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EUROPEAN PAYMENT SERVICES DIRECTIVE 2 IN NORTH MACEDONIA: ARE WE READY TO COMPLY?

Martin Trajkovski[1], Renata Petrevska Nechkoska[2], Olivera Kostoska[3]

Abstract:

The Payment Services Directive 2 (PSD2) will have a profound and direct impact on the European banking industry. It is also widely accepted as a regulation producing ripple effects both in the banking and other sectors in and beyond Europe. Extending the first Payment Services Directive, PSD2 is intended to strengthen the security of online transactions, promote a more efficient and integrated payments market, protect customers, provide a level playing field between different payment service providers, and resolve all security gaps and risks that were not previously addressed. PSD2 creates space for innovative financial services, and by developing and advancing openness in banking, it calls into question the traditional banking models and imposes important operational and technological amendments to banks, their vendors, collaborates and the entire banking ecosystem mechanisms and function. PSD2 principles are also important for regulating the new Account Information Services (AIS) and Payment Initiation Services (PIS) along with the Third Party Providers (TPPs) - AISPs and PISPs. By properly synthesizing and analyzing the financial information from different banks and institutions, the former act as aggregators for the various customers. The latter, on the other hand, look to arrange and administer the financial transactions of their customers. Given the above considerations, this paper aims at answering three main questions about the PSD2. At first, we will take an in-depth look at the concepts and principal goals of the European Directive. Secondly, we will examine the implications of the EU regulation on the (1) legislative measures in the area of financial services and (2) day-to-day operations of both the central bank and commercial banks, or any other entity that may also be affected. Finally, this paper may serve as a guideline for the queries and dilemmas that managers in North Macedonia have about the PSD2, and may also assist by providing certain instructions and recommendations in managing change during the implementation process.

Key words: *PSD2, financial services, change management, compliance, North Macedonia*

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1. Introduction

The banking industry across the world, including Europe, is facing incredible dynamics both as a result of bottom-up FinTech disruption and top-down regulatory and strategic impulses. Our research interest lays in investigating what the Payment Services Directive 2 (PSD2) is about and what impact it would have on the European banking ecosystem, along with the banking in North Macedonia, as a candidate for EU membership. Since PSD2 is intended to strengthen the security of online transactions, promote a more efficient and integrated payments market, protect customers, provide a level playing field between different payment service providers, and resolve all security gaps and risks that were not previously addressed it creates space for innovative financial services, while by developing and advancing openness in banking, it calls into question the traditional banking models and imposes important operational and technological amendments to banks, their vendors, collaborates and the entire banking ecosystem mechanisms and function. For this reason, we will take an in-depth look at the concepts and principal goals of the PSD2 as well as its main components - the security articles, the Third Party Providers roles and positioning, to portray:1) the emerging business models that come as result of the traced trajectory by PSD2 (and GDPR as its complementary regulation);2) the respective current practices in banks; and 3) the existence and function of TPPs and countries' legislatives synchronisation for EU and candidate countries, such as the Republic of North Macedonia. We will therefore use a primary and secondary data as well as case studies and interviews with TPP and bank managers to answer our main question in discussion - are we ready to comply with PSD2? This is a work in progress and as such it outlines steps taken so far and intentions for the future research efforts and design.
The rest of the paper is organizedas follows. Part 2 takes a look at PSD2, the reasons that led to its creation, and the goals behind this Directive. It also makes an in-depth analysis of PSD2 security details (Articles 97 and 98) and explains the new players created as a consequence of PSD2. Part 3examines the business models that emerge as a result of the forthcoming changes. Part 4focuses on the effects on and possible responses by the commercial banks.Parts 5 and 6 look closely into specific countries and their response to PSD2, i.e. North Macedonia and the way that the country prepares for the future implementation, as well as Croatia, an EU country that has already implemented the Directive and will serve as a comparison benchmark for the implementation in North Macedonia. Part 7 concludes and makes recommendations.

2. Payment Services Directive (PSD2): a brief overview

The European Commission adopted the original Payment Services Directive (2007/64/EC) in 2007, with the aim of increasing pan-European competition in the financial services market and creating a level playing field in that market by harmonizing the regulations on consumer and service provider rights and obligations. Even though this Directive was twice updated, in 2009 (2009/924/EC) and 2012 (2012/260/EC)(European Commission, 2007), it gradually started to become more and more outdated and unable to cope with the contemporary technological and financial advances. The lack of regulation on transactions with countries outside of the European Union, the lack of proper protection for the consumers and inability to encompassthe market's heterogeneitywere among the main issues of this Directive. However, the biggest problem lurking in the background was related to the payment services providers which emerged as a third party among the consumers and producers and which were neither mentioned, nor regulated by the Directive. These third party service providers were offering cheap and fast payment services, banking services, financial data aggregation and were also making online shopping easier for the customers. They started to appear increasingly each year. This entailed the need to harmonize the rules, introduce licensing and supervision, as well as to standardizethe security standards with the aim of fully protecting the customers. Addressing these problemsand establishing a legislative that could bear with the contemporary and future issues meant that the European Commission had to preparea Payment Services Directive 2 – PSD2 (EU/2015/2366) that would repeal the previous one and be adopted by the European Parliament on 8 October 2015. EU members had a two-year window in which they were supposed to incorporate its provisions into their national legislations. The PSD2 came into force on 13 January 2018 and had a final incorporation deadline in September 2019 (European Commission, 2015).

