

G20/OECD INFE REPORT

Ensuring financial education and consumer protection for all in the digital age



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Foreword

With the unprecedented pace of technological change and the proliferation of Digital Financial Services (DFS) around the world, the need to strengthen financial and digital literacy is an important component of the international policy agenda, as highlighted by G20 leaders in 2016 when they endorsed the High-level Principles for Digital Financial Inclusion. Financial education, financial consumer protection and financial inclusion are globally recognised as essential ingredients for the financial empowerment of individuals and the overall stability of the financial system, as enshrined in a series of high-level principles approved by G20 leaders.

This report supports Principle 6 of the High-Level Principles for Digital Financial Inclusion and contributes to G20 and Global Partnership for Financial Inclusion (GPFI) efforts to prioritise their implementation. It discusses the implications of the digitalisation of finance for financial education and relevant consumer protection issues and provides an overview of digital financial services around the world. It also explores the challenges and opportunities resulting from today's digital revolution for consumers, small businesses and particularly disadvantaged groups. The report then highlights the need to further enhance consumer protection and financial education frameworks to more effectively target digital finance, and identifies financial literacy initiatives and policy options that can help consumers better manage any potential digital risks and benefits. It illustrates the use of digital tools to deliver financial education, while addressing the role of public, private and other relevant stakeholders in this regard.



This report is meant as a contribution to the priorities of Germany's G20 presidency on digitalisation and financial inclusion and is transmitted to G20 Financial Ministers and Central Bankers at their meeting in Washington DC on 20-21 April 2017. Highlights from the report¹ were also circulated to the G20 in 2016 and mentioned in the annex of the G20 Leaders' communiqué.

This report has been prepared by the OECD International Network on Financial Education (OECD/INFE) through an iterative consultation process between 2015 and 2017. It is based on initial contributions from 38 public institutions in Africa, Asia, Europe and the Americas through a stocktaking survey and an extensive desk research and literature review. The report has benefited from several rounds of comments made by the large OECD/INFE membership and relevant G20 and international bodies. Final comments by the OECD/INFE, the G20/OECD Task Force on Financial Consumer Protection, FinCoNet and GPFI were incorporated in February 2017. As the report constitutes an integral part of the programme of work of the OECD Committee on Financial Markets and Insurance and the Private Pensions Committee, it was reviewed and approved for dissemination to the G20 by these two OECD bodies in March 2017.

¹ www.oecd.org/finance/financial-education/HIGHLIGHTS-G20-OECD-INFE-Report-Financial-education-and-consumer-protection-in-the-digital-age.pdf

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Executive summary

Digital financial services (or ‘DFS’, which can incorporate any financial operation using digital technology, including electronic money, mobile financial services, online financial services, i-teller solutions, and branchless banking) are a major global phenomenon and particularly widespread in the developing world. They offer unlimited possibilities for integrating the poor, unbanked and previously financially excluded populations, into the formal financial system by:

- extending reach and access to new types of financial services while overcoming physical infrastructure barriers;
- lowering costs and making finance more affordable to all;
- offering more convenient, faster, secure and timely transactions; and,
- providing a seamless experience tailored to individual needs and facilitating usage.

Today, there is a global upward trend in the overall uptake of digital technologies in finance and the use of mobile financial services, in particular:

- In 3 years’ time, global mobile connections could reach 8.9 billion (or a penetration rate of 114%) and the number of smartphones could more than double to 5.8 billion the world over (GSMA, 2016a).
- DFS are currently available to over 60% of the world’s population, particularly in the form of mobile money (GSMA, 2016b). But there are still 2 billion adults without an account today, and only 58% of women (65% of men) have access to an account at a financial institution (Demirguc-Kunt et al., 2015).
- DFS do not only encompass payments and transfers, but also more sophisticated financial operations and services such as mobile insurance, credit and savings.²
- DFS are offered by a variety of providers including banks, telecoms, governments, post offices, as well as credit, insurance, pension and increasingly FinTech companies.³

At the same time, major threats have emerged due to the spread of digital innovation, including:

- *Market driven risks*: new types of fraud, misuse and mis-selling; security and confidentiality of data; digital profiling; extremely rapid access to (often high-cost) short-term credit; and

² INFE stocktaking survey, 2015/16.

³ Ibid.

questionable digital market practices that reinforce behavioural biases (e.g. short-termism, self-control problems, confirmatory bias).

- *Regulation and supervision driven risks:* Uneven protection within and across countries (inadequate disclosure and redress mechanisms, unfair customer treatment, lack of transparency, variety and liability of providers, cross-border selling, regulatory arbitrage).
- *Consumer driven risks:* increased digitalisation of daily life coupled with low financial and digital literacy.

