WORKING PAPER

Reshaping DCB as a Financial Solution in the Middle East, Africa and Türkiye

How should Direct Carrier Billing be regulated to pave the path for more efficient and secure mobile payment innovation?

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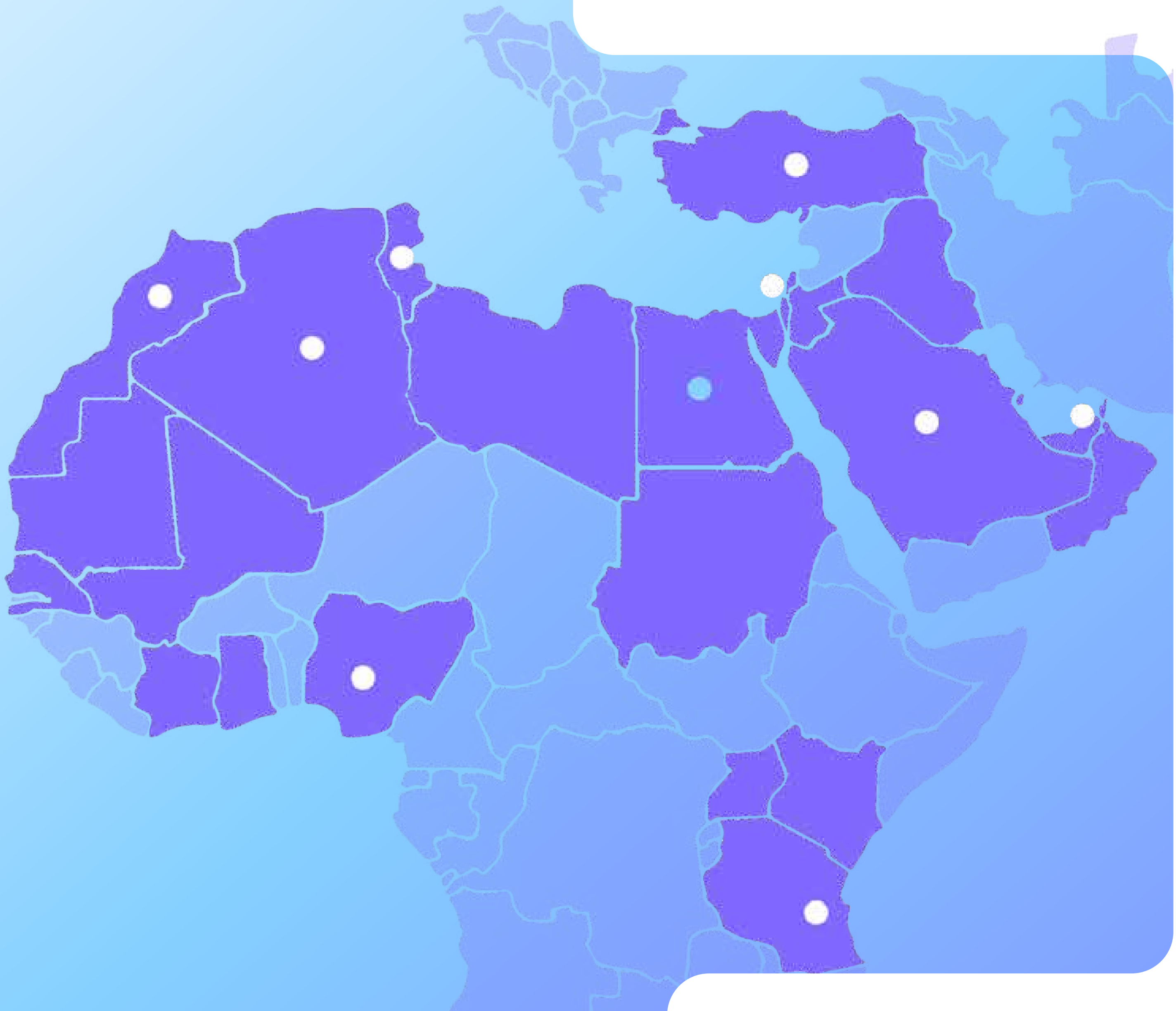
Smaller is Bigger, sometimes...

More Transactions
We process a higher number of micro-payments than HSBC in the region

More Markets
We are reaching more mobile subscribers than VODAFONE

More People
We are covering a higher population than any bank in the region

Don’t you think so?



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DCB Manifesto 2025

Fintech is propelling financial services into a new era like never before. The sector is driven to innovate in critical areas as consumer demand for simpler, more accessible, and user-friendly services increases. One such service is DCB. As innovator players, we will meet on September 17th and 18th at the "Global Carrier Billing & Mobile Payments Summit" to share knowledge, showcase regional successes, and tackle the challenges surrounding DCB in more than twenty markets. We'll maybe discuss DCB-specific regulatory formulas for best innovating to improve customer and merchant experience in a balanced way, tailoring to all demographics as financial services march into the digital age.

In the event, I hope we also find an opportunity to emphasise how crucial it is to see DCB as more of a financial solution rather than a premium telco service while implementing further regulatory strategies. Since DCB has long been considered a premium network service, it is generally regulated by national telecommunication regulation agencies across the MEA countries. Unfortunately, many mobile carriers experience customer complaints due to unconsented transactions or charging issues regarding DCB activities. These complaints may quickly erode business leaders' trust in DCB and attract unwelcome regulatory attention, including significant fines, which can result in carriers switching off a highly profitable DCB revenue channel.

However, in markets where DCB is accepted as a financial solution, and the ecosystem is regulated by financial authorities such as central banks. mobile carriers and payment aggregators typically enjoy more robust growth from their DCB revenue streams. These markets demonstrate high levels of compliance and lower customer complaints. Our experience in Türkiye, working with all of the mobile carriers, shows that customer complaint rates were reduced by over 90% when the market was regulated by the Central Bank of the Republic of Türkiye (CBRT) while yielding significant improvements in customer satisfaction and operational efficiency. Countries in the Middle East and North Africa should consider the successful Turkish regulatory model of DCB. The way to broaden the horizons of the DCB is through regulative measures, as long as a robust regulatory fintech ecosystem of a healthy character is established, of course!

It would be good to see a notable shift as more central banks begin to regulate the mobile payments ecosystem, including DCB. This way, countries would also empower carriers with improved visibility and control over their DCB operations and the value chain, ensuring healthy compliance with regulations and minimising fraudulent activities. In this way, carriers can also foster sustainable growth and protect the interests of their customers.

The following pages underscore the potential for growth in the mobile payment field through reshaping DCB as a financial solution and implementing a central bank-led regulatory framework. This working paper is the latest manifestation of our particular attention to DCB as a financial solution, and it's a sign of the promising future ahead.

Now, let's collectively manifest for the sake of a prosperous future of the mobile payment ecosystem, where your role is pivotal!

Işık Uman,
TPAY Group CEO

Evolution of Carrier Billing

- Mobile Economy in Size
- Rising Popularity of Mobile Payments
- Evolution of DCB
- It was Operators' World
- Consumer Perspective
- Gaining Popularity in LMIC

01

Mobile Economy in Size

Mobile connectivity is still one of the most essential factors in driving digital innovation these days. It helps governments achieve positive societal benefits while providing a wide range of transformative technologies that empower individuals and enterprises.

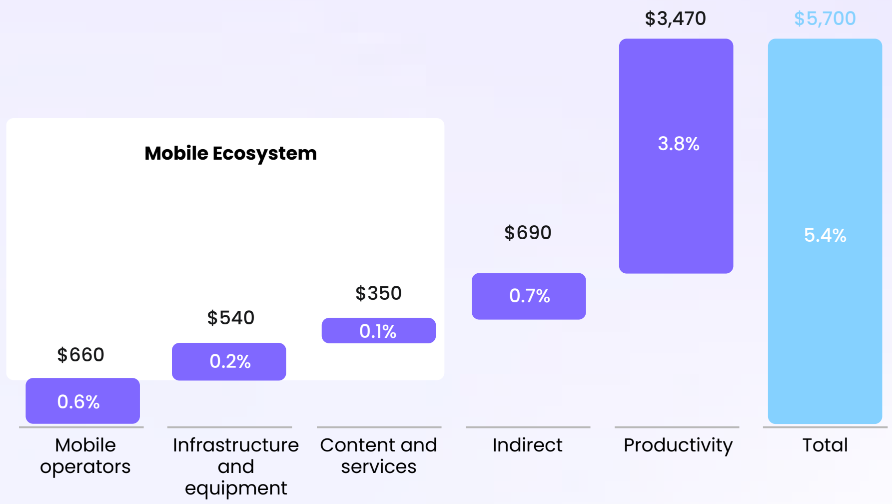
According to the GSM Association (GSMA), 5.6 billion people[1] (69% of the global population) subscribed to a mobile service by the end of 2023, representing an increase of 1.6 billion people since 2015. Despite saturation in high-income countries, there is still room for growth in many low- and middle-income countries (LMICs). Consequently, mobile penetration is projected to increase to 6.3 billion by 2030, encompassing 74% of the global population. Growth in mobile internet penetration has been even faster. At the end of 2023, 58% of the world's population used mobile internet, equating to 4.7 billion users – an increase of 2.1 billion since 2015. Of the 3.4 billion people who remain unconnected to mobile internet, 90% (3 billion) live in an area already covered by mobile broadband but do not use mobile internet services. This underscores the urgency of addressing the primary barriers to mobile internet adoption: affordability (particularly of handsets) and literacy/digital skills.

The impact of mobile connectivity is evidenced significantly by its contribution to the economies. In 2023, mobile technologies and services generated 5.4% of global GDP, which amounted to $5.7 trillion of economic value added. By 2025, mobile's economic contribution is expected to reach almost $6 trillion, rising to about $6.4 trillion by 2030 as countries worldwide increasingly benefit from the improvements in productivity and efficiency brought about by the increased take-up of mobile services.

Mobile operators and the wider mobile ecosystem directly employed more than 19 million people worldwide. The ecosystem's economic activity generated 16 million jobs in other sectors, meaning that around 35 million jobs were directly or indirectly supported.

Total Economic Contribution of the Mobile Industry, 2023

in billion USD



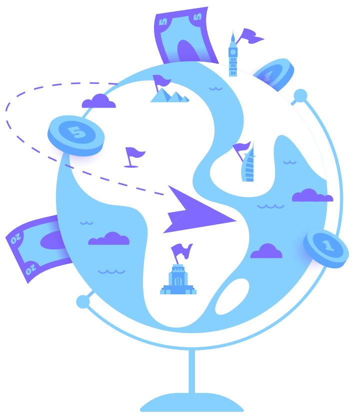
Source: "The Mobile Economy 2024," p. 17, GSMA Intelligence Report, 2024

Rising Popularity of Mobile Payments

The significant rise in mobile connectivity and increasing reliance on smartphones/ tablets for daily activities led to rising m-commerce sales worldwide. Revenue from mobile e-commerce sales reached an estimated 1.7 trillion USD in 2023, accounting for over half of all retail e-commerce sales.