The PSD2 fundamentally changes the payments chain (or net), the business models of the commercial banks, the use of personal data and the customer's expectations and behavior. The key changes lodged by the PSD2 are: expanding the scope of payments to include non-EEA currencies for intra-EEA payments; mandating the use of the Shared Payment Charge SHA charging option for all intra-EEA payments, irrespective of the currency; standardizing the Complaint handling; setting the minimum standards for Strong Customer Authentication and paving the way for openness of bankingby allowing the third party providers to enter the market. The last point is probably the most interesting for all actors in the market. What PSD2 actually doesto promote openness of the banking ecosystem is the requirement for banks to open up their databases and permit an open access to third party providers (TPPs), which,by leveraging the available data, would become the new market players.They will shake up the finance and banking market to the core and will be able to conduct many operations which were exclusive to banks (of course the banks themselves are allowed to provide the same services as the new TPPs). The PSD2 foresees two types of TPPs: Account Information Service Providers (AISPs) and Payment Initiation Service Providers (PISPs) (Deutsche Bundesbank, 2018).

2.1.Main security aspects:Articles 97 and 98

Articles 97 and 98 of the Payment Service Directive 2 are crucial for security - one of the most important issues and concerns of PSD2 (around 70% of the population would not trust a third party service provider as much as they do in the banks) (Accenture, 2016). Article 97 lays out the foundation for secure payments by demanding strong customer authentication provided a string of conditions are met. However, a better understanding of the Article 97 requires explaining first what constitutes strong customer authentication. The Article 4 (30) of the Directive reads: "an authentication based on the use of two or more elements categorized as knowledge (something only the user knows), possession (something only the user possesses) and inherence (something the user is) that are independent, in that the breach of one does not compromise the reliability of the others, and is designed in such a way as to protect the confidentiality of the authentication data" (European Parliament and European Council, 2015a). This means that, when operating in his/her account, the user will have to provide at least two things, for example the password (somethinghe/she knows) and the fingerprint scan (something he/she is); or a verification code sent to his mobile phone (something he/she possesses) paired with a login code or an answer to a security question (something he/she knows). The non-exhaustive lists of elements for all three categories were listed in an Opinion published by EBA on 21 June 2019. Besides,a voice recognition, retina and iris scan, hand and face geometry etc. are also included as possible elements of the inherence category.Apart from passwords and security answers, PIN codes, pass-phrases or memorized swiping paths stand forother possible elements of the knowledge category.As regards to the possession elements (other than receiving a one-use code on their mobile phones), users can also deploy their digital signature, scan a QR code, scan a card through a card reader or provide a proof of possession by using device binding (European Banking Authority, 2019). It's also worth mentioning that the European Banking Authority does not consider card numbers, expiry dates and CVV numbers as elements belonging to both the knowledge and possession categories (Ecommerce Europe, 2019). It is allowed to use one device for both authentication and transaction,but the risk of deploying such multi-purpose devices (like tablets or smartphones)need to be mitigated by separate secure execution environments and mechanisms ensuring that such devices have not been altered or used in a fraudulent manner (MasterCard, 2018). Article 97, paragraph 1, states that the process will be required in three cases: when the customer accesses his payment account; when he/she initiates an electronic payment transaction; and when he/sheconducts an action throughout a remote channel which may imply a risk of payment fraud or other abuses. Furthermore, in paragraph 2, the Article demands a strong customer authentication based on dynamic linking to a specific amount and a specific payee, and in paragraph 3, it demands an adequate security measures for protecting the confidentiality and integrity of the service users. Paragraph 4 states that the paragraphs 2 and 3 should always apply when payments are initiated through PISPs, whilstthe paragraph 1 and 3 apply in case the user requires information throughout the AISP (European Parliament and European Council, 2015b).

