

Some merchants will accept a credit card number for in-store purchases, whereupon access to the number allows easy fraud, but many require the card itself to be present, and require a signature. A lost or stolen card can be cancelled, and if this is done quickly, will greatly limit the fraud that can take place in this way. European banks can require a cardholder's security PIN be entered for in-person purchases with the card (<http://www.mynewcreditcard.info/>).

The goal of the credit card companies is not to eliminate fraud, but to reduce it to manageable levels, which implies that high-cost low-return fraud prevention measures will not be used if their cost exceeds the potential gains from fraud reduction.

Another of the biggest risks of debit and credit cards is **identity theft** that occurs when someone uses the card holder's name and personal information to assume his identity either to open new credit accounts, bank accounts, mobile phone

accounts, and more in his name or to assume ownership of existing accounts he may legitimately hold ([www.americanexpress.com](http://www.americanexpress.com)). Protecting from identity theft includes monitoring the card and account statements weekly, reporting all lost or stolen cards immediately and by contacting the financial institution if the replacement card or new card does not arrive on time. **Phishing** is another big risk. This is where a web page entices card holders to enter their details voluntarily. Phishing can start with a letter or phone call, but frequently it's in the guise of an email with a web link. Once on the site a person may be asked to enter his login name, password and credit card number - in short, all that's needed to hack his account ([www.tescobank.com](http://www.tescobank.com)).

Some scammers may use **mail, phone and e-mail scams** in the form of sending official-looking letters or pose as representatives from a financial institution on the phone, which is also a big risk. Card issuing companies will not call or e-mail card holders to request personal account information. Information should not be given out unless the card holder has initiated the communication or has verified the source. Card holders should be very careful when **shopping online**. Only trusted merchants should be visited and sites that ask to provide unnecessary information should be avoided. Payment information should never be sent by email. Transactions should occur in a secure environment by looking for the padlock icon at the bottom of the browser. Any website URL where you enter sensitive information begins with <https://>.

Another challenge, exceptionally in Albania, where ATM transactions cover the biggest number of transactions is **ATM safety**. The keypad should be covered when PIN is entered and the card holder should be aware of the surroundings. If the card holder is using a drive-through ATM, doors should be locked ([usa.visa.com](http://usa.visa.com)). According to experts in security events, there are risks from several types of attacks, like putting equipment on ATM's (skimmer, card and cash trapping, Lebanese loop), cyber-crime (sniffing, phishing) and brute force on ATM (Tashi, 2019).

According to The Information and Data Protection Commissioner (IDP) in Albania, some other risks include: losing the wallet with card information; not destroying or shredding debit and credit cards, personal ID cards, transaction documents, certificates etc. before throwing them away; not protecting personal PC with firewalls, anti-virus or not removing personal information before selling it; not protecting mobile phone etc. [11]

#### **Let's look at some characteristics of cards:**

**Debit Cards** take money out of the holder's checking account immediately. This is sometimes an advantage, but in most cases a big disadvantage as the money is gone and the transaction cannot be reversed. "If someone gets a hold of your debit card information, the second they use it, depending on the nature of the

transaction, your bank account will be drained,” Robert Siciliano, identity theft expert and CEO of IDTheftSecurity.com says. Debit cards help people budget as it’s harder to spend beyond their means; if they go out of budget, the card won’t work anymore. Some banks and third-party services now allow people to request text messages that contain their current balance. If the other party needs to be paid immediately debit is the best option, since debit transactions are the fastest method of payment. To automate finances, the person can carry a debit card that’s specifically for his personal purchases.

If someone is recovering from poor money management habits, he may be better off leaving the credit card at home entirely and finding a bank that offers a zero-liability policy on his debit account, so he’s protected from fraudulent transactions. That way he can budget, spend only what he has, and still be protected in case someone steals his card number and PIN. To have the best exchange rate on foreign currency a debit card may be used. If someone needs actual currency in a country that’s not his own, his best bet is to use his debit card and hit the ATM. In this case the card holder generally gets the exchange rate which is reserved for interbank purchases.

**Credit Cards** can be more useful when someone needs to make a big purchase that wouldn’t be covered by his available funds. Credit cards offer better rewards than debit cards do. Credit cards are the safest option when shopping online, because the credit card issuers watch for fraudulent charges. If someone detects fraud, he can dispute a charge and get it reversed quickly, thanks to credit card issuers’ “zero liability” policies. The card holder is never liable for unauthorized charges, unlike debit transactions, which are the same as cash (and are protected in some cases, but that varies from bank to bank) (Pash, 2010). Most credit cards offer their own warranty protection for purchases just for using a credit card for the transaction. Some of those warranties go beyond what’s offered by the manufacturer, and offer extra coverage, which is really useful for electronics, appliances, or other large purchases.

