

CONSIDERATIONS CONCERNING THE MAIN EXISTING PAYMENT METHODS IN THE BANKING SYSTEM

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Abstract: The technological evolution in the monetary field has made the use of cash in the payments sector considerably decreasing. Digitalization of money has the potential to change the traditional structure of the financial system, as well as to redefine the role of central banks. This paper aims to present the main non-cash payment methods available worldwide, with an emphasis on internet and mobile banking. Comparing the increasing use of mobile payment applications, as more and more smartphone users prefer these applications to the detriment of cash payments, along with the evolution of ATM usage, one can see that there is a clear trend digitalization of banking services.

JEL classification: E42 , G21, G23

Key words: payment system, ATM, POS, payment system, banking system

1. INTRODUCTION

The payment system has evolved considerably over history, from goods to goods exchange to goods to currency exchange, and is now a goods to virtual currency. Modern payments are usually made through a currency. These payments may take a variety of forms, such as cash, check, bank transfer, credit / debit card, share issue, bonds, etc.

Ever since their introduction, in the 7th century BC, the exchange for cash, either in metallic or paper form, was the most convenient way to pay. However, this ease in using cash brings with it a number of inconveniences. Cash is an expensive tool that involves a number of costs, among which the most important are: printing costs, storage costs, transportation costs.

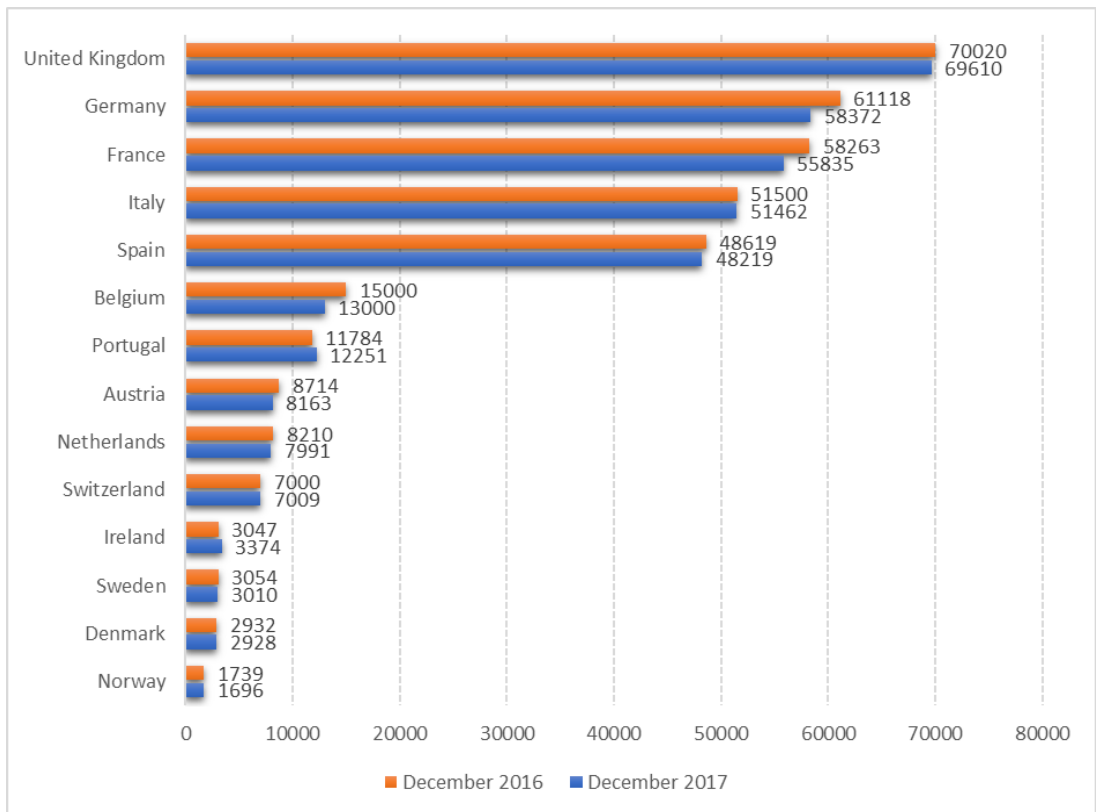
Technological developments have caused very important changes in the banking sector and especially in the payment methods that their customers can use. The use of cash in payments continues to fall further, being replaced by cashless transactions as a result of global government efforts made in order to increase financial inclusion and their attempt to boost mobile payments.