These risks can have a potentially damaging impact on consumers, particularly by encouraging risky financial behaviour and leading to problems, such as:

- lack of, or uneven, consumer safety and trust in DFS, the financial system and technological innovation;
- new types of exclusion for certain populations (elderly, women, Micro Small and Medium Entreprises (MSMEs), first time users of finance and technology) driven by particular policies (digital credit/insurance denials);
- excess reliance on digitally delivered credit or over-indebtedness of particular groups (youth, students, low-income segments); and,
- high customer vulnerability to phishing schemes, social engineering scams, account hacking attacks, data theft, etc.

Alongside prudential regulation, both financial consumer protection and financial education are critical, complementary elements in ensuring an enabling framework for digital finance. But, globally, there has been limited adaptation of consumer protection and financial education frameworks to the aforementioned digitalisation trends and challenges. Some countries are only partly addressing DFS topics through financial consumer protection legislation or financial literacy initiatives for adults or in schools.

Further joint action is needed by public authorities and relevant private and civil stakeholders to help consumers make the best use of DFS. Decision makers could consider the following policy options:

- Step up efforts to assess the capacity of existing consumer protection frameworks to adequately safeguard users from harm and promote their financial wellbeing.
- Ensure that wider financial education strategies are flexible enough to address emerging issues and challenges.
- Increase overall levels of financial literacy from a young age, to empower future generations to make informed decisions about appropriate digital financial services and to reduce the risk of consumers facing fraud or taking on excessive levels of credit.

More targeted financial education guidance may also be needed to develop comprehensive financial literacy initiatives aimed at:

- expanding awareness and deepening understanding of digital finance through awareness campaigns, websites, roadshows;

- supporting knowledge and learning about the beneficial use of DFS through practical training and workshops;
- empowering individuals with financial and digital skills, through both in and out of school programmes;
- providing opportunities to increase experience with and trust in DFS through innovative initiatives and programmes;
- alerting consumers to the potential dangers of digital finance though information security workshops, seminars and DFS fairs; and,
- developing competencies and meeting the particular needs of vulnerable groups through targeted training, initiatives, and easy-to-use digital tools.

Digital technologies can also be useful channels to deliver financial literacy content, thereby supporting the implementation of national strategies for financial education. But many digital innovations, designed, developed and marketed by the private financial sector (often start-ups and FinTechs), are not necessarily intended to deliver unbiased financial information or education. The type of stakeholder (public, private, not-for profit actors) involved in the creation or promotion of a specific digital tool should be considered to ensure that such innovations are used for educational purposes and are in line with the OECD/INFE Guidelines for Private and Not-for-profit Stakeholders in Financial Education.

Smart use of technology can also support achievement of financial education outcomes by:

- improving access to financial information, advice and training (e.g. through websites, massive open online courses);
- developing competencies, confidence and experiences with finance (e.g. through gamification);
- enhancing money management skills and control over finances (e.g. through mobile applications, budgeting tools);
- addressing consumers' biases (e.g. through self-commitment devices, automated alerts).

A key policy priority for policymakers will be to closely follow progress of new digital tools and financial literacy initiatives focused on DFS, and to undertake further research and more in-depth evaluation of the impact on consumers and small businesses' financial wellbeing.

The OECD/INFE's new working group on digitalisation and financial literacy will further explore implications of the digitalisation of finance in 2017-19, which could lead to the development of a dedicated set of guidelines.

Introduction

As the overall economy and financial markets go digital and with the acceleration of technological progress, financial education, consumer protection and financial inclusion are increasingly important. The integration of these three elements as essential ingredients for the financial empowerment of individuals and the overall stability of the financial system has been globally recognised and endorsed by G20 leaders through a series of high-level principles: Innovative Financial Inclusion (2010); Financial Consumer Protection (2011); and National Strategies for Financial Education (2012). In recognition of the need to take concrete action to advance digital financial inclusion, G20 High-level Principles for Digital Financial Inclusion were developed and endorsed by G20 Leaders under the Chinese G20 presidency.⁴ Collectively, these four sets of principles provide a relevant baseline for developing more targeted approaches and international guidance on digital finance.

Building on its global leadership on financial education issues, the OECD and its International Network on Financial Education (OECD/INFE) are actively involved in developing policy research and guidance on the implications of the digitalisation of finance for financial education and relevant consumer protection issues. This report is part of the OECD and its CMF and IPPC programme of work on the digitalisation of the economy and FinTech. It also directly contributes to the G20 Global Partnership for Financial Inclusion (GPFI) priority of digital financial inclusion aimed particularly at supporting the implementation of Principle 5 to some extent (*Establish responsible digital financial practices to protect consumers*) and Principle 6 (*Strengthen digital and financial literacy and awareness*) of the G20 High-Level Principles for Digital Financial Inclusion (G20, 2016).

The report presents a brief overview of Digital Financial Services (DFS) around the world and explores the demand-side opportunities and challenges resulting from today's digital revolution, with a particular focus on the emerging financial education and consumer protection needs of newly financially included and disadvantaged or at-risk segments of the population. It discusses financial consumer protection frameworks to more effectively target DFS and identifies financial education initiatives that address digital financial services. The report also highlights concrete examples of the use of digital tools to deliver financial education outcomes and enhance overall financial decision-making.