Low introductory credit card rates are limited to a fixed term, usually between 6 and 12 months, after which a higher rate is charged. As all credit cards charge fees and interest, some customers become so indebted to their credit card provider that they are driven to bankruptcy. Some credit cards often levy a rate of 20 to 30 percent after a payment is missed (Simon, 2010). This can lead to a snowball effect in which the consumer is drowned by unexpectedly high interest rates. Further, most card holder agreements enable the issuer to arbitrarily raise the interest rate for any reason they see fit. Studies have shown that consumers are likely to spend more money when they pay by credit card. Researchers suggest that when people pay using credit cards, they do not experience the abstract pain of payment, (Prelec and Loewenstein, 1998). Merchants that accept credit cards must pay interchange fees and discount fees on all credit-card

transactions (Martin, 2010). In some cases, merchants are barred by their credit agreements from passing these fees directly to credit card customers, or from setting a minimum transaction amount. But for merchants, a credit card transaction is often more secure than other forms of payment, such as cheques, because the issuing bank commits to pay the merchant the moment the transaction is authorized, regardless of whether the consumer defaults on the credit card payment. In most cases, cards are even more secure than cash, because they discourage theft by the merchant's employees and reduce the amount of cash on the premises. Credit cards reduce the back-office expense of processing checks/cash and transporting them to the bank.

### **Results and discussions**

From our study it has resulted that security issues around debit cards make a lot of people uncomfortable. The biggest one is that if the card gets stolen or compromised somehow, the money spent comes straight out of the account.

With a credit card, as long as the card holder notices the fraudulent charge on his account, he can call the card company, file a dispute and not be out any money. The same thing goes for mistakes that show up on the bill.

Credit can be a much more powerful and flexible option than debit. Card holders are protected from identity theft, purchases can be protected from defects and failures, and disputes are handled quickly without having to pay up just to get the money back. However, credit cards are still credit, and the card owner may be in debt for the purchases he makes. Interests are paid on them, and not being able to handle credit wisely can lead to financial problems. Sometimes it can be better to not spend at all unless you have the money to spend—in which case debit cards and cash are better options.

### **So, what should we consider when buying online?**

Using a secure connection is one way to play it safe. If there's a padlock visible at the bottom of the browser when paying online, it shows that the site is secure. If the padlock is broken, so is the security. Buying from well-known stores is another safeguard, and if you shop elsewhere, checking the site for contact details and ensuring there is a way to contact or trace them other than via the website is a sensible idea. If those details are missing, it could be a red flag.

The good news is that shopping online with a credit card does offer extra levels of protection. The obvious way to stay safe is to keep your details under wraps. Safety measures can include avoiding using a computer in public - such as an internet cafe or at work - when buying online. Home-based computers, where the card holder's details are far less likely to be seen by third parties, are much safer. It's worth knowing that a reputable company will never ask you for your online banking password, secret number or other account details. Sending credit

card numbers over email would be inadvisable, and parting with your PIN online or otherwise - even to a bank employee - is not a sensible idea. It's the most important number scammers need to steal your funds ([www.tescobank.com](http://www.tescobank.com)).

#### **Where is best to use or not to use each card?**

We have agreed so far that when buying online, the best bet is to use a credit card because of its characteristics, as stated in the previous paragraph. Also, because of its characteristics, it would be better to not use a debit card when buying online, when booking advanced travel and when making big everyday purchases, but to use a credit card instead.

But when should we use a debit card? A debit card is best used when buying from a small business with a small amount of money. Another situation when debit cards come in use is when there is credit card debt and paying with it will mean more interests to pay. According to Kimberly Palmer, NerdWallet's resident credit card and banking expert, "If you are accruing balances on credit cards and paying interest and fees, credit cards quickly become expensive. If you'll pay more to use a credit card due to an added fee, then using a debit card often makes more sense." Also, when someone finds it hard to budget and can't control their spending, it is best to use a debit card. This way that person cannot spend money that does not have.

#### **Conclusions**

With the increase of use of debit and credit cards in Albania in the recent years and the expected increase in the future, the risks associated with them increases.

We notice that Albania still has a long way to go in terms of using debit and credit cards and electronic payments, compared to other European countries. Even though the increase of their usage is positive and digitalization is spreading in Albania, we are aware that there are a lot of challenges associated with it.

We suggest that as long as the credit card bill is paid off fully at the end of every month there's no reason to ever use a debit card when going shopping (especially online). All it takes is a little self-restraint. The card holder gets all of the benefits by using a credit card (cash back and other benefits) without any of the debt.

The debit card should be used for cash withdrawal from ATM's or when the limit of the credit card is exceeded. Overall it is advised to not make big purchases with debit cards.

Also, securing the cards physically (both debit and credit) and not writing the PIN on the card or purse where the card is stored are good practice that could prevent the use of these cards if they are stolen.

Besides the information covered in this paper, the future for digital transactions includes Artificial Intelligence (AI) and Machine Learning (ML) to elevate customer experience and collect and mine information from digital transactions data. AI-related technology enables to automate account openings, dispute management and cardholder servicing, meanwhile ML algorithms are used for fraud management and anomaly detection in card transaction processing. AI and ML will lead to 'Self-driving' banking which is expected to evolve to a stage where it can make decisions on behalf of costumers based on costumer consent and data (www.infosys.com).

This paper is limited in debit and credit cards security (and ATM's as a mean for using these cards) and would be the focus of a broader work and study regarding security of financial institutions in Albania and how to make transactions more secure overall. Our vision is that the more secure the digital transactions, and the more educated the people are regarding cyber risks of digital transactions and how to mitigate them, the more likely they are to use digital transactions and therefore low the number of cash transactions in Albania. This will mitigate the economic informality in Albania that is elevated by the use of mostly cash by its citizens.

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