Next, we propose to present the three most important payment methods offered by banking institutions as follows: ATMs, POS and online payments (through mobile apps).

2. ATMs

The ATM, also known as the automated teller machine, is an electronic device that allows customers of a financial institution access to various financial transactions in a public space without requiring the presence of an employee of financial institution concerned. For most ATMs, the customer is identified based on the debit/credit card that is issued by a financial institution (a plastic card with a magnetic tape or a chip that has a unique identifier and contains some information such as expiration date and CVV / CVC verification code). Authentication is based on the PIN entered by the client using the keyboard of the device. ATMs allow clients of financial institutions to perform various transactions such as withdrawals or cash deposits, balance queries, currency exchanges, certain payments (e.g., local taxes, utility bills, etc.) and recharging phone cards.

ATMs continue to represent a significant component of the cash payment infrastructure, but their importance has declined in recent years as a result of digitization in the banking system. In particular, there is a gradual decrease in the number of ATMs in Europe (see Figure 1), in particular because banks restrict their physical operations (i.e. through branches) and redirect their resources towards the development of digital services. Switching from cash payments to electronic payments has diminished cash demand, and the growing popularity of digital banking has made banks' branches no longer necessarily the main locations of ATMs (due to low customer traffic). Moreover, the introduction of new policies on ATM services prices (e.g. more transparency on commissions, maximum tariffs, dynamic foreign exchange, etc.) has affected the dynamics of the ATM market in Europe, reducing the revenues of certain types of ATMs. At present, there are three types of business models for ATMs: a) cash dispensers located in the branches of banks; b) ATMs held by banks but located in other public places; and c) independent ATMs. ATMs located in bank branches are the traditional and most common model, especially in countries like Germany, Spain, France or Belgium. Countries where this type of ATM is frequently used are characterized by either very stringent security requirements (Belgium and France), or by the practice of withdrawal fees in the national currency (Germany and Spain).



Source: "ATM Numbers" (2019)

Figure no. 1 Evolution of the number of ATMs in some European countries (2016-2017)

In contrast, ATMs located in public places other than bank branches are commonly found in countries such as Portugal, Sweden and Greece, where banks have had to streamline their ATM networks either as a result of competition or as a result of the economic-financial crisis since 2008. As banks shift their attention to the digital space and close more and more branches, this ATM model is likely to become the most common. Instead, independent ATMs represent only an insignificant proportion of all ATMs in European countries, with the exception of Poland where more than half of ATMs are independent. These ATMs are operated by non-bank financial institutions and generally only allow for cash withdrawals. The advantage of these independent ATMs comes from the fact that they are located in public areas with medium or small traffic (e.g. cafes, shops, railway stations etc.) that are not necessarily attractive for banks and that they operate on the lowest cost strategy sometimes even the companies selling or renting the devices of those who own the location in order to focus on the operational aspects of the business (Batiz-Lazo & Reese, 2008).

Besides the fact that the number of ATM terminals has decreased in most European countries, it is obvious that the number of monthly transactions per terminal has also decreased, which supports the idea that cash is increasingly replaced by card payments flow, especially contactless ones. However, according to Table 1, it can be seen that the average withdrawals increased from 118.08 EURO in 2013 to 131.16 EURO in 2017 but the total withdrawal rate decreased by 3.07% from 2016 in 2017, with an annual growth rate in 2013-2017 of only 2.28%.