By increasing access to, and use of, innovative, low-cost financial tools and applications, digital financial services open up new opportunities for improving overall levels of financial inclusion. They also bring various new challenges for governments, financial service providers, and consumers. For consumers, difficulties in accessing digital financial products and services may result from their lack of familiarity with these new tools, and/or their low financial and digital literacy. This, along with the new features of the DFS market, may expose consumers to "newer" risks and threats (particularly when compared to traditional financial products), including notably the risk of fraud, misuse of personal financial data, digital profiling, cybercrime, etc. The report finds that enhanced, flexible and complementary consumer

⁴ The G20 High-level Principles for Digital Financial Inclusion were endorsed by G20 Leaders at their Summit in Hangzhou, China, on 4-5 September 2016. The G20 Communiqué states: "We encourage countries to consider these principles in devising their broader financial inclusion plans, particularly in the area of digital financial inclusion, and to take concrete actions to accelerate progress on all people's access to finance".

protection and financial education policy responses are still needed to address these demand-side challenges effectively, as well as to achieve increased financial awareness, financial inclusion and overall financial wellbeing for all. Innovative tools can be a key part of the solution to supporting and enhancing financial education policies for today's digital age.

Purpose and structure

This report identifies policy challenges and solutions for enhancing financial education frameworks, including relevant financial consumer protection aspects in the digital age, and addresses the use and potential of digital tools to achieve higher levels of financial wellbeing. More specifically, the report:

- presents global trends in the development of DFS and their implications (section 1);
- explores policy challenges and solutions for developing financial consumer protection frameworks to more effectively tackle DFS (section 2);
- illustrates the key role of financial education in addressing consumer level challenges, highlighting global financial and digital literacy needs, and providing an overview of financial education initiatives and programmes which seek to address DFS (section 3); and,
- showcases the use and potential of digital tools for achieving financial education outcomes around the world (section 4).

Resources and limitations

The report is based on an extensive literature review and draws on institutional responses to a stocktaking questionnaire on the “*implications of digital financial services for financial education and related financial consumer protection issues*” circulated to the OECD/INFE in 2015/16. A total of 38 institutions from 36 countries and economies in Africa, Asia, Europe and the Americas replied to the stocktaking survey.⁵ (See Annex 1 for a list of institutions).

This report is intended for public and private financial institutions, policymakers, financial education specialists, and regulatory and supervisory agencies. It recognises the work already undertaken by other international organisations on relevant policy questions related to digital finance, including work by the G20 and the GPFI; the International Financial Consumer Protection Organisation (FinCoNet); the G20/OECD Task Force on Financial Consumer Protection; the Alliance for Financial Inclusion (AFI); the World Bank; and the Consultative Group to Assist the Poor (CGAP).

The report provides a high-level overview of the key supply-side challenges to the development of DFS in countries, but does not seek to comprehensively assess the global penetration of digital finance or cover market, regulatory and supervisory issues in detail (e.g. it does not discuss cybercrime affecting private sector institutions). Highly sophisticated digital finance products such as virtual, digital currencies (e.g. bitcoins), are also not covered in this report. Similarly, crowdfunding and other schemes for making

⁵ Respondents to the OECD/INFE survey include: Angola; Australia; Austria; Bangladesh; Belarus; Belgium; Brazil; British Virgin Islands; China, People's Republic of; Colombia; Croatia; Czech Republic; Denmark; Estonia; Germany; Hong Kong, China; India; Indonesia (Financial Services Authority/OJK and Bank Indonesia sent a combined reply); Italy; Japan (Bank of Japan); Japan (Financial Services Agency); Korea; Latvia; Malaysia (Bank Negara Malaysia); Malaysia (Securities Commission); Netherlands; New Zealand; Peru; Philippines; Portugal; Romania; Slovak Republic; Slovenia; Spain; Switzerland; Thailand; Turkey; United States.

digital financial investments are not addressed comprehensively as they concern, at present, only a very small number of investors.

Process

At the 2nd OECD/INFE Technical Committee meeting held in Paris in November 2014, the Working Group on the Role of Financial Education in Financial Inclusion agreed to develop a new work stream on DFS and prepared a stocktaking questionnaire that was circulated among OECD/INFE members during 2015. The survey aimed to gather information on the use and modalities of digital finance, the challenges and opportunities created by DFS, the role of financial education (and related consumer protection aspects) with respect to DFS, and the use of digital tools to support financial education and literacy.