Article 98, on the other hand, serves for a quite different purpose, i.e. laying a foundation, rather than regulating. The first paragraph of this article states that "EBA shall, in close cooperation with the ECB and after consulting all relevant stakeholders, including those in the payment services market, reflecting all interests involved, develop draft regulatory technical standards addressed to payment service providers …" (European Parliament and European Council, 2015c). This means that the PSD2 and the article thereofwould not regulate the requirements for Strong Customer Authentication (SCA),exemptions from Article 97, the requirements for confidentiality and integrity of users which the security measures have to comply with and the requirements for common and secure open standards of communication between all parties involved. Rather, the Article stated all things needed to address and handed over the responsibility by means of creating a Commission Delegated Regulation to the European Banking Authority (EBA). The EBA complied with Article 98, devised the Commission Delegated Regulation (EU) 2018/389 and put it into force on 27 November 2017 (European Commission, 2017). In the second chapter, the Regulation develops the security of online payments by setting strict rules for the authentication codes and dynamic linking. It also sets the rules for independence and mitigating the risks of SCA elements (knowledge, possession, inherence), while creating requirements and rules for their usage. The third chapter deals with the exemptions from SCA and lists the cases where SCA will not be required by the service providers. The exemptions are banded togetherin a way that each group is examined in its own article.The exemptions from SCA, through the articles 10 to 18, are listed as follows: accessing the balance of payment account or checking the transactions executed in the last 90 days; contactless payment of no more than 50 Euros, while having no more than 150 Euros of cumulative contactless transactions from the date of the last SCA and no more than 5 transactions since the last SCA; making a transaction at an unattended terminal for parking fees or public transport; making a transaction to a trusted beneficiary included in the list of trusted beneficiary by the payee himself/herself; paying for a recurring transaction, except for the first of each individual payment; credit transfers between different accounts of a same natural or legal person; remote electronic payments not exceeding 30 Euros, while having a cumulative remote electronic payment on previous transactions totaling 100 Euros since the last SCA application and no more than 5 consecutive low-value remote electronic payments without the SCA application; secure corporate payment processes and protocolsavailable to payers who are not consumers, and where the authorities are convinced that these processes and protocols have at least the same level of security (as requiredby the PSD2), while transactions identified by the service provider are low risk according to the monitoring mechanisms of Article 2 of the Regulation (European Parliament and European Council, 2015c).

2.2.The new players- Third Party Providers (TPPs)

The Account Information Service Providers (AISPs) stands for the first type of newly created TPPs as a result of PSD2.AISPs are essentially aggregators of financial data for the customers. They sit between the user and various banks and financial entities relating tothat user.Using the open Application Program Interfaces (APIs) that the banks are obliged to provide, AISPs, with the customer's permission, pull out the entire customer's financial data and then show it in a consolidated manner in their respective app or web platform. Using the entire data, these new players can also provide a financial or investment advice to their customers, or make an analysis of the customer's behavior and help them with their budgeting or spending. Historically, the banks have used a similar interface (SWIFT/MT940/MT942) in order to exchange transactions and balance information between themselves. With the new regulative, non-bank entities will now be allowed to replicate this functionality and become AISPs (Barclays, 2019). This kind of services can be provided by both banking and non-banking entities. The latter are not allowed making any transaction unless they have a permission to act as PISPs (Figure 1).

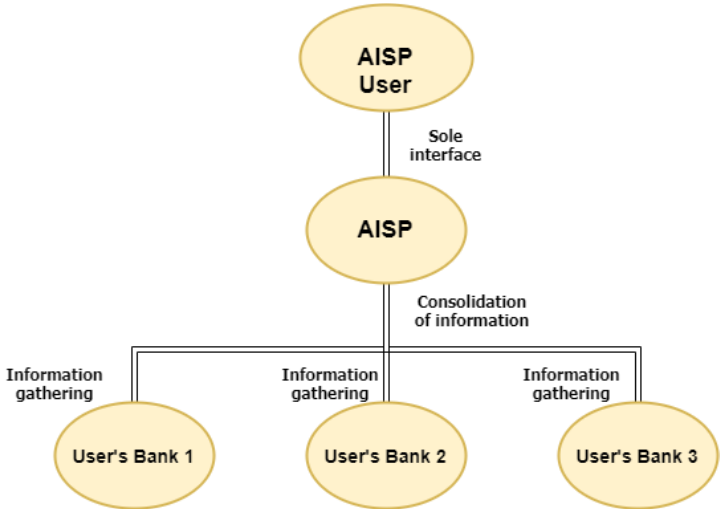

Figure 1. A graphic representation of how AISPs aggregate the user's data from different banks
Source: Authors' own representation.

PISPs (Payment Initiation Service Providers) are the second type of entities appearing at the financial market. They act as intermediaries in the payment process, i.e.they appear between the customers and their respective banks and facilitate the movement of funds. PISPs will become the only needed payment interface for their customers. When customer uses the PISP's application or web interface, he/sheis in a position to initiate a payment from his/her account to any other account, without the need to visit both the bank or the its digital platform. Basically, the Directive allows for the non-banking entities to perform banking functions and skip certain steps in the payment process (as done before) (Barclays, 2019) (Figure 2).

