

## Bezbednosni aspekti u bezgotovinskim transakcijama i digitalnoj ekonomiji

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**Apstrakt:** Porast digitalnih transakcija i sve veća zastupljenost sistema elektronskog plaćanja, pokrenuli su rasprave o potencijalnim prednostima i izazovima, povezanim sa potpunom eliminacijom gotovine iz ekonomskog pejzaža. Određeni trendovi i razvoj daju uvid u tekući pomak, ka digitalnim i bezgotovinskim transakcijama. Potpuno ukidanje gotovine na globalnom nivou je složeno i višestruko pitanje koje takođe uključuje tehnološke, ekonomske, društvene i bezbednosne faktore. Ukidanje gotovine moglo bi da ima i pozitivne posledice na borbu protiv raznih vrsta kriminala i malverzacija. Ova studija ima za cilj da sveobuhvatno analizira implikacije takve promene, uzimajući u obzir sigurnosnu, bezbednosnu, socijalnu, kao i neke tehnološke i političke perspektive. Kako društva sve više prelaze na elektronske oblike plaćanja, razumevanje bezbednosnih prednosti i nedostataka je ključno. Ova studija vrši pregled na tehnološke, regulatorne i bihevioralne faktore koji doprinose celokupnom bezbednosnom pejzažu bezgotovinskih transakcija.

**Ključne reči:** sigurnost, gotovina, digitalna ekonomija, kriptovaluta, bezbednost, sajber-bezbednost

## The security aspects associated with non-cash transactions in the digital economy

**Abstract:** The rise of digital transactions and the increasing prevalence of electronic payment systems have sparked discussions about the potential benefits and challenges associated with complete elimination of cash from the economic landscape. Certain trends and developments provide insights into the ongoing shift towards digital and cashless transactions. The complete abolition of cash on a global scale is a complex and multifaceted issue that also involves technological, economic, social, and regulatory factors. Abolition of cash could also have positive consequences for the fight against various types of crime and malfeasance. This study aims to comprehensively analyze the implications of such a transition, considering primary security, safety, social as well as some technological and policy perspectives. As societies increasingly transition towards electronic forms of payment, understanding the security advantages and disadvantages is crucial. The study explores the technological, regulatory, and behavioral factors that contribute to the overall security landscape of non-cash transactions.

**Keywords:** safety, non-cash, digital economy, cryptocurrency, security, cybersecurity

### 1. Introduction

Young generations of consumers want to make purchases online and without using cash. The habits of the generation born at the end of the nineties of the last century and later could have major consequences for cash, that is, for paper money, which has been used for ten centuries (Luther, 2018). The youngest group of consumers sets future market trends, which showed that young people want to shop online, and support mobile contactless payments and mobile banking. Payment systems companies like Paypal, Apple Pay, Samsung Pay, and Alipay are becoming more popular (Hamukuaya, 2021). In Europe, Scandinavian countries considered to be the leaders of these changes, because in them there is agreement between the population and financial decision-makers on this issue, while this is not always the case in other parts of the planet (Arvidsson & Teniska-Hogskolan, 2017).

The pace of technological advancements, including the development of secure and efficient digital payment systems, influences the transition away from cash (Zhou, H. 2021). Innovations in fintech,

blockchain, and mobile banking contribute to the evolution of digital payment ecosystem (Zhu, & Wang, 2022). On the other hand, there are many hackers who have learned how to abuse financial systems and successfully defraud and defraud people of large sums of money (Galvan, 2017).

In Asia, China has been actively engaged in various aspects of the digital economy, and there have likely been further developments since then. The digital economy in China encompasses a wide range of technologies, industries, and policies (骆苗, 2020). Beyond payments, there are a few platforms offer a variety of lifestyle services such as food delivery, ride-hailing, hotel bookings, and more. Users can access these services directly through the app (骆苗, 2020). These platforms are widely used in China, the digital payment landscape may differ in other parts of the world. The Chinese government plays a significant role in shaping the digital economy through policies and regulations. The regulatory landscape has evolved to address issues such as data security, privacy, and antitrust concerns (周玉祥, 2020).