According to Statista's Digital Market Insights[2], a large part of global e-commerce growth is driven by consumers using their mobile devices, phones and tablets to acquire goods and services. The share of mobile e-commerce in all e-commerce has been steadily climbing, up from just 48% in 2020 to 54% in 2023. It is projected to be 63% by 2028. While e-commerce evolves into a hyper-personalized shopping experience powered by AI-driven recommendations, virtual try-ons, and social commerce, mobile payment becomes more critical.

The definition of mobile payment is quite clear: A mobile payment is a transaction conducted and completed using a mobile device —such as a smartphone, a tablet, or even a smartwatch— and a payment instrument like a bank account, debit/credit card, transport card, gift card, or a mobile wallet like PayPal or Direct Carrier Billing. With this payment method, consumers do not need to take out their wallets or credit cards to purchase goods or services from a business or to send money to each other. Consumers pay for services from their smartphones, transferring money between accounts or moving money from one account to another. These payments can be made using digital wallets or peer-to-peer platforms. Mobile payment involves a lot of things: e-commerce on a smartphone, payment via phone bill (Direct Carrier Billing —DCB), mobile POS, airtime payment, and more.



DCB, as a tiny proportion of the mobile economy, was launched in the early 2000s as a telco-driven payment model with simple SMS-based services, like buying ringtones, background wallpapers, and icons for mobile phones.

Mobile payment offers consumers a safe alternative to cash-based transactions and allows for rapid money transfers. In some countries, mobile payment methods are the most frequently used, with the highest proportion of users leveraging them at least weekly.

Some mobile payment types, such as digital wallets and peer-to-peer payment apps, have been popular for years, but their popularity skyrocketed in 2020 due to COVID-19 and pandemic lockdowns. According to a Mastercard survey, 79% of respondents worldwide say they used contactless payments amid the COVID-19 pandemic, citing safety and cleanliness as key drivers.[3]

The term "mobile payment" actually describes many different financial transaction activities facilitated through or on a mobile device, such as proximity payment and remote payment.

Direct Carrier Billing (DCB), also known as "operator billing," is a type of remote online payment that allows consumers to make purchases or transactions and have the charges billed directly to their mobile phone carrier account.

Evolution of DCB

Direct Carrier Billing (DCB), as a tiny proportion of the mobile economy, was launched in the early 2000s as a telco-driven payment model with simple SMS-based services, like buying ringtones, background wallpapers, and icons for mobile phones.

This opened the possibility of generating a new revenue stream for mobile network operators and service providers by leveraging the existing telco network and the billing relationship with the customers. Many operators thought that they found a new revenue generation source. Enabling the customers to make ringtone and wallpaper purchases using their handsets by charging the cost to their mobile phone bill or deducting it from their prepaid balance was welcomed by users as a very attractive and convenient choice of payment. Over the years, the service expanded to multimedia content, including streaming services. In the 2010s, we witnessed a wider adoption of apps and digital services. The monetisation of content and services through any device has become a critical factor in the digital economy towards the end of the 2010s while shaping the future of mobile and technology, media, and telecom (TMT) industry.

Mobile network operators, who have long sought a revenue stream beyond connectivity to offset subscriber saturation and competitive pricing pressures, intensified their efforts to drive growth in this digital realm. Value-added services (VAS) have been pivotal in the telecommunications industry, expanding beyond conventional voice calls, SMS, and data offerings. According to the GSMA report "Global Mobile Trends 2020 – New Decade, New Industry?", non-connectivity revenue of the 20 biggest operator groups worldwide was, on average (in 2018 data), between 10% and 20% of the group's top line (AT&T's 40% is an exception driven by the Time Warner acquisition). The strategies of these operators include the Internet of Things (IoT), pay TV, advertising, and fintech.[4]

One such service was Direct Carrier Billing (DCB), a payment method in which the transaction is made by entering the mobile phone number and confirming the payment. Some operators, feeling the commoditisation pressures on core telecom communications services, understood the promise of DCB to generate additional revenues while differentiating acquisition and retention strategies. Initially, operators viewed DCB as more of a premium value-added operator service, an extension of their telecom services.

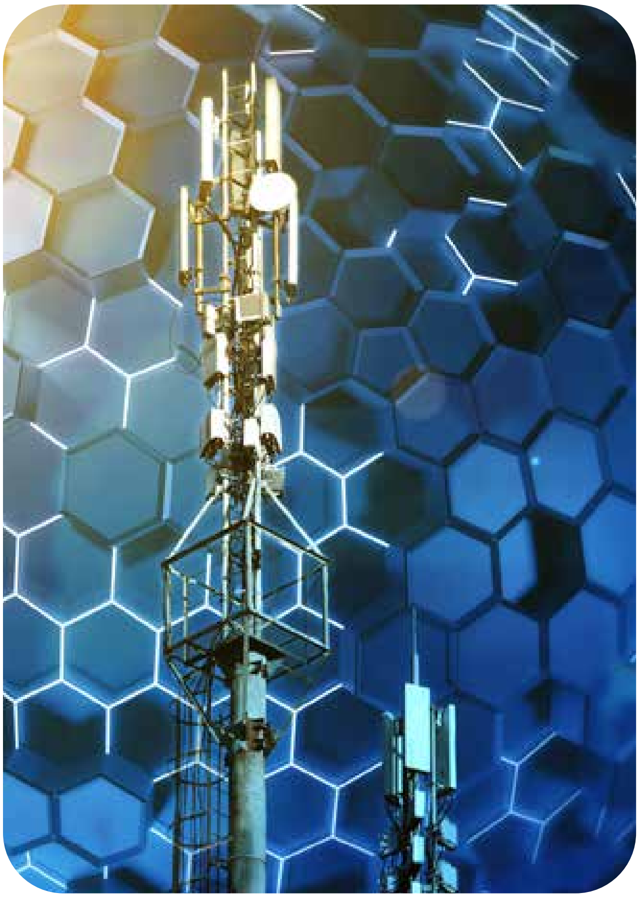
It's important to note that DCB didn't start as a financial solution, but rather as a payment option for premium value-added service of digital content for some telco operators. This initial perception of DCB as a premium service is a key part of its evolution and its understanding of its current role in the industry.

It was Operators' World

The good thing about DCB is it eliminates the need for traditional payment methods like credit cards or bank accounts, providing a convenient and accessible payment option, particularly for mobile users. The technology behind DCB reduces the payment process (x5 compared to credit cards). It allows reaching more users and offers them a more natural, more secure, and faster checkout.

Having seen its convenience, telcos, as providers of mobile network services, played a crucial role in enabling DCB. They acted as intermediaries between merchants/aggregators and end-users, facilitating the payment process and ensuring the security of transactions. While telecom operators intensified their efforts to drive growth in the digital realm, digital merchants saw an opportunity to expand into emerging markets where a large proportion of the population remains unbanked.

However, in the world where DCB was seen as a VAS service, all the actors in the value chain (including merchants) were subject to operators' rules. The flows and processes depended on the mobile operators' rules. Operators dictated the "revenue share model" to other value chain players and rated the



service's performance. The generated revenue was subsequently shared among the various value chain entities, operating under the VAS service revenue-sharing model.

The only exceptions were tech giants like Apple and Google. In this model, these industry titans, which have a significant sphere of influence, establish direct agreements with mobile operators. Subscribers make payments directly to these giants, while the network operator receives a smaller share of the revenue.

Building a level playing field in such service offerings was and still is essential to support fair competition and protect customers while holding all the players equally responsible for meeting the exact requirements and challenges.

Consumer Perspective

Creating a safe and secure DCB ecosystem requires several safeguards to guard consumers' private data and financial activities. However, this type of billing was problematic in the early days because there were no government rulings to monitor mobile carrier billing. Instead, consumers were left to rely on voluntary safeguards and privacy provisions enacted by individual mobile carrier companies. Regulations were either absent or very limited. This was mainly because mobile phone networks were generally regulated by national telecom regulation authorities (NTRAs), which oversee networks but do not cover these payments under a financial regulatory structure. What was critical was that the mobile carrier-based payment system of DCB fell into a different regulatory atmosphere than other mobile payment types (such as remote and proximity mobile payments) and needed to be covered accordingly.

Major telecom operators' mindsets were heavily impacted by the industry's past, so their first interest in DCB was unusual. The majority of players believed that it was not very beneficial to try to compete with credit cards, whose penetration, particularly in developed economies, was so intense. Some even thought offering DCB for third-party services might cannibalise their revenues from traditional voice, SMS, and data services. However, those who developed an appetite and commitment to DCB and supported it were the ones who thought that DCB was more about gaining new customers than it was about competing with credit cards.

> Those who developed an appetite and commitment to DCB thought that DCB was more about gaining new customers than it was about competing with credit cards.

These operators thought that providing a one-click payment method integrated with the user's mobile phone bill could increase customer loyalty and reduce churn.

The major global companies offering DCB platforms, such as Bango, Boku, Centili, Comviva, Digital Turbine, Digital Virgo, Dimoco, Fortumo, NTT Docomo, and Singtel, are shaping the future of digital payments. As the global payment ecosystem continues to evolve, DCB is anticipated to play an increasingly important role. One reason is that DCB is secure. The fact that the user does not need to reveal personal data during the payment process makes DCB a secure payment method.

Gaining Popularity in LMIC

The DCB method has been embraced by mobile network operators and digital service providers primarily due to its simplicity and reach. Its straightforward process, which only requires an active mobile number to process the transaction and register the payment, has made it a popular choice, especially in financially underserved regions.

As mobile e-commerce increased in volume, DCB has emerged as a fast and suitable payment method for both merchants and consumers in those regions. Supporting a wide range of digital transactions, the DCB was soon accepted as the most prominent means of online transaction among the unbanked population of the Middle East and Africa. With a large percentage of the population owning mobile phones, the MEA region became one of the fastest-growing DCB markets. Because DCB was accessible to users with a subscription or prepaid plan from a telecom operator, it allowed users, even with no credit card or bank account, to make some purchases directly charged to their mobile phone bill or deduct the amount from their balance.

Plus, it offered greater security. Users with mobile devices could make purchases through their mobile phones and give explicit permission (consent) to process their personal data for payment. They would not need to provide sensitive personal data such as credit cards or banking information. Consumers only share their mobile phone numbers without needing to introduce any personal or banking details.

Additionally, this payment solution, which offered immediate access, had an effortless and smooth checkout flow. It facilitated an online payment experience with fewer steps to complete a transaction—almost a one-click payment. Users can acquire the content they wish in a single click and see their expenditures reflected in their following phone bills. Since the payment experience is notably improved, DCB results in lower abandonment rates at the point of purchase. This simplification of the process promotes user acquisition and multiplies conversion rates for operators. A study showed that the conversion was 77% for DCB[5], whereas in the case of credit cards, it was 10%.

It should be noted that DCB became popular not just in the LMIC world, where the unbanked population was low, and mobile ownership was high, but also in developed countries, where mobile ownership was high, and the unbanked population was negligible. These were the countries where the pressure to protect consumer rights was felt more strongly.

This is why the door to the solid growth of the DCB ecosystem was opened in Europe through regulatory legislation. Thanks to these regulatory frameworks, which aim to enhance security, competition, and innovation, the fintech landscape in Europe has undergone significant transformations, especially in the 2010s. The Payment Services Directives (PSDs) were at the forefront of this evolution.