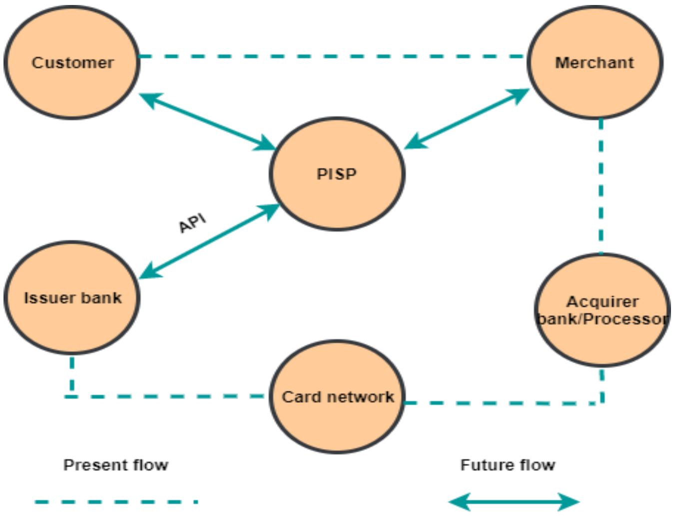

Figure 2.A graphic representation of how PISPs will change the flow of the current payment chain
Source: Authors' own representation.

3. Emerging business models

There are numberof ways businesses can compete in the newly created open banking environment. Strategy&, a business strategy consulting company, part of the PriceWaterhouseCoopers group, made a thorough analysis (Strategy&, 2016) and identified 6 business models (in banking) that companies have implemented so far showinghow the changes produced by PSD2 can be put into practice using tactical management (PetrevskaNechkoska, 2019). All six companies represent a prime example of a first-mover FinTech or bank that has already embraced open infrastructures and APIs, and have started generating value (linked to the PSD2 adoption)before anyone else.
The first example is Buddybank, an Italian modular digital bank (a subsidiary of UniCredit)based on modules from third parties. It has been launched on 29 January 2018;it is an app made exclusively for iOS smartphones and only available to UniCredit customers owning a MasterCard debit or credit card. It is based on domestically developed front end and API in Italy, and provides banking services through connections with partners. Buddybank provides quick and easy services to its customers, like digital storage of cards, which eliminates the need for a physical card and all associated risks.It also provides a free 24/7 access to a concierge and a possibility tosolve certain banking issues, such as the card replacement and transactions management in just a few seconds (Flynn, 2018).
N26 is a German direct bank starting in 2016 as a complementary bank and third-party interface powered by Wirecard's backend. It obtained a banking license in July 2016, and changed the names to N26(from Number26). It laid hold of a modular approach by integrating many APIs from partners and grew into the first pan-European direct bankproviding services in 22 EU countries. N26transforms its users' smartphone into a paying instrument, and provides its customers withcomplete and instant control over the entire credit and debit card functions.Customers may also sendmoney to their trusted contactsimmediately, with no need for having IBAN data. In 2016, Vincent Haupert, a computer scientist who was able to easily extract the credentialsofthe bank's 33,000 customers, has found a number of security issues for N26.The bank has resolved these issues and thanked him publicly (Ghosh, 2016). However, in March 2019, N26 was a victim again, and this time through a malicious phishing attack leaving a huge number of users with account and data problems. The worst victim was

stolen 80 000 Euros from his account,whilst the bank had a very hard time responding to this crisis (Schlenk, 2019). This raised the question about the bank's too rapid growthmaking it incapable to cope with the digital security architecture (Jauernig, 2019).

Treefin is another German company which, unlike N26,serves as an AISP. It helps customers manage their investments, insurance policies and bank accounts by employing APIs that integrate multiple data sources into the free mobile app. The app analyzes the customer's data and provides an advice for optimizing the financial returns (Finconomy, 2017).

Satispay is an Italian company that uses APIs to provide P2P payment solutions.It is founded in 2013 and currently has around 500 000 users (Spini, 2019). The users of the free app are able to: send money to other people; make purchases in physical and online stores that are registered users of Satispay; pay vehicle taxes;and pay even for the Italian public services through the "pagoPa" system (Loda, 2018). Using the new PSD2 legislative, Satispay was able to simplify the data integration processes and create a standardized customer identification process. However, the Brexit situation has forced Satispay to move its headquarters from London to Luxembourg (La Repubblica, 2019).

Open Bank Project (OPB) is a German company (established in 2010) that provides an API-driven compliance toolkit for financial institutions. It basically means that banks and other entities can employ OPBto build infrastructure and standardize their work so they could comply easily with the PSD2. OPB also runs a community of developers working on APIs. The set of tools that OPB offers is comprised of: a dedicated interface; an API catalogue; SCA and exemptions tools; monitoring and compliance tools; security measures; a TPP registry, and a publicly available PSD2 sandbox (Open Bank Project, 2019).

The last example is Figo, a German B2B banking-as-a-service provider. Using the banking API, it provides a platform for data exchange by consolidating data from banks, credit card companies and other financial entities, and then offers it to FinTechs, third-party companies of other banks. It also offers services to banks choosing not to build an in-house infrastructure through a specially designed API which helps them to easily synchronize with the PSD2 requirements and implement the needed changes. It also offers the FigoRegShield, a full solution for PSD2 compliance and functionality for AISPs and PISPs (Figo, 2019).