## **1. The heightened importance of the globe cashless economy**

The abolition of cash is justified with many good intentions. When we look at it from a safety perspective, the goal, is to prevent money laundering and tax evasion because cash can play a big role in criminal activities. Digital transactions create an audit trail for law enforcement, which helps financial institutions fight crime (White, 2015.). Cash used to encourage corruption, besides that notes and coins carry the risk of bacteria (Rashmi, 2023). Matters worse used in transactions for drugs, weapons and terrorism (Rashmi, 2023). The fight against terrorism is one of the reasons why some developed countries are excluding and reducing the use of paper money in everyday transactions. Abolition of cash payments could make money laundering, terrorist financing, illegal work or some other illegal activities involving the use of money, significantly more difficult and in many of its current forms almost impossible. Digital transactions, reduce transaction costs, encourage healthier spending habits and stimulate savings (Beijing Review, 2017).

Cash is often used in gambling but although that is increasingly online too. “Underground” gambling was much easier to hide by cash until in online gambling there are always some records and evidence (Rashmi, 2023).

There are a lot of cases in countries in economic transition, that employers give workers the maximum amount for overtime and other extra payment, which was not taxed, so they used to officially receive more benefits than wages, but that amount also started to be taxed, so they officially reduced the fee for any extra payment. That is apparently kind of malfeasance. That people will have problems with their pensions and when they need to take out loans. However, most of the same employers, if were paying taxes to everyone on the amount, employees really earned, unfortunately, they could comfortably put the key in the lock and close the company (Luther, 2018). Also, many employers if do not register their workers or register them on the minimum basis, intending to pay as little taxes as possible, which makes the issue of putting cash out of use even more important. Changes in consumer behavior, preferences, and trust in digital payment systems contribute to the decline in cash usage. Increased awareness and acceptance of digital currencies could accelerate the shift away from physical cash (Holmström, E. och Holmqvist, 2019).

## **2. Security measures in the most develop countries of digital economy**

Different countries and regions have varying levels of adoption when it comes to cashless transactions. Some countries, particularly in Scandinavia and Asia, have made significant progress toward reducing cash usage, while others still heavily rely on cash (骆苗, 2020). The pace of technological advancements, including the development of secure and efficient digital payment systems, influences the transition away from cash. Innovations in fintech, block-chain, and mobile banking contribute to the evolution of digital payment ecosystem.

Sweden is of course leading the way in the idea of abolishing cash. In that country, over eighty percent of people pay cashless (Arvidsson & Teniska-Hogskolan, 2017). In most Swedish cities, tickets on public buses cannot be bought with cash, there are more and more shops that only accept cards, some banks have stopped operating with cash, and there are also limousines that charge for the services with cards (Lindström. 2017). As many as five out of six banks there banned cash payments and abolished ATMs in rural areas of the country (Lindström, 2017). Banks even have the right and obligation to report to

police, the citizens who do not follow the rules and use large amounts of cash (Sveriges Riksbank, 2020). Even then, Denmark was breathing down Sweden's neck in this matter, and along with them, Norway, Finland and Iceland were the world leaders in cashless payments, where swiping a card even five years ago was common for the smallest purchase. The Danes have made it possible for merchants, gas stations and restaurants to no longer accept cash. This should reduce companies' costs and increase their productivity (Chavolla, 2018).

Germany is somewhere in the middle of the scale of non-cash payments, in Luxembourg, France or Estonia, people pay by card more often (Hayashi, 2021). Young people want simple and efficient payment, and he notes that they will inevitably be the initiators of changes, which would first come from the most developed countries, in an economic and digital sense. Abolition of cash in the north of Europe, possibly can be in the next ten years, while it will hardly be the case with other territories (Hayashi, 2021). Sweden's central bank, only nine percent of Swedes used cash for their last purchase. It is estimated that the corona virus pandemic has accelerated the already rapid Swedish transition to card and digital payments (SverigesRiksbank, 2020). Their central bank is then that coins and notes could completely disappear from use in just 10 to 20 years (SverigesRiksbank, 2020).

In addition to classic forms of cashless payment, where money still exists as a classic currency, only payments are made electronically, it is realistic to expect further expansion of digital currencies - like the Digital Yuan, which is already experimentally broadcast in China, so it is kind of cryptocurrency (Christensen, 2023). In Asia, China is certainly leader in mobile payment. The adoption of digital payment methods, such as mobile payments and online transactions, has been rapidly increasing there in recent years. China has experienced a significant shift towards a cashless society, especially in urban areas.