Table no. 1 ATMs - Statistics Europe

	2013	2014	2015	2016	2017	Growth 2016/2017	CAGR 2013- 2017
ATM Terminals in the E33 region	452.110	466.294	462.429	461.190	459.645	-0.34%	0.41%
Number of transactions per monthly ATM	2533.7	2457.1	2538.3	2540.8	2494.3	-1.83%	-0.28%
Cash withdrawals from ATMs (m)	13746.1	13748.6	14085.2	14061.5	13757.3	-2.16%	0.12%
Amount of withdrawals (EUR billions)	1623.1	1678.6	1764.7	1844.3	1787.7	-3.07%	2.28%
Average withdrawals (Euro)	118.08	122.10	125.29	131.16	131.16	-0.93%	2.15%
Number of ATM withdrawals per capita	22.7	22.6	23.1	23.0	22.4	-2.53%	-0.27%

Source: Rolfe (2019)

In order to counteract the decline in ATM usage, banks have implemented new technologies that allow for greater functionality: touch screens, contactless functions, cash withdrawal without the use of QR cards, etc. ATMs that no longer need to use cards have been introduced as a pilot in several countries, hoping to increase the security level of withdrawals from ATMs, but recent studies have shown that hackers can use phishing attacks to intercept information transmitted between the ATM and the mobile device used to access the account. In addition, banks have introduced biometric identifiers such as fingerprint recognition or capillary configuration to increase security. In addition, ATM services continue to expand, which now allows paying bills, purchasing tickets, recharging phone cards, and initiating credit applications. Although banks are investing in improving ATM services, the fact that customers can now withdraw their cash from POS terminals used by traders has led to a reduction in ATM transactions in commercial areas and, combined with a higher penetration rate of POS and mobile payment, it is very likely that the trend to decrease the number of ATMs will continue in the near future.

Between March 2015 and December 2018, the number of ATMs in Romania dropped by approximately 8%, from 11,544 units to 10,644 units (see Table 2). This decline was caused by several factors including the decrease in the number of branches, the orientation of banks' strategies towards a reduction in the costs of cash activities and the increase in the number of online transactions. However, the number of ATM transactions increased by 32% from 56 million transactions in March 2015 to 74 million transactions in December 2018. Cash withdrawals continue to be more frequent than deposits, but we can notice a doubling in the number of ATM cash deposits over the last 3 years. The same upward trend was recorded in the value of deposits and withdrawals. According to Table 2, the value of withdrawals increased by approximately 77% and that of deposits by 337% in the analysed period, but for each

deposited RON, approximately another 7.5 RON are withdrawn, which indicates that cash transactions are still a method of payment frequently used by Romanians.

Table no. 2 ATMs - Statistics Europe

Date	The number of ATMs provided by PSP residents	number of ATMs with cash withdrawal function	Number of ATMs with credit transfer function	Number of ATM cash withdrawals with cards issued by resident PSPs (excluding electronic money transactions)	Number of ATM cash deposits with cards issued by resident PSPs (excluding electronic money transactions)	Cash withdrawals at ATM with cards issued by resident PSPs (excluding electronic money transactions)	Amount of ATM cash deposits with cards issued by resident PSPs (excluding electronic money transactions)
	(units)	(units)	(units)	(million)	(million)	(million RON)	(million RON)
Dec. 2018	10.644	9892	9299	70	4	52.319	7012
September 2018	10.958	10.191	9,615	69	4	50.549	6,487
June. 2018	10.960	10.184	9620	68	4	47.083	5,568
Apple. 2018	11.058	10.290	9698	63	3	43.121	4478
Dec. 2017	11.069	10.293	9701	66	3	46.076	4528
September 2017	11,081	10.263	9695	64	3	44.076	4252
June. 2017	11.208	10.373	9740	64	3	41.495	3745
Apple. 2017	11.154	10.384	9670	59	2	37.362	3007
Dec. 2016	11.127	10.341	9616	61	2	39.356	2997
September 2016	11.669	10.874	10.175	61	2	38.943	2,926
June. 2016	11.615	10.821	10.135	61	2	36.777	2567
Apple. 2016	11.494	10.703	10.032	57	2	33.142	2176
Dec. 2015	11.492	10,682	10.019	59	2	35.270	2202
September 2015	11.596	10.783	10.054	58	2	33.998	2168
June. 2015	11.738	10.936	10.094	58	2	32.041	1957
M ar. 2015	11,544	10.741	9921	54	2	29.563	1605