1 *"The Mobile Economy 2024," p. 2, GSMA Intelligence Report, 2024* – https://www.gsma.com/solutions-and-impact/connectivity-for-good/mobile-economy/wp-content/uploads/2024/02/260224-The-Mobile-Economy-2024.pdf

2 *"Mobile Commerce Revenue and Share of Total Retail E-commerce Worldwide from 2017 to 2028," Statista, April 30, 2024* - https://www.statista.com/statistics/1449284/retail-mobile-commerce-revenue-worldwide/

3 *"Consumers Globally Make the Move to Contactless Payments for Everyday Purchases," Mastercard Press Release, April 29, 2020* – https://www.mastercard.com/news/press/press-releases/2020/april/mastercard-study-shows-consumers-globally-make-the-move-tocontactless-payments-for-everyday-purchases-seeking-touch-free-payment-experiences/)

4 *"Global Mobile Trends 2020 – New Decade, New Industry?" GSMA Intelligence Report, p.4, 2019* - https://data.gsmaintelligence.com/api-web/v2/research-file-download?id=47743151&file=2863-071119-GMT-2019.pdf

5 *"Direct Carrier Billing, the Payment Method with the Largest Reach," Digital Virgo* – https://www.digitalvirgo.com/mobile-payment/direct-carrier-billing/

DCB Markets: Size and Potentials

- Global DCB Market Size
- DCB Markets by Region
- Payments Landscape in the MEA
- Status and Potential of DCB Markets in MEA

02

Global DCB Market Size

> The staggering acceptance of over-the-top (OTT) content platforms has persuaded many network service providers to accept direct carrier billing as a payment method.

DCB is currently a tiny size of a vast m-commerce pie. But it is on the rise. All market research studies indicate that global DCB revenue is exploding as big digital media brands hook up to the operators.

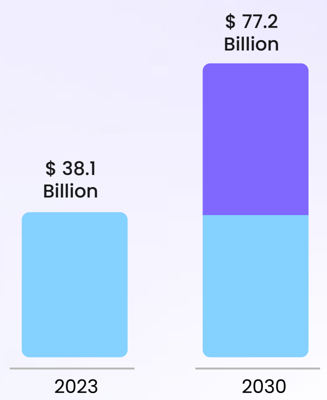
The opportunity for growth is immense, with the global DCB market expected to exhibit double-digit growth in the coming years. According to Research and Markets' DCB 2024 Report,[1], the global Direct Carrier Billing (DCB) market is estimated at US$38.1 billion in 2023. It is projected to reach US$77.2 billion by 2030, growing at a CAGR of 10.6% from 2023 to 2030.

The market is experiencing a significant surge in growth, driven by several factors, including the increasing use of smartphones, the expanding availability of digital content, and the rising demand for convenient payment methods. The proliferation of smartphones has created a vast user base that relies on mobile devices for various transactions, making DCB an attractive option.

From the perspective of customers, the benefit of subscribing to or paying for a feature or media content while offline is emerging as a notable direct carrier billing market trend. Due to its speed and simplicity as a payment method, DCB is seen by many, particularly among younger demographics who are more inclined to use mobile technology as the perfect payment technology today. The increasing popularity of over-the-top (OTT) content platforms is further pushing revenue growth. Smartphones are presently the key medium for adopting digital content such as e-sports and live streaming. The staggering acceptance of OTT services has persuaded many network service providers to accept direct carrier billing as a payment method. The surge in the popularity of in-app purchases has also significantly boosted DCB transactions.

Global Direct Carrier Billing (DCB)Market

Market forecast to grow at a CAGR of 10.6%



Source: "Direct Carrier Billing (DCB) - Global Strategic Business Report," Research and Markets, August 2024.

Video, gaming, and e-publishing industries seem to account for the majority of the European DCB market today. With a promising outlook, games and videos are projected to be the main sectors in digital content sales for the foreseeable future. Growing demand for such products and services, driven by population growth, urbanisation, and shifting consumer preferences, catalyses DCB market expansion worldwide. The market is poised to continue its upward trajectory.

Technological advancements, such as improved network speeds, more secure billing platforms and the growing adoption of cloud computing infrastructure, also fuel the demand for DCB solutions.

Furthermore, strategic partnerships between mobile network operators, payment aggregators, and content providers have enhanced the DCB ecosystem, driving its adoption and integration across various

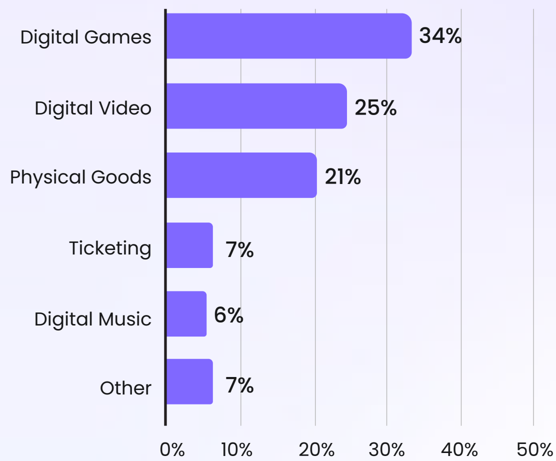
sectors and contributing to its expanding footprint in the global payment landscape.

As we continue to witness these advancements, it is clear that the world of DCB is on a trajectory of exciting growth and innovation. It remains to be seen how these developments unfold in the coming years and shape the future of digital commerce. markets.

A Juniper Research report on DCB projects[2] that the carrier billing expenditure will reach $122 billion globally by 2027, rising from $70 billion in 2023. This means a growth of 74% in 4 years (2023-2027). According to the researchers, the main reason behind this growth is the existence of high investments in R&D activities backed by smartphone penetration. Also, the affordability of smartphones will reinforce the growing popularity of digital content platforms. However, revenue does not come from digital goods and services alone. The digital (goods and) services opportunity is becoming saturated in some markets. But it is good to know that there is much room for physical goods and real-life services to play. Therefore, the growth rate of 74% is said to be driven by carrier billing expanding beyond digital content and into physical goods, ticketing, public parking, etc.

The Juniper report lists the top sectors using DCB in the years ahead: digital games, digital videos, physical goods, ticketing, etc.

Top Sectors Using DCB in 2027



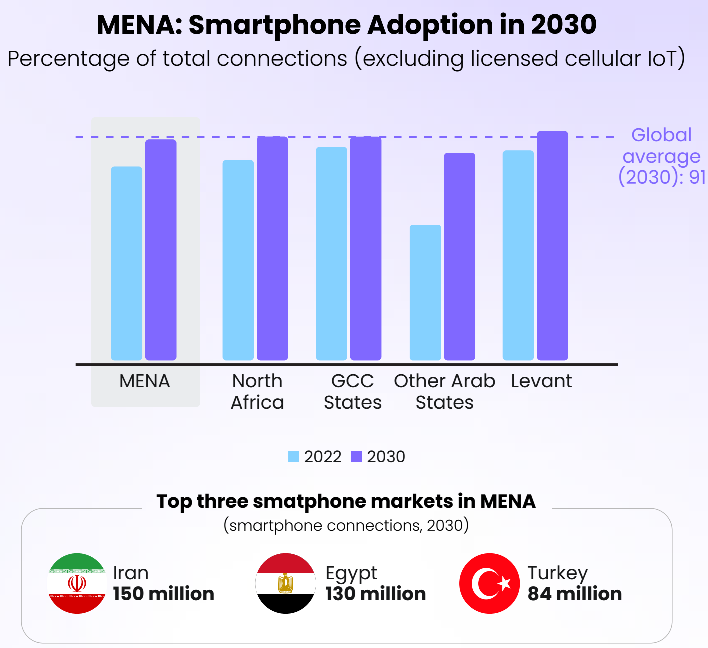
Source: "Carrier Billing: Regional Analysis, Key Verticals & Market Forecasts (2023-2027)," Juniper Research, April 2023.

DCB Markets by Region

Asia-Pacific is the largest DCB market region. According to a report[3] by Market Research Future (MRF), a global market research company, the region registers the highest CAGR for the forecast period due to the increased internet penetration. Including countries such as China, Japan, South Korea, India, and Indonesia, as well as others, the Asia-Pacific region has a high level of mobile phone penetration, with a large number of consumers using their mobile devices for various activities, such as shopping, entertainment, and communication. This leads to a significant increase in demand for DCB services in the region.

The DCB market in Asia-Pacific is expected to continue dominating the global market in the coming years, driven by factors such as the increasing adoption of smartphones.

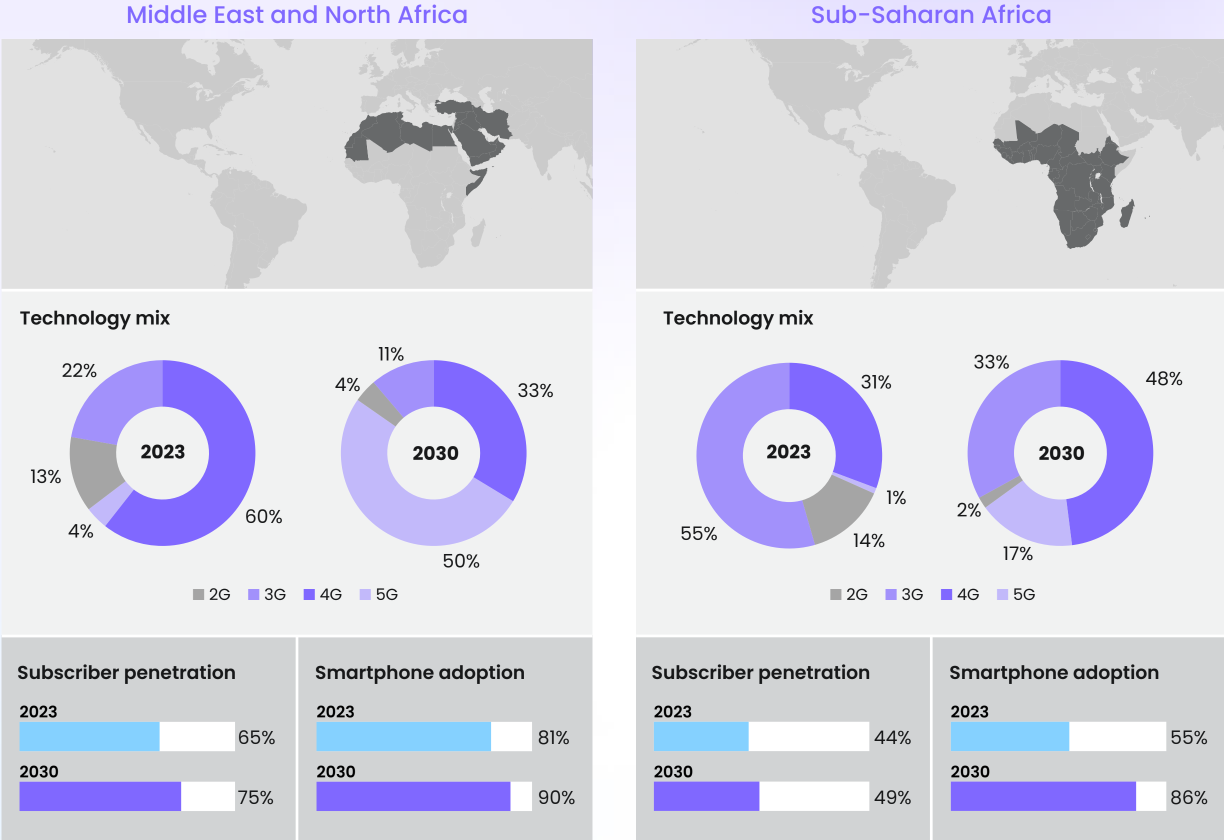
Figures in the report indicate that North America and Europe collectively contribute nearly half of the global DCB platform market. These regions continue to flourish in their



Source: "The Mobile Economy, Middle East & North Africa 2023," GSMA, 2023.