Our investigation resulted inseveral other functional models of FinTech ecosystems. One example is the ProjectiveGroup Belgium, which is incorporating B-Hive, The Glue, SmartFin, Scale-Ups Europe and Epoch XX (Projective, 2019) to cover the necessary components for realising the PSD2 endeavours with clients. Other example include sultancies that are outsourced, such as Exellys Belgium (Exellys, 2019) and the members of the European Payments Consulting Association (EPCA) (European Payments Consulting Association, 2019).

4. Banks' approach and responses

Strategy&, part of the PriceWaterhouseCoopers network, carried out another extensive research (Strategy&, 2016) into the PSD2 and its implications on banks. They interviewed senior executives from around 30 banks on the topic of PSD2 implementation and its impact on the banks' future. The most of executives had a mixed to negative perception about PSD2, with 88% believing that the Directive's implementation will affect their banks significantly. However, not many of them were sure neither about the exact effects nor about the direction in which their respective bank should float to answer accordingly. About 50% of the interviewees admitted they have a strategy initiative that should startvery soon, though very few know the exact role of PSD2 in these initiatives and how it couldhelp them creatingnew business models. The Strategy&analysts were actually able to distinguish between three particular mindsets with respect to PSD2: the threat mindset, the wait-and-see mindset, and the catalyst mindset. The proponents of the threat mindset look atPSD2 as a test for their tactical response and compliance. They believe that PSD2 would rather be a source of expenditure, and they will probably have to defend their customer interface from the new competition by lowering prices. The second group of executivesproved to be patient and still unable to deviseproper ways to use the Directive in value creation. Their response is: complying with the Directive, waiting for major changes to occur, and then looking for an appropriateopportunity to expand their market reach and use the PSD2 to their own advantage. The third mindset sees the PSD2 in a broader context of global financial disruptions and perceives the Directive as just another catalytic force that thrusts the banking towards theultimate goal of inevitable openness of this sector. These executives respond to changes and admit that the time for doing so is already deep in motion. In short, the Strategy&finds that the catalyst mindset is the only viable approach to PSD2.If banks don't want to find themselves subject to service commoditization and competitive marginalization, they have to respond promptly by creating new business models, embracing collaboration with their new partners and being open to the exchange of data via the application programming interfaces (APIs).

When it comes to actual implementation of a technical solution, a Miraclsurvey (conducted on around 70 top-tier European banks)shows that the approaches for complying with PSD2 are almost equally divided. Most banks (37.5%) have decided to build an in-house solution for compliance,one third has not made their decision yet,whilst 29.2% are ready to buy a technical solution directly (Miracl, 2017).

5. An EU country and PSD2:the case of Croatia

Croatia, as the newestEU member state and as a country that is geographically, economically, culturally and politically very close to North Macedonia, will serve as the best comparison benchmark for implementing and applying the Payment Services Directive 2.

Croatia adopted its national counterpart of PSD2, The Payments Act ("Zakon o platnomprometu", published in "NarodneNovine" no.66/2018) on 10 August 2018 and entered into force on 28 July 2018 (NarodneNovine, 2018). However, several articles were exempted and given a later date of implementation. Article 30, paragraphs 3 and 5,which refers toinformation providedby the payment service provider to the payment receiver after payment, will enter into force on 14 September 2019, and Article 48, paragraph 8, which makes a reference to the refunding rights for payments in Croatian Kunas(already authorized), will enter into force on 28 July 2020 (Eurofast, 2019).

The first example of new players in financial market of Croatia was the Swedish company "Instantor".This company has started to cooperate with "Ferratum", a Croatian small loans company, at the beginning of 2018. "Instantor" was charged with checking the financial background and credit score of the loan applicants.This wasmade by signing in the respective bank's online banking system and granting access to "Instantor" (Ivezić, 2018). Therefore, the company had to negotiate with each bank on the rights ofaccess tocustomer data, but with the Payments Act entering into force, every FinTech entity, including Instantor, will automatically be entitled to this right. As of 10 May 2019, there is only one registered PISP entity in the Register of payment and electronic money institutions in Croatia, andno registered AISP entity (HrvatskaNarodna Banka, 2019). Given that only a short time has elapsed since the opening of market and that 37% of Croatian citizens are not ready to use payment services from entities other than banks (HrvatskaUdrugaBanaka, 2018), 69% believe that banks are more capable to provide satisfactory level of user data protection and that 33% would never agree to provide their personal financial data to non-banking entities(PricewaterhouseCoopers, 2017), it is more than clear why there is no substantial movement in the market. However, when it comes to banks themselves offering these newly available services, Croatia may soon notice some new products on the market. In October 2017, the Croatian National Bank (HNB) created a taskforce, which was obliged to produce a facilitating platform for developing innovative payment products and tackling the issues to implement "instant payments" into the Croatian financial system. The core members of this taskforce consist of seven Croatian banks and FINA (Croatian Financial Agency), aided by many other professionals in the fields of law, IT, cyber-security, finance and consumer rights. According to the Governor of HNB, the ultimate goal of this taskforce is to unify the various operations that will arise in the payment industry as a result of the multidisciplinary nature of PSD2 and its implementation. By the end of 2019, there will be some offer available on the market, whilst the Croatian citizens will be able to use payment products that Croatian banks will start offering (Eurofast, 2019).