Source: "Payments statistics" (2019) - www.bnr.ro/Report-statistic-606.aspx

Although the trend of decrease in other European countries regarding the use of ATMs is also recorded in Romania, the use of cash remains the main preferred means of payment by Romanians. This is mainly due to the country's high poverty rate, with statistics showing that about 40% of the population is at risk of poverty and 39% of the population has no access to banking services (Niță & Badiu, 2018). According to

statistics published by the National Bank of Romania, only half of Romanians use banking services frequently, although the number of cards has increased considerably as wages and pensions are largely paid directly to the beneficiaries' bank accounts (Niță & Badiu, 2018). The low rate of use of electronic payment means is explained by the fact that low-income people prefer to withdraw their card revenue and use cash because they avoid paying certain bank fees and can make payments to merchants who do not use POS. It should also be noted that about half of Romania's population lives in rural areas where banks have a poor presence and where ATMs are not available, which makes cash as the most commonly used means of payment in poorly urbanized areas.

3. POSs

A POS terminal ("point of sale") is an electronic device that allows processing of card payments at the merchant's points of sale. A POS generally fulfils the following functions:

- a) reads the information on the buyer's debit or credit card;
- b) checks for sufficient funds in the buyer's bank account for the transaction;
- c) transfer funds from the buyer's account to the merchant's bank account;
- d) records the transaction and prints a receipt.

At an European level, around 80% of POS transactions involve the use of EMV (Europay, MasterCard, Visa) chip cards, including contactless card payments or technology payments such as Near Field Communication (NFC), or HCE (host card emulation). Contactless POS terminals and retail solutions that involve the use of mobile devices combined with mobile contact terminals continue to bring innovations to the market that include various payment facilitation and buyer loyalty applications such as QR codes, Bluetooth Smart Technology and beacon technology. According to Table 3, the number of POS terminals installed in European countries increased from about 12 million in 2013 to about 16 million in 2017, with an average annual growth rate of 6.09%. The same growth trend was also registered in the number of monthly transactions per POS that grew about 7% from 2016 by the end of 2017. The highest growth rate has been recorded in the number of annual transactions performed through POS - which in the period 2013-2017 increased by an average of 9.51% per year. Moreover, the total value of POS payments has increased: from €2,377.2 billion in 2013 to €2,945.8 billion in 2017, and the card payment has begun to be used for transaction amounts lower, the average of transactions in POS decreasing from EUR 50.02 in 2013 to EUR 42.17 in 2017.

Table no. 3 POS statistics in Europe

	2013	2014	2015	2016	2017	Growth 2016/2017	CAGR 2013-2017
Number of POS terminals (thousand)	11797.7	12761.7	13477.2	14734.7	15809.2	7.29%	6.09%
Monthly number of transactions per POS	335.7	328.7	345.7	344.7	368.2	6.82%	3.23%

Payments through POS (m)	47528.0	50343.8	55904.9	60949.8	69852.6	14.61%	9.51%
Amount of POS payments (EUR billions)	2377.2	2448.7	2649.8	2848.9	2945.8	3.40%	5.14%
Average POS transactions	50.02	48.64	47.40	46.17	42.17	-9.78%	-3.99%
Annual number of POS transactions per capita	78.6	82.8	91.7	99.6	113.7	14.18%	9.03%

Source: Rolfe (2019)