- A report outline on the “*implications of digital financial services for financial education and related consumer protection issues*” was welcomed at the 4th meeting of the INFE Technical Committee in Kuala Lumpur, Malaysia, and opened for comments by 2 November 2015. A draft report incorporating Working Group members’ comments was submitted at the 5th INFE Technical Committee meeting in Amsterdam, the Netherlands, for review, discussion and further feedback through the written process by 27 May 2016.
- At this same meeting, INFE members also approved the transmission of the “Highlights” from the report to the G20 Global Partnership for Financial Inclusion (GPFI) and the G20 Finance Ministers and Central Bank Governors by July 2016. A final version of the Highlights was published as a G20/OECD INFE document and mentioned in the G20 Leaders’ Communiqué’s Annex, China, on 5 September 2016.
- A draft report was revised in light of the discussions at the 6th meeting of the Technical Committee on 11 October 2016 in Auckland, New Zealand, where members also approved its transmission to the GPFI, the G20/OECD Task Force on Financial Consumer Protection, and the International Financial Consumer Protection Organisation (FinCoNet) for review and feedback.
- This report has been updated following a final round of comments received from INFE, GPFI, G20/OECD Task Force on Financial Consumer Protection and FinCoNet members through the written procedure by 10 February 2017 and subsequently approved by the OECD CMF and IPPC in March for circulation to the G20 Finance Ministers and Central Bank Governors, ahead of their meeting on 20-21 April 2017 in Washington D.C.
- Further work on financial literacy and digitalisation based on the findings from this report will be carried out by the new OECD/INFE Working Group on digitalisation and financial literacy in 2017/2019, possibly leading to the development of dedicated guidance.

1. Setting the scene – How digitalisation is transforming the financial world

Key messages

- An increasing variety of digital financial services are currently available and used globally for undertaking different types of financial operations, including basic cash in/out, payments, transfers, savings, investments, credit, insurance and pensions.
- Mobile banking, internet banking and mobile wallets are the most widely employed digital finance channels in nearly all the countries that participated in the survey. Banks and telecommunication companies are the biggest actors in this market.
- Technology is not only changing the financial system landscape but also the way in which individuals engage with it, thus confronting them with both new risks (fraud, digital profiling and exclusion from coverage) as well as presenting important opportunities (financial inclusion and education outcomes).

1.1. Definition

For the purpose of this report, Digital Financial Services (DFS) may include any financial operation using a technological innovation or delivered through digital means such as, *inter alia*, cash-in/cash-out transactions (*i.e.* basic money management facilitated by digital tools); transfers (*e.g.* remittances, bill payments, income receipts, government to person transfers, *etc.*); and, more advanced financial services (*e.g.* savings, insurance, credit, pensions, investment/trading platforms). Box 1 offers a practical and working definition⁶ of DFS which can encompass different types of digital financial mechanisms including electronic cards, point-of-sale (POS) devices, and other electronic devices used by branchless banking agents, as well as automated-teller-machines (ATMs) and i-teller solutions.⁷ Some of these digital channels have existed in developed countries for several decades and are intended to diversify and further facilitate use/access for existing customers, while others (*e.g.* mobile financial services) are relatively recent and more common and widespread in developing economies.

⁶ This working definition may be interpreted flexibly and is consistent with other international attempts to specify the nature of digital financial services, as well as with the definition of digital financial inclusion proposed by the Global Partnership for Financial Inclusion.

⁷ Interactive Teller technologies allow live tellers at the customer service centre to take remote control of an ATM at a branch (*i*-branches) to assist consumers over a two-way video screen with banking transactions typically completed by tellers at counters. See, for example, in Hong Kong, China: <https://www.ncr.com/news/newsroom/news-releases/financial/fubon-bank-first-to-transform-branch-banking-in-greater-china-with-ncr-video-teller-technology>.

Box 1. What is a Digital Financial Service?

Digital financial services (DFS) can be defined as financial operations using digital technology, including electronic money, mobile financial services, online financial services, i-teller and branchless banking, whether through bank or non-bank institutions. DFS can encompass various monetary transactions such as depositing, withdrawing, sending and receiving money, as well as other financial products and services including payment, credit, saving, pensions and insurance. DFS can also include non-transactional services, such as viewing personal financial information through digital devices.

1.2. Types of financial products delivered through digital means

A variety of financial services around the world are currently delivered through digital devices, such as:

- basic mobile phones (non-technologically enhanced) for carrying out simple mobile money operations, and that can be combined with other instruments such as prepaid cards;
- smartphones and tablets with more advanced mobile broadband functionalities (e.g. 3G and 4G) or Wi-Fi for mobile banking, mobile wallets and other applications; and,
- computers for using the Internet for e-banking, as well as other digital interfaces for a wide range of online financial operations (See Box 2 for some specific descriptions of DFS focusing on the banking sector).