China is home to some of the world's largest e-commerce companies, such as Alibaba and JD.com. These platforms have played a significant role in shaping the digital economy by facilitating online retail, digital payments, and logistics. WeChat and Alipay are two prominent mobile payment and lifestyle platforms in China (Donna Lu, 2019). Both have become integral parts of daily life for millions of Chinese users, offering a wide range of services beyond just payment processing. Both platforms allow users to make mobile payments by scanning QR codes, transferring money to friends, and making purchases online or offline. Both platforms allow users to make mobile payments by scanning QR codes, transferring money to friends, and making purchases online or offline (周猛王祥峰, 2020). There is also WeChat Pay that employs encryption technologies to secure transactions, ensuring that data transmitted between the user and payment system is protected. Multi-factor authentication methods, such as password verification and biometric authentication, add an extra layer of security (周王祥, 2020). WeChat Pay transactions leave a digital trail, making it easier to trace and verify payment activities. This can be beneficial for both users and business in tracking their financial history. Unusual transaction patterns or suspicious behavior can trigger security measures (Donna Lu, 2019). WeChat Pay utilizes QR code technology for transactions. QR codes are dynamically generated for each transaction, reducing the risk of unauthorized use. Users can link biometric data such as fingerprints or facial recognition to enhance the security of their WeChat Pay accounts. The security of WeChat Pay is dependent on the security of the user's device. Compromised or insecure devices could expose users to risk (Fang, et al. 2023). Users may have limited control over the security features of WeChat Pay, as certain security settings may be determined by the app's default configurations.

### **3. Comparison of the most develop areas of digital economy (and their experience)**

In China, the number of fraud crimes showed constant fluctuations in recent years, while theft crimes decreased considerably. Crime situation in China, according to governmental statistics, the total number of crimes committed in China has rapidly decreased over the past years (白牧蓉 张嘉鑫, 2020).

Sweden and China have been at the forefront of transitioning to non-cash payment systems. However, it's important to note that developments in the field of non-cash payments can change rapidly. If we compare on the moment the non-cash payment systems in Sweden and China:

We could see that Sweden has made significant strides toward becoming a cashless society. The use of cash for transactions has declined sharply in recent periods (Kinberg-Batra, 2021). China has witnessed

a rapid transformation into a nearly cashless society, particularly in urban areas. Factors driving this shift include widespread access to digital infrastructure, high levels of trust in digital systems, and government support for electronic payments. Swedish, a mobile payment app, is widely used for peer-to-peer transactions and in various retail settings. Card payments, including contactless transactions, are prevalent. Many businesses and services prefer card payments over cash (Huang, 2021).

In China the widespread adoption of mobile payment platforms, such as WeChat Pay and Alipay, has been a driving force (Chinese American Forum 2017). QR code-based transactions are highly popular. WeChat Pay and Alipay are dominant players, offering a range of services beyond simple transactions, including social interactions, investment, and more. QR codes are extensively used for transactions, and even small vendors in rural areas commonly accept mobile payments.

The Swedish government actively promotes digital payments and has embraced a vision of becoming the world's first cashless society (Kinberg-Batra, 2021). China has been actively exploring the use of digital currency, with the development of the Digital Currency Electronic Payment (DCEP) system, often referred to as the digital yuan (Chavolla, 2018). Sweden has a robust digital infrastructure, and technological innovations are continuously introduced to enhance the efficiency and security of non-cash transaction (Donna, 2019). China's fintech sector has experienced rapid growth, fostering innovation in digital payments, blockchain, and other financial technologies.

What would be the similarities and differences of these two systems:

#### Similarity

- High mobile penetration - both Sweden and China have high rates of mobile phone penetration, facilitating the widespread adoption of mobile payment solutions (Huang, 2021).
- Reduced reliance on cash - both countries have experienced a significant reduction in the use of cash for transactions, with digital payment methods becoming the norm (Fang, et al. 2023).
- In both Sweden and China have supported the transition to non-cash systems, recognizing the potential benefits in terms of efficiency, transparency, and financial inclusions (Luther, 2018).

#### Differences

- While Sweden has Swedish as a dominant mobile payment app, China's landscape is characterized by the duopoly of WeChat Pay and Alipay (Donna, 2019).
- Digital development - China has taken significant steps in developing its digital currency (DCEP), exploring the potential of a government-backed digital currency. Sweden didn't have it (Christensen, 2023).
- China's centralized approach to digital payments has raised concerns about data privacy and government surveillance. Sweden didn't mention anything about it (骆苗, 2020).

## 4. SWOT analysis

A SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) of the security abolition of cash provides a structured way to evaluate the potential advantages and challenges associated with transitioning to a cashless society from a security perspective.