6. EU candidates and PSD2: the case of North Macedonia

As a candidate country for EU accession, the Republic of North Macedonia was not obliged to implement the PSD2 and adopt national legislation ahead of the common deadline for all EUmember countries. Therefore, the competent authorities and lawmakers(theoretically) have more time and space at their disposal to draft the text and adopt the national PSD2 legislation. Taking into account the current situation in digital banking and e-commerce in North Macedonia(i.e. not keeping upwith the European standards and advancements), the late, rather than early introduction of PSD2 can be much more valuable, as the latter may lead to hasty and chaotic implementation.

North Macedonia currently operates under the Payments Act (Законзаплатниотпромет) from 2007 along with a wide range of complementary acts and regulations(Macedonian government gazette, 2007), which came under scrutiny in the past mainly for the lack of harmonization with the EU law, (especially with the Directive on settlement finality in payment and security settlement systems (98/26/EC)). In early 2018, the National Bank of the Republic of North Macedonia (NBRNM) drafted a Law on Payment Services and Payment Systems to overcome the harmonization problem and align with both the PSD2 and the 'Electronic Money Directive' (2009/110/EC). This new law is supposed to liberalize the market for payment services in North Macedonia and put into practice the needed mechanisms for starting up PISPs and AISPs (National electronic registry for regulations of the Republic of North Macedonia, 2019).It willguarantee the finality of payments,minimizethe systemic risks ofthe payments system, and will also introduce the new payment instruments (e.g. direct loans). The initial date for the start of legislative procedure was 30 June 2019, but the Government ofNorth Macedonia has postponed the process until 30 September 2019. The Government has also promised to hold three public debates on the draft document, pointing tothe large numberof interested financial institutions and entities that would like to participate in the law-makingprocess (Government of the Republic of North Macedonia, 2019).

In terms ofthe situation in practice, the NBRNM, besides being the main driving force behind the draft document of the national law, works together with the Ministry of Financeto developthe national payment services market.With the aim of creating an environment that welcomes new players, NBRNMhas created both a taskforce and a creative hub, working closely with the relevant financial institutions and already established domestic FinTech companies. With this collaboration, NBRNM wants to help other entities to better understand the forthcoming changes and help them prepare. But, NBRNM also wants to learn from them, especially from the FinTech companies, on how the new business models will be actually put into practice and what the NBRNM needs to change or implement, besides the new law, in order to help them to grow and thrive in the future (National Bank of the Republic of North Macedonia, 2019).

Although there are no PISP or AISP companies currently operating in North Macedonia,Seavus, a Macedonian company with international presence and clientele, works on developing IT solutions for the foreign PISP and AISP companies. In June, Seavushas announced its partnership with the Swedish Marginalen Bank and that the companywould like to implement the PSD2 technical solutions.Seavus will also provideTPP management for the bank, management of the bank's APIs and their usage by the TPPs, as well as the ideas fornew ways to take advantageofthe PSD2 (Seavus, 2019).

7. Conclusion

Our attempt to observe an EU directive and its path to reality results in arich foundation for analysis on the triggers, responses and emergent effects across the EU and broader banking ecosystem. This paper attempted to portray, systematise, analyse and discuss recent developments on a trajectory to synchronisation and synergy of EU and non-EU stakeholders and collaborates in terms of banking related to PSD2. The EU developments with regards to PSD2 are visible, but uneven, and with moderate tempo resulting in extensions for reconfiguration and compliance, while the FinTech is leading its way; as a non-EU country, North Macedonia denotes awareness, work in progress and moderate tempo as well. To wrap up with our question, whether North Macedonia is ready to comply with the PSD2, we could say that the country has the needed capacity,capability, and readiness to align with the required legislation, but with no visible timeframe in practice. Even though the Government announced that it will start the process by 30 September, there is still no information available to the public and no actual date (or timeframe) by which it could be assumed that the law will be enacted in the Parliament. At the same time, the question of actually putting the new law into practice arises, since the Macedonian economy is still heavily reliant on the traditional methods of banking and commerce, whilethe mindset and consumer behavior of the majority of Macedonian citizens are not really welcoming to the modern and innovative payment services.Indeed, this conservative approach has to a certain extentsafeguarded the banking sector of the country on the wave of recent global financial crisis.Nevertheless, the North Macedonia's banking systemis expected to be in line with the EU developments and open banking ecosystem. Efforts to predict when and how the PSD2 will affect the economy of North Macedonia at this stage are still considereda non-deterministic, complex venture.