In Romania, the number of SOPs increased from 132,245 SOPs in March 2015 to 204,372 POSs in December 2018, representing a growth rate of about 55% (see Table 4). More significant, however, is the substantial increase in the number of POS transactions with cards issued by resident payment service providers: from 49 million in March 2015 to 131 million transactions in December 2018. As the number of transactions increased, the total value of the amounts traded through POS increased as well: from 5,653 million RON in March 2015 to 14,048 million RON in December 2018. Regarding other European countries, the average value of transactions through POS has decreased from 115, 36 RON in March 2015 to 107.2 RON in December 2018, which indicates that payment by card has become a method of payment used not only for transactions involving large amounts of money. The upward trends in the number and frequency of use of POSs explain, at least in part, the downward trend in ATMs. However, the value of POSs transactions in Romania is well below the traded value in other European countries, as a result of the weak purchasing power of the Romanians and the fact that the penetration rate of POSs is still low, especially among small traders .

Table no. 4 POS - Statistics Romania

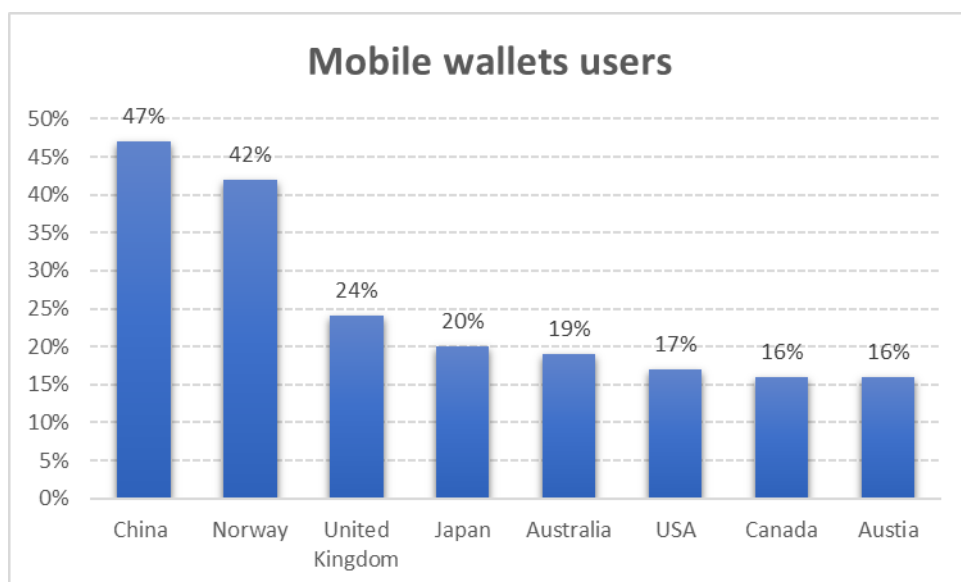
Date	Number of POSs provided by PSP residents	The number of EFTPOSs provided by PSP residents	Number of POS transactions with cards issued by resident PSPs (excluding electronic money transactions)	Number of POS transactions provided by non-resident PSPs with cards issued by the reporting institution (excluding electronic money transactions)	Value of POS transactions with cards issued by resident PSPs (excluding electronic money transactions)	Value of POS transactions with cards issued by non-resident PSPs (excluding electronic money transactions)
	(units)	(units)	(million)	(million)	(million RON)	(million RON)
Dec.2018	204.372	200.927	131	11	14.048	1136
Sep.2018	199.198	195.946	123	13	12,750	1536