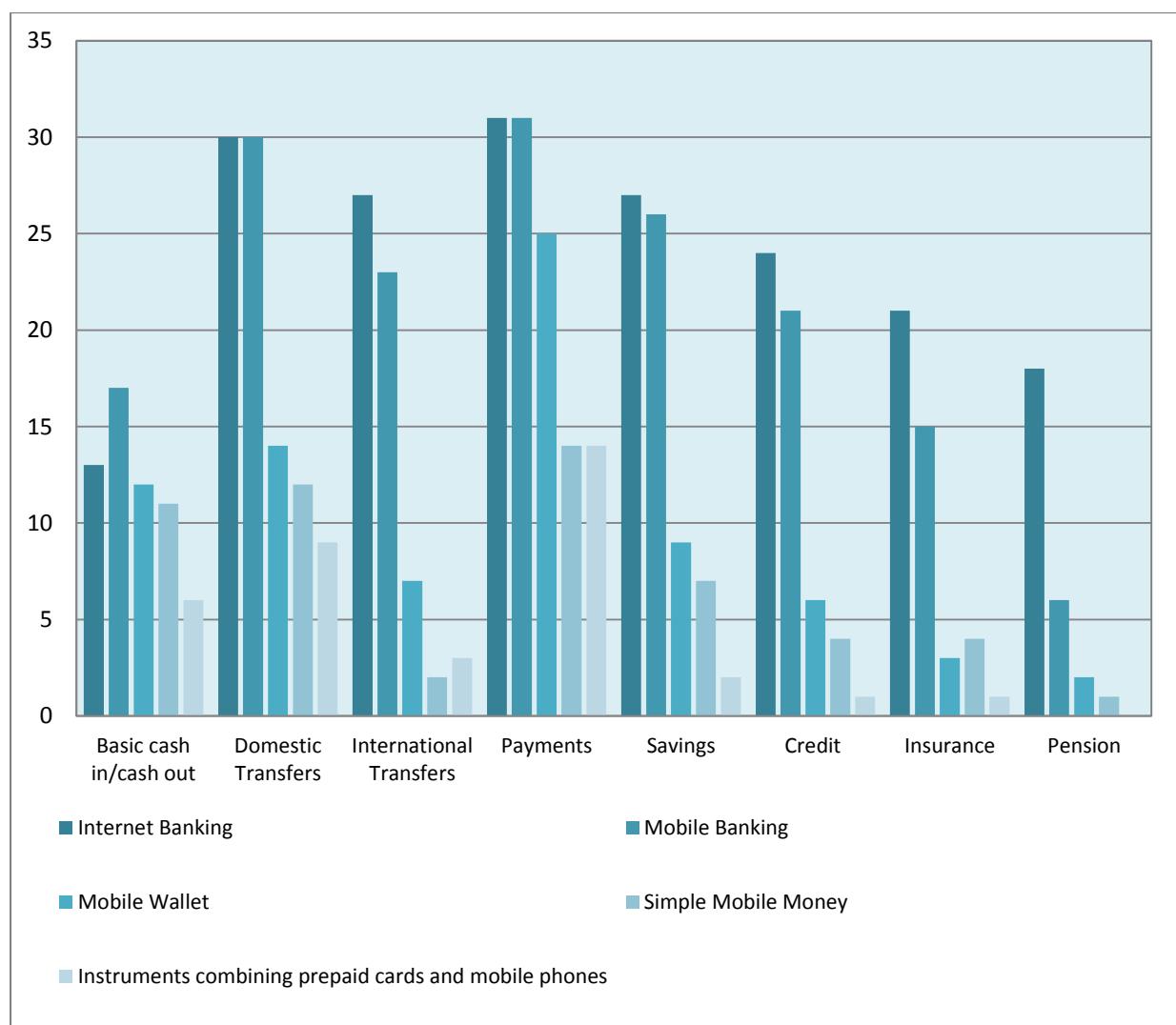
Box 2. Key DFS for payment transactions under review

1. **Mobile money** – is a transactional service using mobile network operators. Within the scope of this report, mobile money refers to making financial transactions via the basic functions of a mobile phone such as with MPESA in Kenya, Tanzania, South Africa and Afghanistan; Easypaisa in Pakistan; T-Cash in Haiti; Globe GCash in Philippines; EKO and Airtel Money in India; and Wizzit in South Africa.
2. **Instruments combining prepaid cards and mobile phones** – includes prepaid cards linking simple mobile phones with financial transactions, such as Prepaid Visa Debit Card of T-Mobile and Reload Mobile Money in South Africa.
3. **Mobile banking** – is the use of a smartphone application to access banking services and undertake financial transactions. This covers both transactional and non-transactional services, such as viewing financial information on a bank customer's mobile phone.
4. **Mobile wallet** – is a software application on a mobile handset that functions as a digital container for payment cards, tickets, loyalty cards, receipts, vouchers and other items that might be found in a conventional wallet.
5. **Internet banking (a.k.a. e-banking, online banking)** – is all banking operations conducted by the customer using the Internet.
6. **Digital payments** – includes electronic payment technologies that allow consumers to pay by tapping their smartphones onto a reader or in a single click such as Apple Pay, Samsung Pay and Android Pay.
7. Other innovations also include contactless smart cards with stored value (e.g. Nets FlashPay, EZlink), contactless cards linked to debit or credit accounts (e.g. Visa PayWave), or contactless payments linked to mobile wallets.