References

1. Accenture. (2016). Consumers' initial reactions to the new services enabled by PSD2.[Online]. Available: https://www.accenture.com/t00010101t000000z__w__/gb-en/_acnmedia/pdf-29/accenture-uk-banking-psd2-consumer-reactions.pdf. (accessed 15.09.2019).
2. Barclays. (2019). PSD2.[Online]. Available: https://www.barclayscorporate.com/insights/regulations/psd2/. (accessed 18.09.2019).
3. Deutsche Bundesbank. (2018). PSD2.[Online]. Available: https://www.bundesbank.de/en/tasks/payment-systems/psd2/psd2-775954. (accessed 18.09.2019).
4. Ecommerce Europe. (2019). Guidance on the Regulatory Technical Standards on Strong Customer Authentication.[Online]. Available: https://www.ecommerce-europe.eu/wp-content/uploads/2019/04/Ecommerce-Europe-Guidance-Document-on-Strong-Customer-Authentication-April-2019.pdf. (accessed 08.09.2019).
5. Eurofast. (2019). What is the PSD2 and how is Croatia preparing for a change of game in the payment industry? [Online]. Available: https://eurofast.eu/2019/07/11/what-is-the-psd2-and-how-is-croatia-preparing-for-a-change-of-game-in-the-payment-industry/. (accessed 01.10.2019).
6. European Banking Authority. (2019). Opinion of the European Banking Authority on the elements of strong customer authentication under PSD2.

7. European Commission. (2017). Commission Delegated Regulation (EU) 2018/389.
8. European Commission. (2007). Payment services (PSD 1) - Directive 2007/64/EC. [Online]. Available: https://ec.europa.eu/info/law/payment-services-psd-1-directive-2007-64-ec_en. (accessed 05.09.2019).
9. European Commission. (2015). Payment services (PSD 2) - Directive (EU) 2015/2366. [Online]. Available: https://ec.europa.eu/info/law/payment-services-psd-2-directive-eu-2015-2366_en. (accessed 05.09.2019).
10. European Parliament, European Council. (2015a). Directive (EU) 2015/2366, Article 4 (30).
11. European Parliament, European Council. (2015b). Directive (EU) 2015/2366, Article 97.
12. European Parliament, European Council. (2015c). Directive (EU) 2015/2366, Article 98.
13. European Payments Consulting Association. (2019). [Online].Avaiable: http://www.epca.de/. (accessed 12.10.2019).
14. Exellys. (2019). [Online].Avaiable: https://www.exellys.com/. (accessed 12.10.2019).
15. Figo. (2019). FigoRegShield.[Online]. Available: https://www.figo.io/en/regshield/. (accessed 10.10.2019).
16. Finconomy. (2017). Finconomy streamlines investment portfolio by selling remaining shares of Treefin AG. [Online]. Available: https://finconomy.de/wp-content/uploads/2017/12/2017-12-Press-Release-Finconomy-Treefin-Exit-ENG-v1.pdf. (accessed 03.10.2019).
17. Flynn.K, "Mashable". (2018). This startup wants everyone to love their bank as much as they love their phone. [Online]. Available: https://mashable.com/2018/01/29/buddybank-launch-banking-app-iphone-unicredit/. (accessed 02.10.2019).
18. Ghosh.A., "International Business Times". (2016). Smartphone bank N26 is not safe and exposes users to hacking, says researcher. [Online]. Available: https://www.ibtimes.co.uk/smartphone-bank-n26-not-safe-exposes-users-hacking-says-researcher-1598474. (accessed 25.09.2019).
19. Government of the Republic of North Macedonia. (2019). Minutes of the 131 Session of the Government of the Republic of North Macedonia held on 23 April 2019 (ЗаписникодСтотриесет и прватаседницанаВладатанаРепубликаСевернаМакедонија, одржанана 23 април 2019 година).
20. HrvatskaNarodna Banka (Croatian National Bank). (2019). Registarpružateljaplatnihusluga I izdavateljaelektroničkognovca (Registry of payment service providers and electronic money issuers).[Online]. Available: https://www.hnb.hr/documents/20182/121807/h-registar-pruzatelja-platnih-usluga-i-izdavatelja-e-novca.pdf/1ccde67b-b481-4d9e-1a8a-1e51c4cf69a6. (accessed 15.09.2019).
21. HrvatskaUdrugaBanaka (Croatian Banking Association). (2018). PSD2 direktivaotvaraprilikezarazvojposlovanjabanakai IT tvrtki (PSD2 opens up opportunities for the development of banks and IT companies).[Online]. Available: https://www.hub.hr/hr/psd2-direktiva-otvara-prilike-za-razvoj-poslovanja-banaka-i-it-tvrtki. (accessed 27.09.2019).
22. Ivezić, B., "PoslovniDnevnik". (2018). U Hrvatskojvećpostojiprimjeruporabebankarske PSD2 direktive (An example of using the PSD2 already exists in Croatia). [Online]. Available: http://www.poslovni.hr/hrvatska/u-hrvatskoj-vec-postoji-primjer-uporabe-bankarske-psd2-direktive-338917. (accessed 27.09.2019).
23. Jauernig, H., "Spiegel Online". (2019). Das kostetemichvieleNerven (That cost me a lot of nerves). [Online]. Available: https://www.spiegel.de/wirtschaft/service/probleme-bei-online-bank-n26-haeufen-sich-a-1260154.html. (accessed 28.09.2019).
24. La Repubblica. (2019). Satispaytrasloca in Lussemburgo per evitare I guai di Brexit (Satispay moves to Luxembourg to avoid Brexit-caused troubles).[Online]. Available: https://www.repubblica.it/economia/finanza/2019/03/26/news/satispay_trasloca_in_lussemburgo_per_evitare_i_guai_di_brexit-222526537/. (accessed 01.10.2019).