Mobile Penetration (2023-2030)

Subscriber and technology trends for MENA & SSA



Source: "The Mobile Economy 2024," GSMA Intelligence, 2024.

position owing to the rise in demand for trending digital content.

The MEA is the fastest-growing region in terms of mobile connections, with a large percentage of the population owning smartphones. There has been a continuous increase in smartphone connections throughout the region; however, the Arab states outside the GCC, such as Djibouti and Somalia, have experienced the largest increase in adoption levels. The popularity of smartphones in the area has been fuelled by the availability of affordable mobile devices and increased digital awareness. The demand will grow with the continual development of 5G and the expanding use of digital technologies in daily life.

DCB has become more common for consumers in the MEA to rely on mobile payments rather than credit or debit cards. This presents a clear opportunity for regional merchants to explore DCB as a payment method to achieve higher conversion rates.

Juniper's research report on carrier billing spending[4] shows that the fastest-growing regions in the world Carrier Billing market are the Indian Subcontinent and the Middle East & Africa. The former will see a CAGR of Carrier Billing spending of 37.7%, whereas the latter will have a CAGR of 37.3%. Both regions have in common an ever-growing interest in mobile payments, which has skyrocketed in recent years and is expected to continue increasing in the following as mobile connections and smartphone penetration rates grow.

Subscriber and technology trends for MENA & Sub-Saharan Africa are remarkable. (See related figures.)

Payments Landscape in the MEA

No longer than a decade ago, “mall culture” and “cash” reigned supreme across the Middle East and Africa (MEA) region. The market could be characterised by just a few payment options and a lack of trust in digital commerce. Since then, the MEA region has profoundly transformed its payment landscape. The use of alternative payment tools has steadily increased in the region. The once-dominant reign of cash is over, replaced by digital payment options.

While the pandemic-enforced lockdowns played a significant role, they were not the only factor at play. Governments across the region looks to double down on building next-generation digital economies as part of a broader strategy to reduce reliance on oil.

There is Vision 2030[5] in Saudi Arabia, the UAE Digital Government Strategy 2025[6], Qatar National Vision 2030[7], and Oman’s Vision 2040[8]. National agendas such as Egypt's Vision 2030[9] and Morocco's Vision 2035[10] also reflect the countries’ long-term strategic plan to achieve the principles and goals of sustainable development, including digital transformation. These visions all have digital commerce, digital payments, and digital financial services more broadly as core agenda items and are fostering an environment ripe for new entrants to power innovation.

As the tech-savvy younger generation across the region enters the economy, they demand fast, friction-free, convenient shopping experiences.

The payments market across the region has recently expanded to include fintechs, tech companies, and telecom companies alongside incumbent banks. The future looks promising, with fintech companies in the region projected to multiply their revenue almost threefold, from $1.5 billion in 2022 to a staggering $3.5 billion to $4.5 billion by 2025.

This shift to digital payments is not just a market trend but a result of strategic regulatory changes. These changes, such as

The improvement in DCB market rating in the Middle East and Africa in 2023 signifies the market's advancements, particularly in innovation and anti-fraud technology. Morocco looks to be the leading country in mobile payments potential.

those introduced in Saudi Arabia in late 2019 and the UAE in 2021, have been crucial in enabling and supporting this transformation.

The 2022 Digital Payments Index report, published by Mastercard, showed how digital payments are developing in the MENA region at an accelerated pace. The best indicator is that 85% of the respondents[11] state that they have used at least one emerging payment method in the past twelve months, while 19% of the consumers admit to using less cash in the past twelve months. Also, 64% of MENA consumers (in contrast to 61% globally) increased the use of at least one emerging digital payment option, including DCB. As credit card ownership is not widespread in these countries, with only a tiny percentage of the population owning a credit card, alternative payment options come along with convenient and reliable alternatives.

Status and Potential of DCB Markets in MEA

DCB is one of the most potent alternatives among digital payment options. In 2021, analysts from Evina, experts in DCB protection, and Telecoming, experts in DCB implementation, developed the first Direct Carrier Billing (DCB) Index, created to measure the development of this market in MEA.

The objective of the rating study was to provide a comprehensive overview of the DCB business's current state and overall potential. The two companies renewed the research in 2022[12] and 2023[13]. Their DCB Index 2023 report produced new findings. Overall, the DCB market rating in 2023 has experienced a modest increase, moving from 2.8 to 2.9. The improvement signifies the market's advancements, particularly in innovation and anti-fraud technology. The figures provided are primarily algorithmic-based estimations calculated from data collected by Evina and Telecoming for the DCB Index.

The DCB Index established a ranking based on the score achieved by each country. It is presented on a scale from 1 to 5, with 1 as the lowest indicator and 5 being the most advanced pointer. The ranking is based on four main factors: mobile players' actions to prevent fraud on DCB, their bent to innovate in DCB, the country's overall DCB penetration, and the DCB growth potential.

The 2023 DCB Index not only offers a snapshot of the current state of Direct Carrier Billing in the Middle East and Africa but also hints at a promising future. The 2023 results show that Morocco is the leading country in the ranking, with the highest score (3.6 out of 5). South Africa is second in 2023, showing significant adoption of mobile money and potential for DCB growth, with 3.5 out of 5.

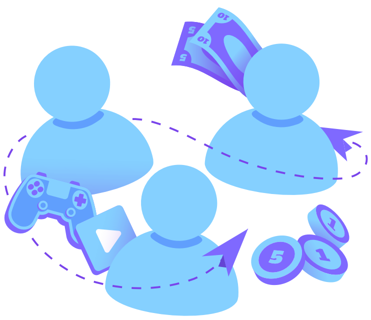
At the same stage, Iraq (3.5 out of 5) and Egypt (3.5 out of 5) differentiated by opening more opportunities for DCB deployment and increasing their protection against fraud attempts on Direct Carrier Billing. Saudi Arabia (3.4 out of 5) is one of the new countries in the ranking and follows close behind, demonstrating its relevance and boosting the region's average score.

The Index also helps to enhance Ivory Coast (3.1 out of 5) as the fastest-growing market and draws attention to the increasing market dynamics in Africa. Focusing on the Middle East, United Arab Emirates (3.3 out of 5) and Kuwait (3.0 out of 5) are making notable progress with positive ratings.

This research provided the market with a standard indicator of the industry. It showed that local mobile operators and merchants are working together to promote DCB as an effective regional payment method. It also indicates that as new countries adopt and enhance DCB technology, the landscape of mobile payments is set to mature further in MEA. Staying updated with these trends is essential for navigating the ever-changing world of digital transactions.

The study shows that the Middle East and Africa region is a valid breeding ground for DCB development. Therefore, efforts by all parties must continue to realise DCB's full potential in a safe, sustainable, and profitable way.

Results also exhibit that the MEA is an extraordinarily dynamic and very mature region in mobile payments. As Roberto Monge, Telecoming's Chief Operations Officer, revealed: "This significant growth reflects the expanding accessibility of mobile services across these regions. Notably, our findings show an impressive rise in innovation, with the indicator climbing an average of 3.4 points out of 5 this year alone. This trend is joined by the substantial growth of the most innovative new mobile payment solutions.



These advancements are vital in driving the mobile economy, where DBC has already established a prominent presence. Telecoming is witnessing the region's dynamism and the exciting developments currently shaping the market."

As the study proved, the MEA looks like a valid breeding ground for the development of DCB. Therefore, all parties must continue to make efforts to realize DCB's full potential. Payment solution providers should partner with mobile operators and brands that wish to develop the market in a safe, sustainable, and profitable way.

David Lotfi, CEO of Evina, explained: "This year's ranking shows a modest increase in the overall level of security among DCB players operating in the MEA region. This positive trend is welcome but should not mask the growing disparity in security levels between players. Some players are investing in their development and security on the DCB and reaping significant benefits in terms of growth and profitability, while others are caught in a downward spiral where they find themselves unprotected and under attack by fraudsters who target the least protected regions of the world and avoid defended players."

Now, let's examine how the leading countries in the report performed. It should also be noted that we also wrote down by whom these countries' DCB regimes are regulated.

MOROCCO: DCB is supervised by the National Telecommunications Regulatory Agency (ANRT), which was created under Law No. 24-96 and is the public body responsible for controlling and regulating the telecommunications sector. ANRT is also responsible for developing and enforcing technical standards of the telecommunications sector. Characterised by stability and robust protection against technical fraud, Morocco's DCB market is a reliable and consistent sector. This stability has allowed for steady, albeit gradual, revenue growth without the disruptions of "stop and go." The market's resilience and steady progress are solid foundations for future DCB development.

SOUTH AFRICA: DCB is supervised by The Independent Communications Authority of South Africa (ICASA), which is the official regulator of the South African telecommunications, broadcasting, and postal services sectors. The Authority's mandate is set out in the Independent Communications Authority of South Africa Act, Act No 13 of 2000 (ICASA Act), and the Electronic Communications Act, Act No 35 of 2005, as amended to regulate electronic communications in the public interest). This legislation empowers ICASA to grant licences, monitor licensee compliance with licence terms and conditions, develop regulations, plan and manage the radio frequency spectrum, and protect consumers. The country with more than 103 million mobile phone connections is an ideal terrain for DCB.

South Africa followed Morocco in the second spot, showing significant adoption of mobile money and promising potential for further DCB growth. Mobile users in South Africa quickly adopted alternative payment methods, such as mobile money, which reached 8 million users this year. When combined with effective cybersecurity project implementations, this trend will enable DCB to boost revenues significantly for mobile players.

EGYPT: DCB is regulated under the National Telecommunication Regulatory Authority's (NTR) mobile value-added services (mVAS). The NTRA was established in accordance with the Telecommunications Regulatory Law No. 10 of 2003 as a national authority to regulate and administer the telecommunications sector. It regulates the telecommunications industry under the Ministry of Communications and Information Technology.

While still in its early stages of expected significant growth, Egypt's DCB market

is showing signs of improvement in cybersecurity. Despite being a target for cybercriminals, many players have begun enhancing their protections. Coupled with the country's high innovation potential and the increasing popularity of digital payments, DCB is poised for sustainable growth in a market where cash has traditionally dominated.