Mobile banking and internet banking are ubiquitous and the most widely employed digital channels for payments and domestic transfers in 31 (nearly all) countries participating in the OECD/INFE survey (Figure 1 below). In several countries, mobile and internet banking are also available for more complex operations such as savings, international transfers and credit. Mobile wallets are third in importance and are mainly used for payments in nearly all countries (25) that noted their availability. In 21 countries, insurance and pensions are provided through internet banking,⁸ whereas basic cash in/cash out transactions are carried out mainly via mobile banking and in fewer countries (Figure 1). Simple mobile money (i.e. mobile money through a basic mobile phone, not a smartphone) is available in less than 15 countries and economies, and used mostly for payments, cash in/cash out, and domestic transfers. Similarly, instruments combining prepaid cards and mobile phones are available only in a limited number of countries (roughly the same countries that use simple mobile money) and are used mostly for payments.

Figure 1. The availability of digital financial services

Number of countries and economies indicating that a financial service is delivered through a given digital channel



Source: OECD/INFE stocktaking survey, 2015/16.

⁸ Banking here encompasses services provided by a bank or other financial institutions.

Eight survey participants emphasised using *all* five digital means for delivering at least one financial service such as payments (Bangladesh, Brazil, India, Japan, Latvia, Peru, Philippines, Turkey). Four respondents noted using all five digital channels for domestic transfers (Bangladesh, Indonesia, Peru, Philippines), while only one reported using them all for international transfers (Philippines). Bangladesh underlined using all five digital technologies for providing both savings and credit. Some countries also highlighted “other” financial products and/or digital delivery instruments in their responses, including roboadvice for pensions and investments (Australia); SMS-banking and TV-banking (Belarus); investment funds (Croatia); cash machines for e-payments (Latvia); online mortgages (Switzerland); crowdfunding platforms (Spain); and, sending cash via ATMs which can be withdrawn at some branches of 7-Eleven convenience stores, amongst others, (Thailand).⁹

1.3. Actors and their roles in the delivery of DFS

Different stakeholders are engaged in the provision of digital financial services and products, playing multiple and diverse roles. Banks are the biggest players involved in DFS delivery in all of the 36 economies covered in the INFE survey, followed closely by telecommunication companies, which are also very active in 32 countries (Figure 2). Banking has been one of the most impacted industries by the advent of mobile technologies, and there is substantial evidence on how banks are trying to become digital leaders, innovate and strengthen their digital strategies to cope with this transformation (A.T. Kearney, 2014; BBA, 2015; Deutsche Bank Research, 2015). Telecommunication companies have entered the digital finance field mainly as mobile network operators (MNOs) ensuring, for instance, the delivery of mobile financial services – globally, 60% of all mobile money services are operationally run by MNOs (GSMA, 2015a).