25. Loda, D., "Il Sole 24 Ore". (2018). Con Satispayorasipagaancheilbollo di auto e moto (With Satispay you can now pay your car and motorcycle tax). [Online]. Available: https://www.ilsole24ore.com/art/con-satispay-ora-si-paga-anche-bollo-auto-e-moto-AENgr4OG. (accessed 01.10.2019).
26. Macedonian government gazette (СлужбенвесникнаРепубликаМакедонија). (2007). Payments act (Законзаплатниотпромет).
27. MasterCard. (2018). Strong Customer Authentication and PSD2.[Online]. Available: https://newsroom.mastercard.com/eu/files/2018/08/Security-Matters-Authentication-under-PSD2-and-SCA-Mastercard-White-Paper2.pdf. (accessed 22.09.2019).
28. Miracl. (2017). PSD2 - What Will Your Bank Do? [Online]. Available: https://miracl.com/blog/psd2-top-70-banks-survey-strong-authentication/. (accessed 03.10.2019).
29. NarodneNovine (Croatian government gazette). (2018). Odluka o proglašenjuzakona o platnomprometu (Decision on enacting the Payments Act).[Online]. Available: https://narodne-novine.nn.hr/clanci/sluzbeni/2018_07_66_1330.html. (accessed 01.10.2019).
30. National Bank of the Republic of North Macedonia (2019). 12th Conference on payments and Market Infrastructure Organized by the National Bank Has Commenced.[Online]. Available: http://www.nbrm.mk/ns-newsarticle-soopstenie-03062019-en.nspx. (accessed 01.10.2019).
31. National electronic registry for regulations of the Republic of North Macedonia (ЕдинственнационаленелектронскирегистарнапрописинаРепубликаСевернаМакедонија). (2019). [Online]. Available: https://www.ener.gov.mk/default.aspx?item=pvrAdm&subitem=view&recId=Z+Lc7Sn09ydReJG40/hWrg==. (accessed 13.10.2019).
32. Open Bank Project. (2019). Open Bank Project PSD2 Suite.[Online]. Available: https://www.openbankproject.com/psd2/. (accessed 10.10.2019).
33. Petrevska Nechkoska, R. (2019).*Tactical Management in Complexity: Managerial and Informational Aspects.* In the book series: Contributions to Management Science, SPRINGER NATURE Switzerland https://www.springer.com/gp/book/9783030228033.
34. PricewaterhouseCoopers. (2017). Zajedničkoistraživanje HUB, HKG i PwC: Što o promjenamamislebanke, IT sector I potrošači u Hrvatskoj? (A mutual research of HUB, HKG and PwC: What do banks, the IT sector and consumers in Croatia think about the incoming changes). [Online]. Available: https://www.hub.hr/sites/default/files/inline-files/psd2_prezentacija_john_gasparac_003_0.pdf. (accessed 01.10.2019).
35. Projective. (2019). Part Of An Ecosystem For Change And Innovation. [Online]. Available: https://www.projectivegroup.com/about-us/#ecosystem. (accessed 12.10.2019).
36. Schlenk, C. T., "Business Insider Deutschland". (2019). Einem N26-Kunden werden 80.000 Euro gestohlen — und die Bank istüberfordert (An N-26 customer is robbed of 80.000 Euros – and the bank is overwhelmed). [Online]. Available: https://www.businessinsider.de/einem-n26-kunden-werden-80000-euro-gestohlen-und-die-bank-ist-ueberfordert-2019-3. (accessed 28.09.2019).
37. Seavus. (2019). Seavus implements a PSD2 compliancy platform for Marginalen Bank. [Online]. Available: https://seavus.com/newsroom/post/seavus-implements-a-psd2-compliancy-platform-for-marginalen-bank. (accessed 13.10.2019).
38. Spini, F., "La Stampa". (2019). Satispay ha superatoi 500 mila client Facciamoconcorrenzaallegrandibanche (Satispay has exceeded 500 thousand customers – We compete with big banks). [Online]. Available: https://www.lastampa.it/tuttosoldi/2019/02/25/news/satispay-ha-superato-i-500-mila-clienti-facciamo-concorrenza-alle-grandi-banche-1.37323351. (accessed 01.10.2019).
39. Strategy&. (2016). The strategic implications of PSD2 for Europe's banks. [Online]. Available: https://www.strategyand.pwc.com/gx/en/reports/catalyst-or-threat.pdf. (accessed 02.09.2019).