IRAQ: DCB is supervised by The Iraqi Communications and Media Commission, established by Coalition Provisional Authority Order No. 65 in 2004 to license and regulate telecommunications, broadcasting, information services and other media in Iraq. The country experienced significant strides in technology adoption in recent years, particularly in mobile phone usage and e-commerce. DCB is the largest digital services payment channel in the country. As of September 2022, Zain Iraq's DCB services (the largest payment channel in the country for digital services) have more than 5 million unique customers, representing approximately 30% of the Zain Iraq customer base.

Iraq is experiencing a maturing DCB market characterised by improved security and increased innovation, exemplified by forward-thinking partnerships in the fintech sphere, such as ZainCash with Western Union.

While there's room for further development, the market is becoming more secure and sustainable, with anticipated cybersecurity collaborations in 2024.

SAUDI ARABIA: DCB is supervised by the Ministry of Communications and Information Technology and the Communications and Information Technology Commission (CITC), which grants service licenses, issues regulations to CITC-licensed service providers, and manages tariffs while supervising the entire sector. In 2023, the average revenue per user from carrier billing in Saudi Arabia was $12.5.

Additionally, the average revenue per user in the video game segment of the digital media market was forecast to increase by $46.7 from 2023 to 2027.

Saudi Arabia solidified its relevance in the region in 2023 and contributed to the overall rise in the average score. The country offers a significant DCB market, yet it poses unique challenges. Strict compliance regulations can incur substantial costs for DCB players if not adhered to rigorously. However, the country's commitment to security, notable innovation, and widespread DCB adoption offset this.

UNITED ARAB EMIRATES: DCB is regulated by the Telecommunications and Digital Government Regulatory Authority (TDRA), established in 2003 and rebranded in 2021 to regulate the United Arab Emirates's (UAE) telecom sector and provide frameworks to government entities in the field of digital transformation. TDRA is also monitoring the impact of its changes on users and collecting feedback to improve services.

With 1.7 million underbanked people in the UAE and the market moving towards cashless transactions, DCB has a huge window of opportunity. All mobile operators continue to offer carrier billing to pay for services. However, it's imperative to safeguard this payment method as the UAE is a prime target for cybercriminals.

IVORY COAST: DCB is supervised by the Telecommunications Regulatory Authority (ARTCI) Act No. 2013-450 of June 19, 2013, based on the Protection of Personal Data. The country was identified as the fastest-growing market and has shown increased DCB potential since 2022, marked by a heightened push for innovation in the fintech sphere, evident in developments like the personal finance app Djamo. In addition, DCB players have shifted towards improving the customer experience through enhanced security for DCB users. These developments have laid a solid foundation for DCB, allowing players to focus on innovation and diverse DCB services.

KUWAIT: DCB is supervised by the Communication and Information Technology Regulatory Authority (CITRA). The governing institution responsible for regulating the Information Technology and Telecommunications (ICT) sector monitors and protects the interests of subscribers, users, and service providers and governs the services of telecommunication networks in the country while ensuring transparency, equality of opportunity, and fair competition.

Kuwait's DCB potential has notably risen due to enhanced protective measures. The increasing demand for contactless transactions is a catalyst in this trend. As digital payments, including mobile wallets, continue to drive the country's digital transformation, DCB is poised to play a crucial role in shaping Kuwait's future payment landscape.

So far, we have seen that those invested in DCB development and security reaped remarkable growth and profitability benefits. Now, it is time to dwell on regulatory policies and practices and see how crucial they are and what can be done to give customers the utmost protection needed for solid growth in the DCB ecosystem.

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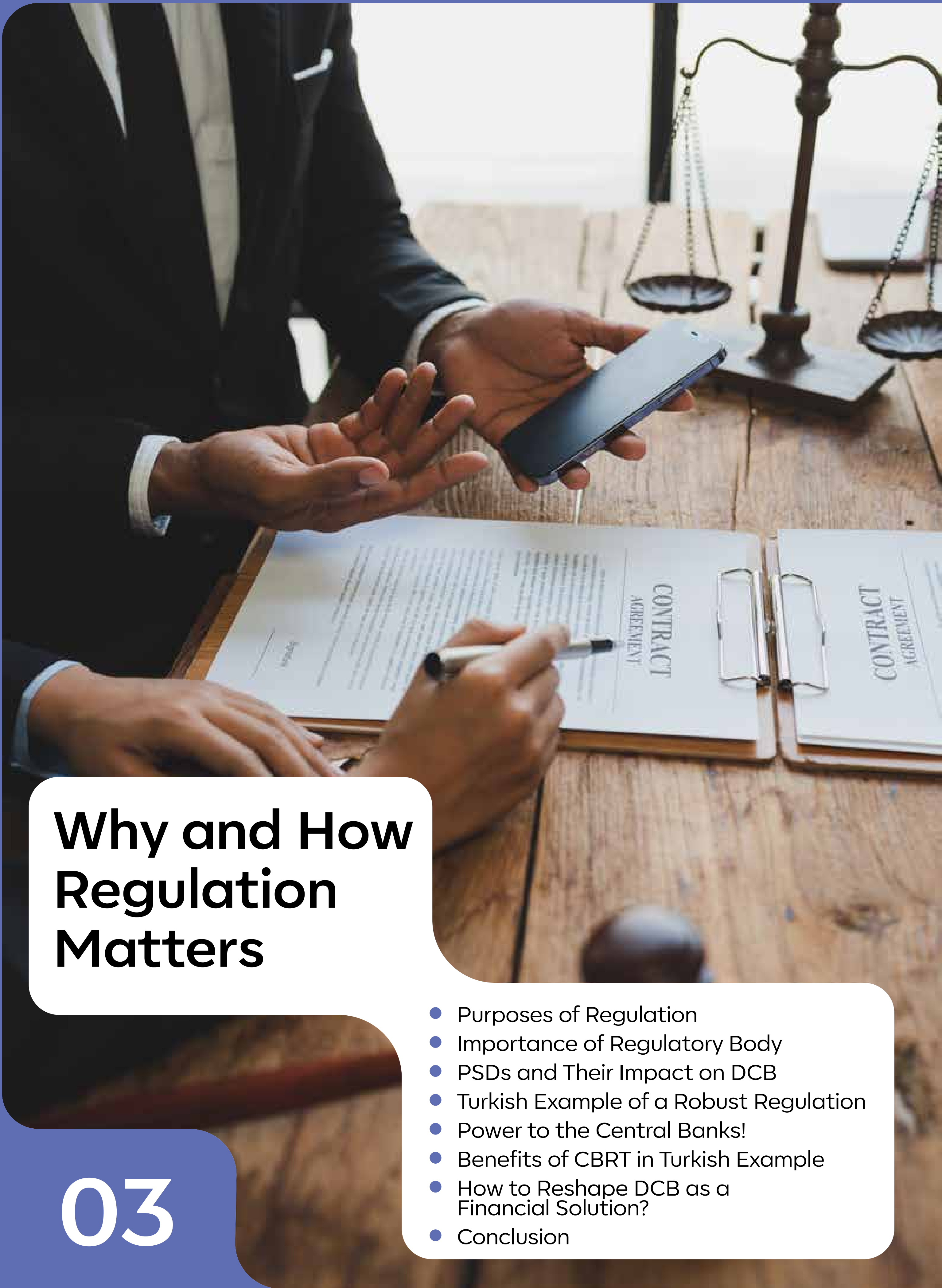


Why and How Regulation Matters

03

Purposes of Regulation

Many factors substantially impact the formation and development of startups, and together, they form the payment ecosystem. They are all essential for the success rate, but the regulatory policies and practices are probably the most crucial.

Regulations are guidelines that control how an activity is carried out and offer a way to enforce them if it is broken. These rules can be found in private contracts, government laws, or market forces. Regulation is not just the creation and publication of a rule but also its enforcement. So, regulators are any actors who enforce those rules. This brings us to a new question: Why is regulation necessary, or what purpose does regulation serve? Is it just to create and enforce some rules for the sake of the rules?

Amidst the debate on who should regulate, there's a unanimous agreement on the essential role of regulations in functional financial service markets. Their primary purpose is to safeguard consumers who constantly seek secure financial services.

Regulations, by safeguarding consumers, influence their purchasing patterns, thereby fostering sustainable market growth.

However, regulatory responses sometimes may impose a burden on regulated firms and constrain the way that many markets operate. So, there will always be a risk that intensive supervision may inhibit innovation and prevent the full benefits of fintech from being realised. In any case, some degree of regulation is always a must.

Why?

In its remarkable report focusing on the experience of European Union (EU) member states as reflected through the lens of the national regulatory authorities, Milken Institute Center for Financial Markets identifies the purposes the regulation serves as such[1]:

The need for orderly and reliable markets to attract customers and provide certainty to market actors: A market that needs to have intelligible rules and provide a reasonable belief that those rules can be relied on and enforced is unlikely to survive. Likewise, entrepreneurs are less likely to enter a market if they are unsure what the rules are and whether their rights will be enforced.

Provision of a means of redress: Providing a mechanism for redress, particularly for consumers and/or small businesses, to limit the risk they face from bad actors (as opposed to market risk), is also vital to obtaining sufficient buy-in.

A level playing field: Firms want to trust that their competition will be held to similar rules and that bad actors will be punished before allocating resources to a market.

Systemic security: Transactions or products that are not threatening in themselves may, in the aggregate, pose a risk to third parties or the broader economy. Regulations help limit the risk and potential spread of such risk.

Law enforcement: Transactions may pose a risk outside the financial system. For example, anti-money-laundering/combating the financing of terrorism (AML/CFT) regulations seek to prevent criminal and terrorist organisations from using the financial system, even if their transactions do not pose risks to the parties to the transactions or to the broader health of the financial system.

Importance of Regulatory Body

The crucial and challenging topic of who would regulate is also essential. The levels of authority, protocols, methods of enforcement, and jurisdictions of different authorities vary from one sector or country to another. They could also be more or less sophisticated and work at different speeds. Besides, the regulatory burden can be significantly impacted by the number of regulators that a market participant has to deal with. The kind, pace, and quantity of these variations may matter when determining which regulator is most appropriate for a particular situation.

The development of the regulatory and supervisory approach to Direct Carrier Billing (DCB) has gone through three phases:

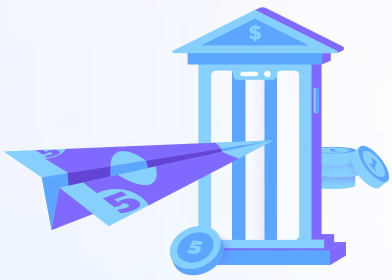
When the operators announced DCB as a value-added mobile service in the first stage, the official reaction was encouraging, highlighting the advantages of premium telecom services and the need to foster innovation. However, the extent of regulatory involvement of National Telecommunications Regulatory Authorities (NTRAs)was essentially restricted to tweaking.

In the second stage, regulators and supervisors started to worry about the risks arising from such services. The rising popularity of DCB services has also resulted in consumer complaints of consent and charging issues. Misleading advertising campaigns were sometimes the prime cause of complaints in the DCB space. Customers thought —as a result of demonstrably untrue statements about a service— they were not fully aware that they would be charged for a service or

PSDs and Their Impact on DCB

Without hesitation, the launch of Payment Service Directives (PSDs) by the European Union was the most critical regulatory step in opening the door to solid growth of the fintech ecosystem, including the DCB area. These steps not only allowed all players in the ecosystem to start seeing DCB as an extension of financial technologies rather than a value-added telecom service but also allowed the use of Carrier Billing for new verticals, such as physical goods, on top of digital goods.