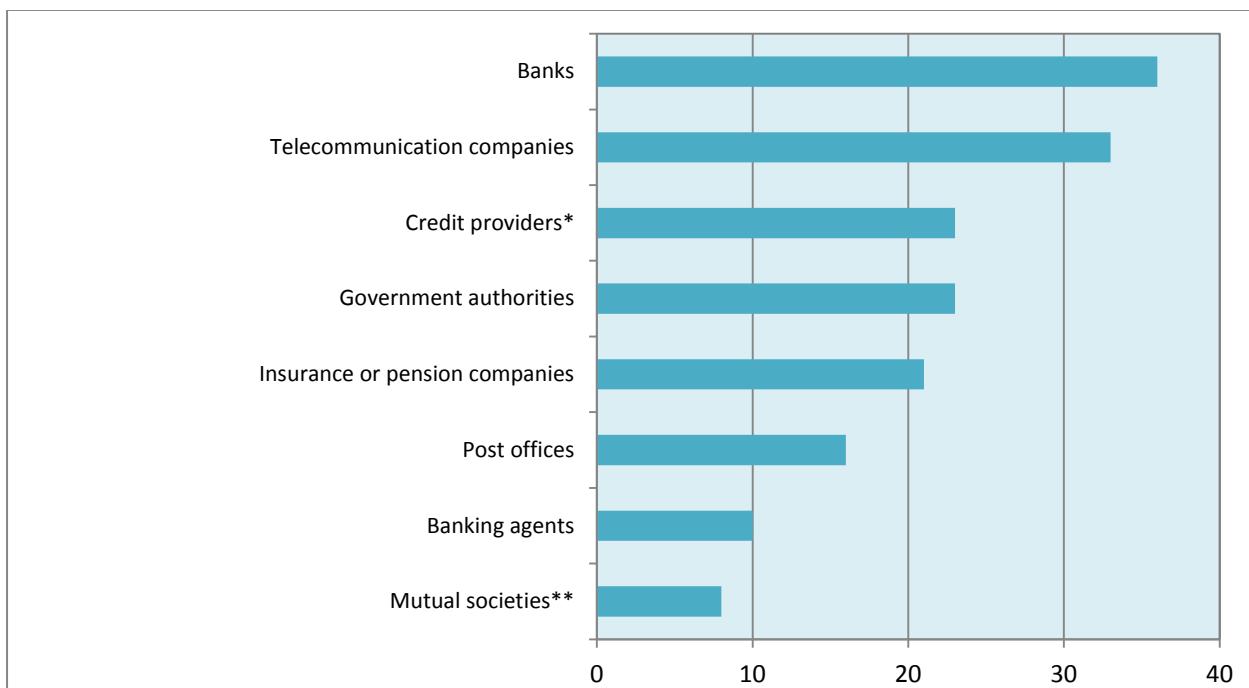
E-money in the Philippines

The most widely used DFS in the country is electronic money (or e-money) Smart money and Gcash. E-money is a monetary value that is digitally stored in a designated electronic account and may be remotely accessed through an instrument or device such as a mobile phone or prepaid card. The Central Bank (BSP) data shows that more and more Filipinos are embracing the use of e-money transactions over the use of cash in everyday purchases. E-money transactions rose by nearly a fifth in 2013, faster than the year before. The BSP believes that the trend will continue and make the economy more efficient and the movement of cash more transparent.

⁹ These “other” products and instruments are mentioned here only for reference, as most of them fall beyond the scope of this study and will therefore not be considered in further detail.

Figure 2. Actors delivering digital financial services

Number of countries or economies indicating that a given actor is involved



* including credit card companies, mortgage companies and micro-credit institutions

** credit unions, building societies, etc.

Source: OECD/INFE stocktaking survey, 2015/16.

Several countries (23) also underscored the involvement of credit providers and government authorities in DFS delivery and, to a slightly lesser extent, that of insurance or pension companies. Post offices, banking agents and mutual societies are ensuring DFS provision in less than half of the surveyed countries (Figure 2). Other stakeholders with a role in delivering DFS include, *inter alia*, FinTech (financial technology) start-up companies; e-money institutions; investment banks and stockbroking companies; brokerage, trading and security houses, mutual fund providers, and remittance agents.

In terms of the concrete roles mentioned by survey respondents, banks are mainly engaged in the provision of mobile and internet banking, ensuring a wide range of digital transactions such as payments, deposits, savings, transfers, etc. Telecommunication companies are involved in providing e-money services and mobile wallets, and play mostly a mediating role working, for instance, with banks and insurance companies to provide digital solutions for the use of mobile, internet banking and other services. In almost two-thirds of countries, government authorities are active in making/receiving transfers through digital channels (e.g. wages, pensions, welfare benefits, revenue collection, etc.), and play a major role in ensuring market regulation and supervision of DFS providers, as well as in fostering overall financial system integrity and consumer protection. Credit providers, post offices and insurance or pension companies are providing financial services via internet and mobile applications, while banking agents are mainly processing cash in/cash out transactions and domestic transfers.

1.4. Implications of digital technology development

Advancements in digital technology are driving most of the transformations in the global economy and society as a whole (OECD, 2015). Economic and social interactions are increasingly being modified

by the speed and pace at which Information and Communication Technologies (ICTs) give rise to new actors, modalities, and market structures that are constantly evolving as countries ‘go digital’. There is growing evidence of the major impact that innovation is having on the entire financial system landscape¹⁰ by driving further technological progress, increased competition, and substantial changes in the behaviours of both finance service providers and consumers alike.¹¹ There is a global trend in the uptake and adoption of new digital technologies – particularly mobile – by consumers, which is expected to grow in the coming years, and will act as a catalyst for more adaptation and industry development. Today, the world has:

- 6.7 billion mobile phone users, 2.7 billion internet users and 1.7 billion social media users (Deloitte, 2014), many of whom are undertaking a myriad of financial transactions via different digital platforms and devices;
- 4.7 billion unique mobile subscribers using 7.6 billion mobile connections around the world.¹² This corresponds to 63% of the world’s population having at least one mobile subscription, and to a 99% penetration rate when measured by the number of global mobile connections;
- 411 million mobile money accounts globally which are delivered via 271 mobile money services in 93 countries around the world (GSMA, 2016a).

By 2020, it is estimated that global mobile connections will reach 8.9 billion (or a penetration rate of 114%) and that the number of smartphones will more than double to 5.8 billion (GSMA, 2016a). The extent and reach of mobile networks is such that they have become the predominant infrastructure in emerging markets, from urban to rural areas, where more people are now covered by mobile networks than have access to energy (GSMA, 2013), water and bank accounts (see also Box 3). Even in more developed economies, mobile technologies are increasingly becoming a viable alternative for unbanked consumers looking to complete transactions and manage their funds. For example, one study found that with a third of nearly 10 million unbanked adults in the United States owning a smartphone today,¹³ mobile payment technologies could provide these individuals with an accessible, more convenient and potentially cheaper channel to financial services.