#### Strengths:

- Enhanced Traceability - digital transactions leave a traceable record, making it easier to detect and investigate fraudulent activities (周王祥, 2020).
- Technological advancement in encryption, biometrics, and other security technologies can provide robust protection for digital transactions (张轶晖, 2023).
- Fraud detection and prevention digital payment systems can leverage machine or even artificial intelligence learning for real time fraud detection, reducing the risk of unauthorized transactions (骆苗, 2020).
- User authentication – multi- factors authentication methods such as biometrics and PINs, enhance user identity verification and overall transaction security (Zhou, et al. 2021)
- Reduced physical theft - The elimination of physical cash reduces the risk of theft, both from individuals and during transportation (Ronggang, 2017).

### Weaknesses

- Cybersecurity vulnerabilities - increased reliance on digital systems introduces the risk of cybersecurity vulnerabilities, including hacking, data breaches, and malware attacks (Huang, 2021).
- Technological dependency - society becomes more vulnerable to disruptions due to technological failures, power outages, or cyberattacks on critical infrastructure (肖临王四春李冠合 唐沧新, 2020).
- Financial exclusion - some segments of the population, particularly the elderly or those in remote areas, may face challenges in adapting to digital systems, easing to financial exclusion (Beijing Review, 2017).
- Privacy concern – the collection and storage of vast amounts of transactional data raise concerns about user privacy, necessitating robust privacy protection Galvan, B. M. (2017).

### Opportunities

- Innovations in Security Technologies - continued advancements in security technologies, such as blockchain and quantum-resistant cryptography, can further strengthen the security of digital transactions (Chinese American Forum, 2017).
- Financial inclusions - a cashless society can promote financial inclusion by providing access to banking services for individuals who were previously unbanked or under-banked (Huang, 2021).
- Regulatory improvements - governments and regulatory bodies can play a crucial role in establishing and enforcing standards that enhance the security of digital transactions (Hamukuaya, 2021).

### Threats

- Cyber security threat landscape - the evolving nature of cyber threats poses a continuous challenge, requiring constant adaptation of security measures to counter emerging risk (Fang, et al. 2023).
- Resistance to change - Individuals and businesses may resist the transition to a cashless society, leading to a slow adoption rate and potential vulnerabilities during the transition period (Chavolla, 2018).
- Economic impact of security breaches - Large-scale security breaches could have severe economic consequences, eroding public trust in digital systems and disrupting financial stability (Huang, 2021).
- Regulatory challenges - inadequate or inconsistent regulatory frameworks may create loopholes that malicious actors can exploit, leading to security breaches (白牧蓉 张嘉鑫, 2020).
- Cryptocurrencies operate on decentralized networks, and transactions are secured using cryptography. However, there have been instances of hacking and security breaches on crypto exchanges and wallets, leading to the loss of funds (Chavolla, 2018).

Important to mention is that the security implications of abolishing cash are dynamic and context dependent. This SWOT analysis is regularly revisited and adjusted to reflect the evolving landscape of digital payments and security measures.

## 5. Conclusion

Officially there is no specific timeline for the complete elimination of cash worldwide. The pace and extent of the shift away from cash will likely vary from one country to another. While some regions may progress rapidly toward a cashless society, others may retain cash for an extended period. Additionally, unforeseen events, economic shifts, or technological breakthroughs could influence the trajectory of this transition. Certain trends and developments provide insights into the ongoing shift towards digital and cashless transactions. The abolition of cash is, of course, justified by noble goals, and some of them are certainly safety reasons, because the tax will harm criminals on the black market, as if criminals are not already ahead of the police and financial institutions in cryptocurrency trading. Some countries actively promote digital payments to enhance efficiency, reduce corruption, and improve financial inclusion. So, government policies and initiatives play a crucial role. Soon or later, it will be necessary to pay more attention to measures to safeguard digital transactions and protection against cyber threats. Achieving a cashless society would likely require a coordinated effort on a global scale. However, cash cannot be

abolished so soon on the global level, because it is still being used by plenty of population groups in many countries.

In this study is noted that the security landscape is dynamic, and both advantages and disadvantages may evolve over time. Users should stay informed about the latest security features, configure settings appropriately, and follow best practices to enhance the security of their digital transactions. Additionally, the regulatory environment and data privacy practices may differ between countries, affecting the overall security perception. Less use of cash has reduced the crime rate, but crime is also becoming an online business, so the damage from cybercrime is increasing. Such forms of criminal activity cannot be completely eradicated, like using cryptocurrencies, such as cases where hackers blackmail governments or companies and demand payment of ransom through such forms of payment. Improvements in the security of digital transactions and the development of robust regulatory frameworks are essential for widespread acceptance. In a meantime, concerns about cybersecurity, privacy, and regulatory compliance need to be addressed to build trust in cashless system.

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