With the Payment Services Directives (PSD1, PSD2, and PSD3), the European Union has extended its regulatory scope to include emerging payment systems such as DCB (Direct Carrier Billing) developments. The EU regarded DCB as more of a financial solution because collecting payments on behalf of other parties was involved in the first place. On the other hand, financial technology firms have grown on a tremendous scale in recent years and have become essential players in areas traditionally handled by



banks. EU needed to think even more deeply about regulations and should look to adopt new regtech. That approach was going to change the whole payment ecosystem.

The first Payment Services Directive (PSD1) was adopted in 2007. It provided the legal foundation for a single European retail Payments market to establish safer and more innovative payment services across the EU. The first PSD has meant more transparency and information for consumers; it has cut execution times, strengthened refund rights, and clarified the liability of consumers and payment institutions. A tangible benefit was that payments throughout the EU were usually credited to the receiver's account within the next day.

However, the most significant leap in consumer protection was achieved by PSD2. The European Union entered into force the regulation PSD2 on January 12, 2016. PSD2 legally specified that “intermediary”

might not receive the service they expected.

Most NTRAs and relevant authorities attested to receiving customer complaints or inquiries regarding third-party billing concerns. The growing volume of these calls underscores the urgent need to impose more stringent regulations on the telco-initiated payment services arena.

operators and aggregators that collect payments on behalf of other parties must be agents or payment institutions. f a telecom operator wishes to continue giving DCB service, it must establish its own payment company and get an operating license. However, carriers were exempted from being licensed to process digital goods, engage in charitable activity, and ticket via DCB under some thresholds. On January 13, 2018, PSD2 became broadly applicable within the European Economic Area. PSD2 obliged banks to facilitate data sharing for AISPs and PISPs via a secure API. These two central ingredients of PSD2 are the core of a stable regulatory framework of an Open Banking ecosystem.

The implementation of PSD2 has encouraged the expansion of payment options like Direct Carrier Billing, which enables customers to conveniently and securely pay for products and services using their monthly cell bill.

PSD2 offered new opportunities to all players within the Mobile Billing market and clarified the authorisations needed to operate in this ecosystem. Moreover, the legal obligation PSD2 specified that “Intermediary” Operators and Aggregators that collect payments on behalf of other parties are required to be agents or Payment Institutions.

However, more sophisticated types of fraud have also emerged, putting consumers at risk. Plus, unclarified areas of regulation were creating some uncertainty in the payment services market. The industry was again looking for a revised Directive (PSD3) to complete the job begun by PSD2, provide greater clarification in certain areas, fight emerging types of fraud effectively– and go further towards Open Finance. That is why the European Commission (EC) proposed new sets of measures on June 28, 2023. The Commission published plans for the successor to PSD2, the third payment services directive (PSD3). The proposal aimed to amend and modernise the current Directive (PSD2), which will become PSD3, and establish, in addition, a Payment Services Regulation (PSR).

Although no precise schedule for PSD3 has been set, the final version will probably be available by the end of 2024. Usually, EU member states will have a transition period of 18 months after adoption. This means that PSD3 and PSR will likely come into force around 2026. In any case, the impacts of this pivotal milestone on the financial industry are so significant that they signal a whole new era.

Charging problems were the most often stated reason for concerns about third-party billing for both value-added telecom services and DCB. Consent issues ranked second in reported complaints, as shown in the report of the Body of European Regulators for Electronic Communications[2], dated 30 Sept. 2021, on handling third-party payment charges on mobile phone bills. So, new regulations were required to include a clause allowing end users to deactivate third-party billing.

However, more was needed, and a whole new regulatory approach and framework giving customers the utmost protection were needed for solid growth in the DCB ecosystem. Policymakers needed to listen to the consumer complaints of consent and charging issues regarding DCB and create a robust framework to protect the consumer by increasing regulation:

- A framework based on the development of international standards
- The implementation of increasingly detailed and prescriptive national rules and guidance
- Shifts in supervisory priorities

It was also clear that fintech players, including DCB service providers, needed to be regulated like banks and held to banking-type standards. DCB was an important transformative financial solution that leveraged advanced technologies to foster financial inclusion. So, all actors in the value chain should have been subject to stricter regulatory scrutiny, safeguarding the global financial system as well.

In the third stage, regulators and supervisors began taking specific actions in response to these risks, especially in Europe. Some countries, realising the character of DCB as a financial solution, have decided that precise customer protection is a must. Wherever companies operate – whether in financial services, customer verification, or transaction support – they should ensure the same checks and security as the major financial

institutions. In some countries, regulatory authority and responsibility for such payment services were taken from NTRAs and given to financial industry regulatory authorities or central banks. One such country that took the regulatory authority and responsibility for such payment services from NTRAs and gave them to financial industry regulatory authorities was Türkiye.

Turkish Example of a Robust Regulation

In the second half of the 2010s, mobile carriers were experiencing high volumes of customer complaints due to non-compliant activities or suspected fraud. Complaints were eroding trust in DCB among business leaders and attracting unwelcome regulatory attention, including significant fines. Finally, the Grand National Assembly of Türkiye gave the duties and regulatory powers over such payment services to the Banking Regulation and Supervision Authority (BRSA) in 2013. So, the Information and Communication Technologies

Authority (ICTA), which was formerly known as the Telecommunications Authority, was no longer the regulatory body for such services, including mobile payments.

The BRSA has made some improvements in the following years. Finally, the regulatory powers exercised by BRSA over payment services were transferred to the Central Bank of the Republic of Türkiye (the "Central Bank") by the Amending Law on Payment Services[3], which entered into force on 1 January 2020.

The CBRT has already been playing an increasingly important role in payment systems due to their widespread use. It was already responsible for establishing payment and securities settlement systems to ensure fast and secure transfer and settlement of funds and securities and for introducing necessary regulations to ensure the uninterrupted operation and oversight of the existing or future systems. So, the CBRT's absence as a strong regulatory body might have resulted in potential risks to financial stability.

As of 1 January 2020, the Central Bank of the Republic of Türkiye became the sole authority to oversee payment institutions and electronic money companies. Its absence as a strong regulatory body could have resulted in potential risks to financial stability.

As of 1 January 2020, CBRT became the sole authority to oversee payment institutions and electronic money companies instead of the Banking Regulation and Supervision Agency (BRSA), established in 2000 as an independent and central supervisory authority to supervise the establishment, management and activities of banks and other financial institutions. Similar to the Payment Services Directive 2 (PSD2) of the European Union, payment institutions, e-money institutions, and other parties that play a role in the functioning of the Turkish payment systems ecosystem have been put under the supervisory authority of a single entity.

The Amending Law on Payment Services introduced significant changes to the law on Payment Systems:

- It increased the scope of the CBRT's existing supervisory powers under the applicable legislation and paved the way for open banking.
- Since then, CBRT has issued and monitored laws and regulations specifically governing the mobile payments ecosystem.
- The Amending Law fortified the Central Bank's monitoring powers by authorising it to set a ceiling for the fees and commissions payable for payment services and monitor (and, if necessary, even regulate) the contractual relationships entered into by payment service providers.
- Additionally, payment and e-money institutions have been made subject to independent audits under the Amending Law on Payment Services.
- The newly adopted open banking regulations under the Law aimed to harmonise the national legislation with the PSD2. The Law categorised and recognised products of payment initiation service providers (PISP) and account information service providers (AISP) as payment services.
- Moreover, subject to the account owner's prior approval, payment service providers are now required to allow other providers to access their customers' account information. In this respect, PISPs and AISPs are expected to become key players in payment services.
- The CBRT's priority was building a digital payment ecosystem with utmost customer protection. Turkish experience shows that customer complaint rates (of non-compliant activities or suspected fraud) were significantly reduced when CBRT implemented strict data protection and privacy regulations, significantly improving customer satisfaction and operational efficiency. Encrypting data to lessen the possibility of unauthorised access or interception, implementing robust authentication procedures, and using cutting-edge algorithms and systems for fraud detection were crucial considerations in developing a safe and secure payment ecosystem, and they still are.
- Under the regulatory leadership and guidance of CBRT, mobile carriers were able to safeguard both their customers and their brand reputation. CBRT empowered carriers with improved visibility and control over their DCB operations and the value chain, ensuring compliance with regulations and minimising fraudulent activities.
- CBRT thought that the most critical factor was to ensure users' data was handled

securely. In a world where fraudsters continuously evolve their methods to exploit vulnerabilities, protecting customers and their data from unauthorised access or disclosure was critical. The only way to guarantee robust customer protection and data security was through regulatory compliance, i.e. adhering to relevant data protection and privacy regulations or other local applicable laws. Most importantly, users' financial information is not shared with anyone, including merchants, adding an extra layer of security. This would give customers peace of mind and build trust in the payment system.

Failure to follow the CBRT's regulatory requirements can lead to hefty fines, damage to reputation, and even legal action. Companies must also provide users with clear billing information, helping build trust and prevent disputes.

Power to the Central Banks!

Now, let's go through the major areas the CBRT has authority in the Turkish payment ecosystem:

1. *Licensing and Authorisation:* CBRT grants licenses to payment institutions and e-money companies before they operate in Türkiye. This ensures that companies operate within the legal framework and meet the necessary regulatory requirements.
2. *Data Privacy and Protection:* Payment institutions are responsible for protecting customer data and ensuring that it is not misused or stolen. In Türkiye, data protection laws require companies to ensure that customer data is protected and used only for the purpose for which it was collected.
3. *Anti-Money Laundering (AML) and Know Your Customer (KYC):* Payment companies must comply with AML and KYC regulations to prevent money laundering and terrorist financing. This involves verifying customers' identities and monitoring their transactions for suspicious activities.

It should also be noted that the regulatory climate is always a delicate factor in influencing how DCB facilitates payments. In countries and regions where regulators are too aggressive on behalf of consumers, DCB innovation and growth are not efficiently maximised. However, in markets where regulatory bodies promote innovation while ensuring that customer data is not misused or stolen, DCM expands from premium digital content to services to physical goods. In some geographies, DCB continues to expand to other opportunities, like being a funding option for mobile money and e-wallets.
So, determining the degree to which the ecosystem is regulated is also crucial.

The CBRT's guidance in Türkiye's payment ecosystem provides a valuable benchmark for other markets. Regulators in the Middle East and Africa region can explore the CBRT experience of Türkiye and find ways to implement a similar regulatory approach in their markets to protect customers further and ensure fair practices.

As a result, the region's payment ecosystems can promote sustainable growth and safeguard users' interests. By mitigating risks associated with non-compliance, fraud, and customer complaints, under the healthy regulatory guidance of central banks, carriers can minimise revenue losses, avoid potential fines, and prevent reputational damage that can have a lasting impact on their business.

Once given the job, central banks across the region must understand the differences, of course, in scope and risk and hold industrywide regulatory discussions before enforcing new regulations.