Iun.2018	196.982	195.903	117	10	12.017	1057
Mar.2018	193.198	192.038	107	9	10.930	848
Dec.2017	193.934	192.822	106	9	12.110	957
Sep.2017	191.190	190.196	95	10	10.524	1370
June.2017	189.609	188.428	88	8	9656	1001
Mar.2017	177.858	176.596	78	7	8599	763
Dec.2016	161.905	160.630	76	7	9268	874
Sep.2016	153.109	151.114	68	8	7982	1048
Iun.2016	148.797	146.435	66	6	7585	790
Mar.2016	144.590	142.152	61	6	6754	640
Dec.2015	144.441	142.001	60	6	7556	732
Sep.2015	140.906	138.537	55	6	6,504	883
Iun.2015	135.639	133.272	53	5	6220	700
Mar.2015	132.245	129.848	49	4	5653	502

Source: "Payment statistics" (2019) - www.bnr.ro/Raport-statistic-606.aspx

4. OTHER DIGITAL PAYMENT MODALITIES

Mobile wallets, also known as digital wallets, store information used for payments on mobile devices (generally smart phones) most often in applications. Mobile wallets can use different technologies to process payments, the most common technologies being NFC and QR codes. Apple Pay is an example of a mobile wallet that allows contactless payments through POS (based on mobile fingerprint authentication), the purchase of products and services within applications and making payments over the Internet. In addition to Apple Pay, there are solutions for mobile wallets offered by both Google (Google Pay) and Samsung (Samsung Pay). Digital wallets are, as a rule, secure payment methods because they use both encryption and tokenisation. Unlike debit cards, mobile wallets allow storage of various information such as information from loyalty cards, tickets for different forms of transport and other important documents. According to Figure 2, mobile wallets are mainly used by the population of China and Norway, and at an European level, the only country to enter the top 10 is Austria, with a mobile wallets utilization rate of only 16%.



Source: "The Rise of Digital & Mobile Wallets" (2019)

Figure no. 2 Global statistics on the use of mobile wallets

Globally, around 39% of mobile phone owners use electronic wallets, most of them in the 18-34 age group ("The Rise of Digital & Mobile Wallets", 2019). Of the three largest vendors of electronic wallets, Apple Pay has the highest enrolment rate (34%) compared to Android Pay with only 14% and Samsung Pay with 20% of mobile phone users. However, only 8% of Apple Pay users utilize the weekly mobile wallet, and weekly usage rates for the other two types of mobile wallets are even lower: only 6% for Samsung Pay and 3% for Android Pay Rise of Digital & Mobile Wallets ", 2019). In Romania, the first mobile wallet was available in 2014 through Netopia's mobilePay Wallet application, and in 2018 Mastercard announced the launch of an application for a digital wallet created in collaboration with the fintech company Phyre. However, mobile wallets have not yet become popular in Romania, largely due to the fact that small merchants prefer cash payment.

SMS payments refer to payments made by sending a text messages from your mobile phone. Once the message is sent along with the relevant information in order to identify the payee and the amount to be transferred, that payment is made and the related amount is added to the mobile service bill. Thus, payment is made through the mobile provider either through direct debit or prepaid payment schemes. SMS payments are no longer as popular as in previous years, but remain the most commonly used payment method for donations for certain social campaigns or for the payment of services such as access to public transport or the payment of taxes (e.g. highway tolls, highways, etc.). According to Netopia Payments statistics, for the payment of online goods and services, Romanians prefer 83% reimbursement, 15% card payment and other payment methods including 2% SMS micro payments (Pavel, 2019). However, SMS payments have the potential to grow in popularity as more and more cities are deploying parking charging systems that use SMS payments.

5. CONCLUSIONS

In this article we focused on analysing the different channels through which customers can now access banking services, analysing especially the Internet and mobile banking. By comparing the evolution of using these channels with the evolution of ATM usage, it is possible to conclude that there is a clear trend towards digitizing services, especially in regards to payments in all European countries, including Romania. It is interesting to note that Romania is a special case because it is a country where cash is still widely used, but which also has access to the latest technologies in terms of payment methods, including mobile wallets. Considering the precarious economic context that explains why a large proportion of the Romanian population does not yet have access to banking services, it is of interest to analyse the degree of digitization of resident banks, as compared to the situation in other European countries.

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