Spreading and promoting successful models all over the region is now essential to ensuring financial inclusion. As the world transitions from open banking to open finance and from large digital/technology companies to integrated financial structures, payment institutions aiming to establish a strong presence in the future digital world should closely monitor global developments, adjust to potential changes in legislation, and participate in this evolution by offering products capable of adapting to new, integrated financial systems.

Turkish experience also demonstrates the necessity of operators and service providers proactively taking technical measures to protect their customers' interests while reiterating their commitment to adapting to regulations that define DCB as a financial solution.

Now, let's talk a little bit about that.

How to Reshape DCB as a Financial Solution?

What happens when mobile carriers and service providers prioritise taking some simple technical measures to safeguard their DCB business from potential risks and demonstrate their commitment to compliance and customer protection?

If operators wish to ensure long-term business viability with trusted partners and unlock new opportunities, they should take robust risk control measures to drive for a resilient and thriving DCB ecosystem with sustainable growth and success. By taking charge of effective risk control, mobile operators can align risk appetite with their specific business objectives and ensure a robust and balanced approach to compliance and risk management. This helps not only to ensure secure and reliable DCB transactions but also to reposition DCB as a financial solution. Here are some of our suggestions in a condensed version:

Benefits of the Central Bank Regulation in Turkish Example

Gülnihal Akartepe
VP - Risk, Compliance and Regulations at TPAY Mobile

Countries may have different (DCB) compliance regulations and different regulatory bodies. However, it should be noted that Türkiye'sDCBstory of the last 4-5 years proves that having a mobile payment ecosystem supervised and regulated by the Central Bank of the Republic of Türkiye (CBRT) has enormous benefits for the payments market, the consumer and the country in general.

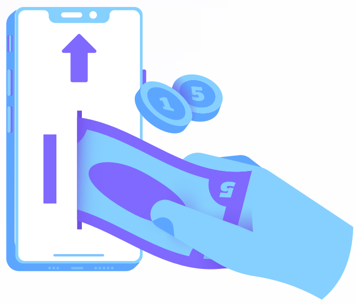
Regulations improving and strengthening the mobile payment ecosystem through the Central Bank legislation not only result in fair practices but also enable sustainable industry development with significant potential benefits for growth and innovation. Let's examine some of the benefits of CBRT involvement to illustrate the dramatic transformation in Türkiye's digital commerce and payments landscape.

These benefits can be listed as follows:

- It leverages access to financial solutions and services, especially for the unbanked and underbanked segments with low financial inclusion.
- It enables intermediary services of mobile payment and the development of financial interaction in many areas and utility services (electricity/water, transportation, etc.).
- It effectively contributes to ensuring security in the field of payments, especially consumer protection.
- Regulations such as "protected accounts" and equity capital requirements will help payment institutions strengthen their financial structures.

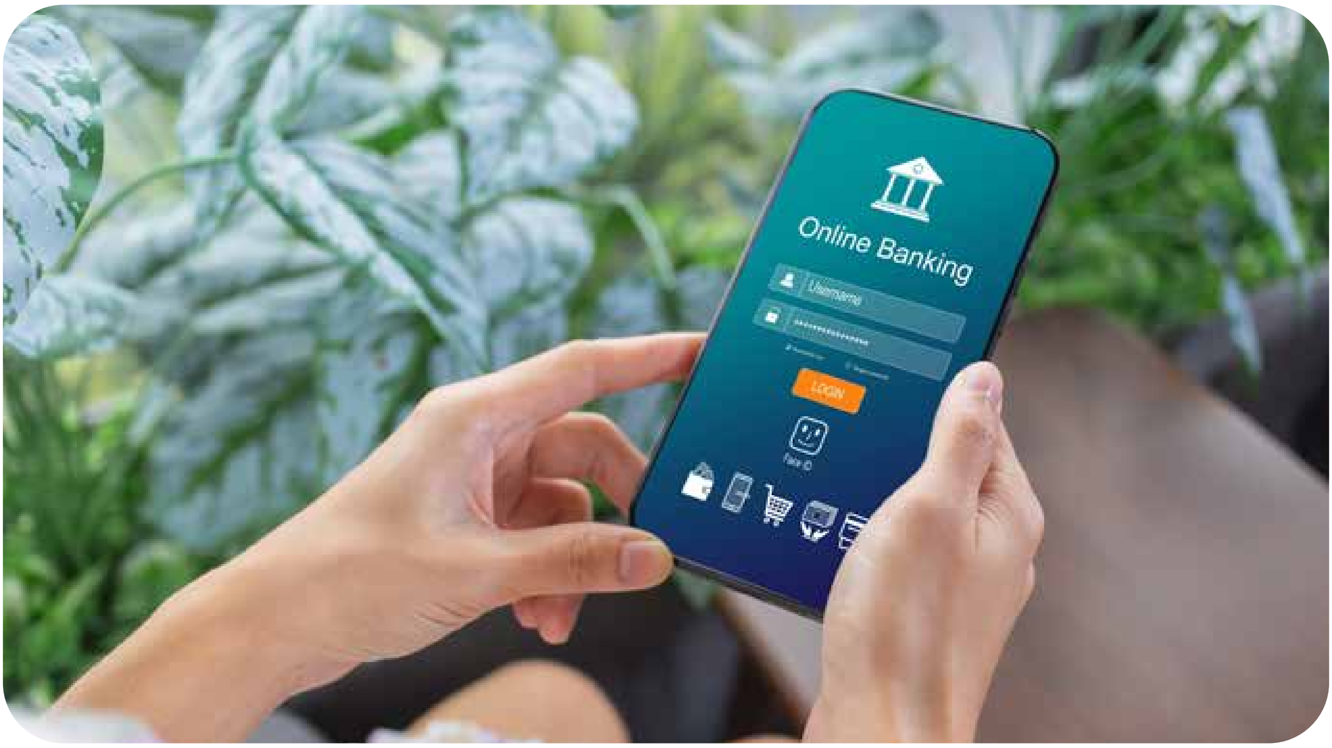
- Identifying and preventing fraudulent activities and Anti-Money Laundering (AML) programs are essential to maintaining the integrity of mobile and digital payment systems. So, network operators and service providers can prevent potential fines and brand-damaging issues by embracing self-regulation and introducing systems to increase checks and controls over merchants and other players throughout the value chain.
- In the dynamic landscape of mobile payments, network operators must assume responsibility for investing in the API interconnections between them and the service providers in the payment process rather than solely relying on other parties in the value chain. (For example, instant and

- It contributes to spreading Open Finance and integrated financial services by deepening financial inclusion and improving financial stability. In return, open finance ecosystems with data-driven strategies will help revolutionise access to financial services, especially for underserved communities.
- It also helps prevent the "underground economy" in which businesses and individuals don't report—or pay taxes on—income from both legal and illegal activities.
- Regulations regarding issues such as customer acceptance, authorisation, fraud controls, identity verification, and data security ensure that payment institutions have a more robust, dynamic IT infrastructure where consumers can find transparent information and explicitly consent to perform transactions.
- It strengthens practices aimed at preventing money laundering and the financing of terrorism throughout the payments ecosystem. It improves cooperation between state authorities



working according to similar methodologies and technical standards.
- It also strengthens rules on anti-money laundering and countering terrorist financing to protect financial systems, contributes to security and growth, and facilitates cooperation on methodology and technical standards between different countries.
- By including non-financial companies and financial companies with no liabilities within the scope of these regulations, more effective results in combatting money laundering proceeds of crime and preventing criminals from using the financial system is possible.
- The scope and range of mobile payment intermediation services will improve rapidly, especially in geographies lacking access to financial services.

Authorities in the countries across the MENA region should carefully explore the Turkish experience and consider the dynamic and exemplary legislation through CBRT, especially in real-time payments, where a new generation of promising industry actors come into play and operate.



transactional checkpoints should be set up in API integrations.)

- Operators should turn their networks into developer-ready platforms so that developers can extend their payment services with advanced functionalities. By doing so, operators may expose their telco capabilities through global, automated and programmable APIs with a single code line to improve customer protection, simplify payments and streamline processes.
- Notifications are at the heart of the DCB operations. Monitoring transactions via notifications by both the payment institution and the operator is indispensable in the mobile payment process, as in all financial transactions. If refunds and collections, which are considered the most critical part of the process, are not monitored correctly and effectively, the accuracy – and, in the end, the reliability - of the financial data formed becomes questionable.
- Refund API requests, which help reverse the direction of a transaction and let the merchant move money back to the customer, are critical in improving customer satisfaction. Developing refund API features through technical integrations with operators ensures that end-user transactions are tracked accurately.
- If a payment transaction cannot be tracked in detail, notifications cannot be received, one-off billing features are not developed, real-time monitoring/tracking and transaction-based reporting are not active, this transaction structure will not be able to ensure a positive customer experience and capture the digital transformation in the field of payments.

Mobile payment transactions, like Open Banking activities, will improve with the creation of API-based standards. We can also call this “a mobile payment gateway structure,” a system designed to be an interconnection between the Mobile Network Operator (MNO) and the Service Provider in the payment process. APIs that provide the payment gateway infrastructure are considered a series of standardised, open APIs that provide access to network features for all telecommunications networks and countries. The accessibility provided by this API set provides a seamless customer experience and accelerates technology development.

If operators wish to ensure long-term business viability with trusted partners and unlock new opportunities, they should include robust risk control measures in their regulations to promote a resilient and thriving DCB ecosystem.

Conclusion

The Middle East is witnessing a surge in its fintech sector. It is estimated to be USD 1.51 billion in size in 2024 and is expected to reach USD 2.40 billion[4] by 2029, growing at a CAGR of 9.71% during the forecast period (2024-2029).

According to the Mordor Intelligence report, the MENA region, particularly the United Arab Emirates, Saudi Arabia, Bahrain, and Egypt, is the epicentre of fintech funding. These nations accounted for a staggering 99% of the region's investments. Payment solutions take the lead within the fintech sector, capturing 42% of all investments and boasting a remarkable annual growth rate of 152%.

The regulatory landscape in the region, on the other hand, is a little complex. Each country has its own set of rules and regulations. Some have established specific frameworks of regulatory policy principles for fintech. Authorities around the region have different rules addressing consumer protection, privacy, and transparency.

Most countries in the region offer two types of licenses: Sandbox and Financial Services. Hence, it's essential to recognise that the specific requirements can vary significantly from one jurisdiction to another. For example, the UAE mandates fintech companies to acquire a license from the prestigious Dubai Financial Services Authority (DFSA) or Abu Dhabi Global Markets (ADGM). Meanwhile, fintech companies that wish to operate in Saudi Arabia must first apply for a sandbox license from the Saudi Arabian Monetary Authority (SAMA). Fintech firms must obtain a license from the Central Bank of Egypt (CBE) to do business in Egypt.

Other countries are still developing such frameworks for fintech. Some require a license or registration to operate, while others restrict the types of financial services available.

Direct Carrier Billing, on the other hand, is not a new phenomenon in the region. The first independent payment aggregators offering carrier billing services and telecom operators in the MENA region emerged around 15 years ago, leading to a growing trend, especially in countries with high unbanked and underbanked populations. The region's DCB landscape traditionally remained under telecom authorities' regulating hands. Since DCB is seen as more of a premium value-added service of a mobile network rather than a financial solution aggregated by fintech, it is not regulated by the central banks. DCB is regulated mainly by national telecommunication regulatory authorities (NTRs) across the MENA.

As a result, many startups of payment aggregators find themselves operating in a grey area, prompting them to seek partnerships with established mobile network operators on terms imposed unilaterally by them.

However, a more adaptive regulatory framework that recognises the unique characteristics of DCB as a financial solution is essential to foster innovation and facilitate the industry's further growth. It is becoming more and more apparent that regulatory expectations for managing DCB should be generally consistent with those associated with other financial services delivered through more traditional channels. (In recent years, there has been a notable shift in that direction, as an increasing number of central banks, which recognise DCB's potential to achieve greater financial inclusion and boost

economic growth, have begun to regulate the mobile payments ecosystem, including the monetisation of digital payment services such as DCB.

One example of authorising its central bank to oversee payment institutions is Türkiye. The Turkish case is almost a perfect example of DCB governance. Earlier in this paper, we highlighted the critical importance of the regulatory approach towards DCB as a key driver for sustainable carrier billing growth and success. We also examined the CBRT use case in detail and explained the values and benefits the Turkish market has had so far. Countries can benefit significantly by similarly introducing a central bank-led regulatory approach based on financial-perspective for the DCB ecosystem.

So, if the duties and regulatory powers over DCB were given to the central banks in the MENA countries, they would deliver sustainable development and fair growth of the industry. Central banks deeply understand the fintech industry and already offer financial service and regulatory sandbox licenses in many countries across the region. By providing a controlled environment, central banks allow an increasing number of startups and established fintech firms to test their products and services while creating innovative financial solutions.

Once again, the CBRT's guidance in Türkiye's payment ecosystem provides a valuable benchmark for other markets. Regulators in the Middle East and Africa regions can explore the CBRT experience of Türkiye in detail and find ways to implement a similar regulatory approach in their markets to protect customers further and ensure fair practices. As a result, the region's payment ecosystems can promote sustainable growth and safeguard users' interests.

We believe the MENA and Sub-Saharan African countries, which have significant DCB market potential, should explore and discuss the Turkish experience and consider the exemplary legislation Türkiye has gone through with CBRT. We at TPAY Mobile have the knowledge and expertise and are always ready to provide you with expert advice on building a resilient and thriving DCB solution, as well as navigating the requirements to unlock new opportunities across the region.

1 *"FinTech: Who Regulates It and Why It Matters," Brian Knight, Milken Institute, Center for Financial Markets, Viewpoints, April 2016* - https://milkeninstitute.org/sites/default/files/reports-pdf/FinTech-Who-Regulates-It-and-Why-It-Matters2.pdf

2 *"BEREC Report on the Handling of Third Party Payment Charges on Mobile Phone Bills," Body of European Regulators for Electronic Communications, BoR (21) 118 30, September 30, 2021* - https://www.berec.europa.eu/en/document-categories/berec/reports/berec-report-on-the-handling-of-third-party-payment-charges-on-mobile-phone-bills

3 *"The Amending Law on Payment and Securities Settlement Systems, Payment Services and Electronic Money Institutions," Official Gazette of the Republic of Türkiye, No: 30956, November 22, 2019* - https://www.tcmb.gov.tr/wps/wcm/connect/EN/TCMB+EN/Main+Menu/Core+Functions/Payment+Services/Payment+Services+Overview

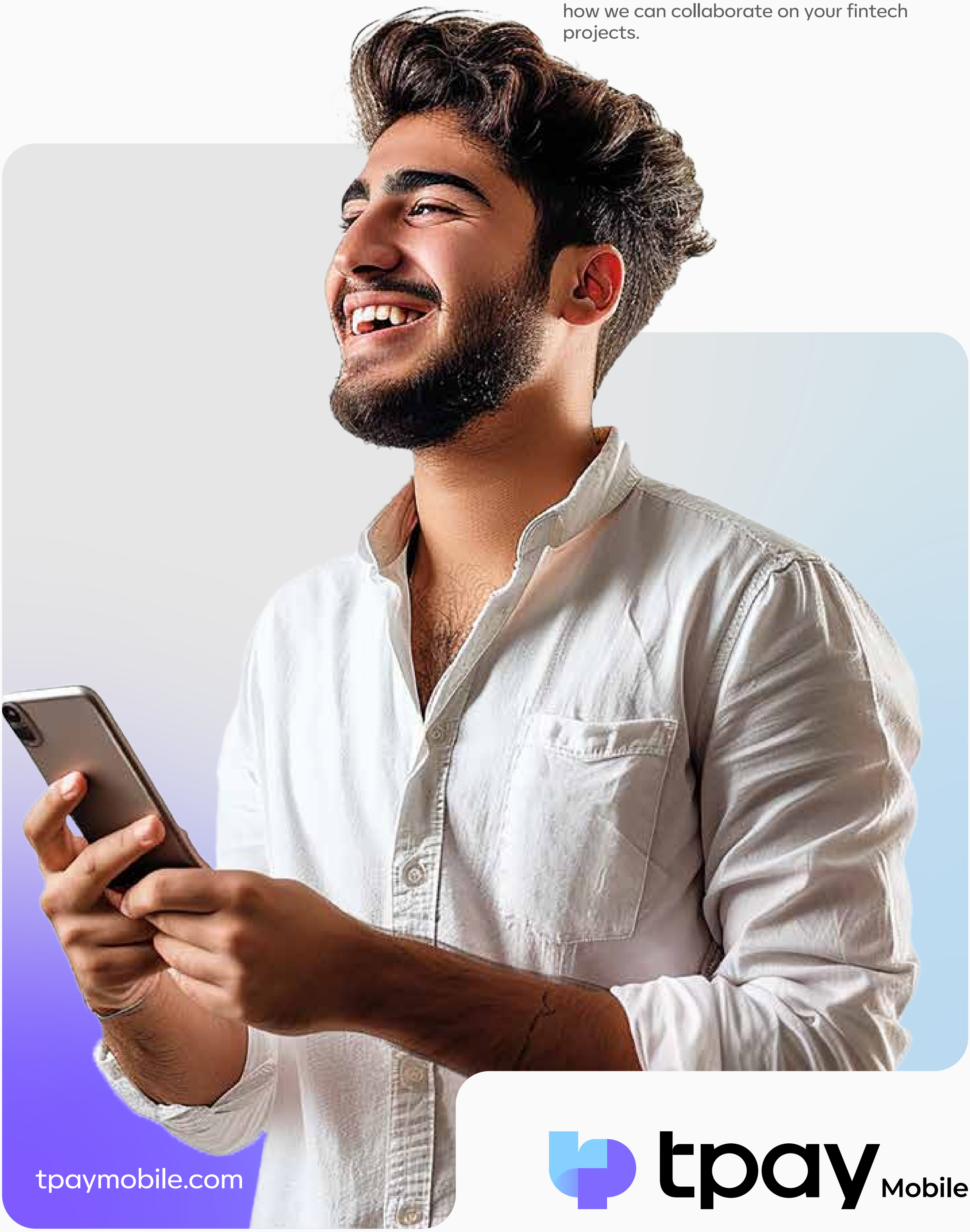
4 *"MENA Fintech Market Size & Share Analysis - Growth Trends & Forecasts (2024 - 2029)," Mordor Intelligence Report, 2023* - https://www.mordorintelligence.com/industry-reports/mena-fintech-market

Leading the Way in Mobile Payments and Beyond

If you wish to enter the MENA fintech or DCB market or need expert advice on navigating the requirements, look no further than TPAY Mobile.

With years of experience working with clients in Türkiye and the MENA region, we have the knowledge and expertise to help you succeed.

Contact us today for a meeting or to explore how we can collaborate on your fintech projects.



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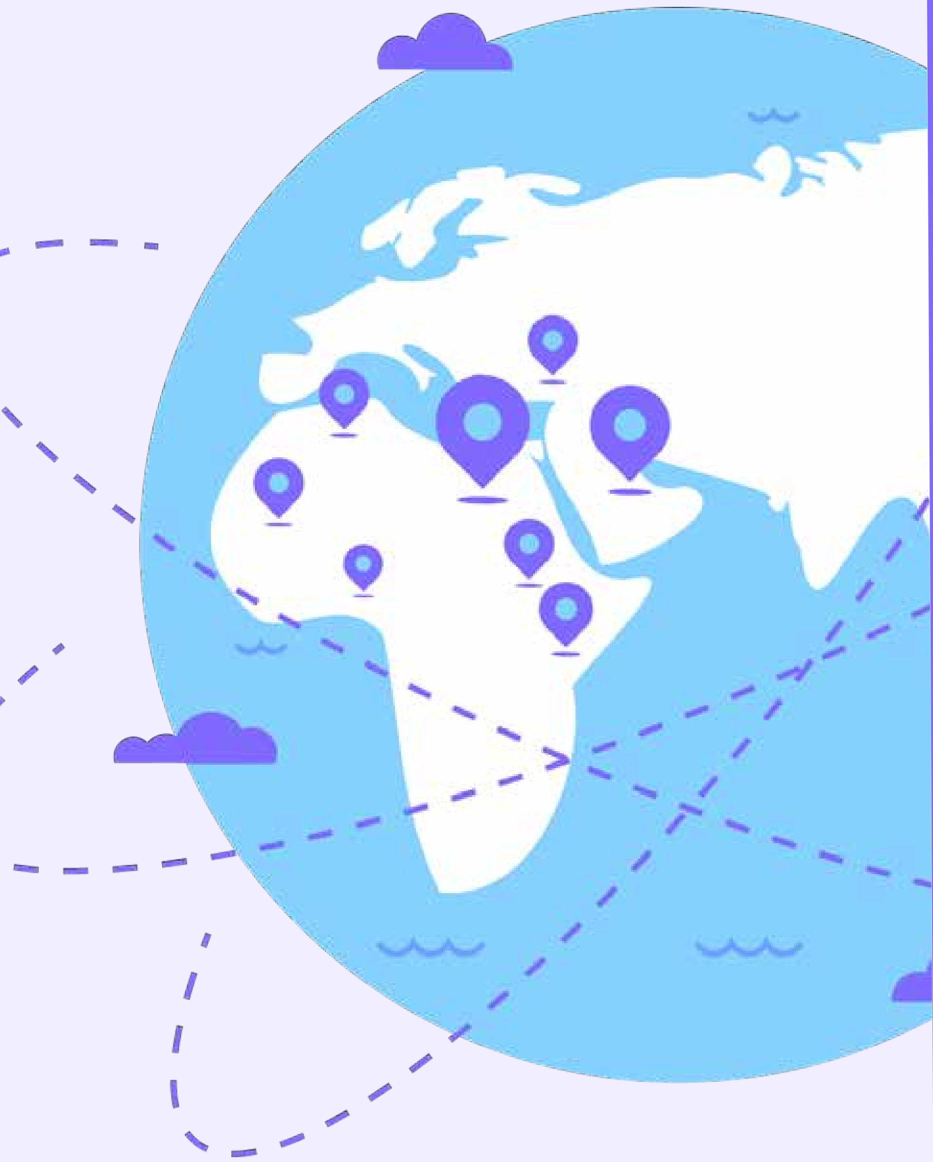

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