¹⁰ There is extensive research documenting the ways in which ‘digitalisation’ or ‘digital disruption’ is reshaping the structure, provision and consumption of financial services, products and sectors across the world (see, for instance, Parada and Bull [2014]; BBA [2015]). Given that the extent of these changes is being felt throughout the financial services ecosystem (e.g. payments, market provisioning, investment management, insurance, deposits and lending, capital raising, etc.), most of this evidence falls well beyond the scope of this report.

¹¹ Banking Technology (17 November 2015), [Digitising the banks](#).

¹² GSMA (2016c), [Infographic: Unique subscribers: Understanding the true reach of mobile](#). GSMA measures mobile penetration rates based mainly on the number of ‘unique mobile subscribers’ which is a term that refers to a single individual that has subscribed to a mobile service and that person can hold multiple mobile connections (i.e. SIM cards).

¹³ Credit Union Times (26 January 2016), [Mobile payments bring consumer fears](#). See also: FED (2015), [Consumers and Mobile Financial Services 2015](#); CFPB (2015), [Mobile financial services. A summary of comments from the public on opportunities, challenges, and risks for the underserved](#); and, Christopher, C. (2016), [Mobile Banking: The Answer for the Unbanked in America](#).

Box 3 The reach and spread of digital financial services

The following facts and figures reveal the geographical reach of DFS:

- Over 60% of developing economies (GSMA, 2015a) are involved in the delivery of financial products through mobile devices, ranging from the provision of mobile money services to mobile insurance, mobile savings and even mobile credit to customers who previously had no access to any kind of formal financial services.
- 60 markets around the world have two or more mobile money services, and 35 markets have three or more, as of December 2015 (GSMA, 2016b).
- Mobile money is available in 64% of the world's developing countries (86 of 135), particularly in six out of seven markets where less than 20% of people have an account at a financial institution (GSMA, 2016b).
- Among INFE survey respondents, the provision of at least two or more mobile money services is available in Brazil, Colombia, India, Indonesia, Malaysia, Philippines and Thailand.

Distributed ledger technologies are also increasingly being used to document and enable the movement and exchange of financial assets digitally, securely and more transparently (Finextra Research, 2016). Additionally, distributed ledgers are used to perform smart contracts for loans, inheritances, escrows, and securities (BBVA Research, 2015). However, it is important to note that application areas for this technology are countless and not limited to the financial sector. For example, distributed ledgers technologies are also currently employed to deliver different government services in several countries including in the United States, Estonia, Georgia, Ghana, Sweden and the United Kingdom.¹⁴

1.4.1. Impact of the digital revolution on financial inclusion

DFS open up new opportunities for improving overall levels of financial inclusion by providing a first entry point into the formal financial system for the unbanked, poor, and financially excluded populations. They also facilitate actual usage of financial services by those who have already embraced the arrival of the digital age.

The potential of digital finance as a powerful tool for broadening and deepening access to new types of financial products for all has been recognised and enshrined by the international community, including through the recent endorsement of the G20 High-level Principles for Digital Financial Inclusion. By lowering costs, overcoming physical infrastructure barriers, extending reach, and offering more convenient and faster transactions, the digitalisation of financial services is also seen as a key contributing factor to the economic empowerment of women, farmers, and to overall inclusive and sustainable growth (World Bank Development Research Group, 2014). But despite progress in lifting millions out of financial exclusion, some major global gaps persist (Box 4).

¹⁴ For more information on this, please refer to: www.coindesk.com/blockchain-perfect-government-services-heres-blueprint/. See also: UK Government Office for Science (2016), [Distributed Ledger Technology: Beyond Block Chain](#).

Box 4. Stark disparities on levels of financial inclusion persist

Today, most nations possess both adequate levels of infrastructural capacity and sufficiently developed financial systems to enable the growth of digital financial services. Despite the rapid changes and financial opportunities in the domain of DFS, two billion people around the world still have no access to an account.¹ While a large share of the population enjoys adequate access to financial institution or mobile money accounts, some marked regional, income, geographical and gender differences persist. For example:

- Account penetration rates (particularly at a financial institution) stood at low levels in the Middle East (14%), Sub-Saharan Africa (below 34%) and South Asia (below 46%) in 2014.
- More than half of adults in the poorest 40% of households in developing countries still do not have an account today.
- The gender gap is not narrowing significantly—globally only 58% of women have an account compared to 65% of men.

¹ The 2014 Global Findex database defines account ownership as having an account either at a financial institution or through a mobile money provider (the definition of a mobile money account here is limited to services that can be used without an account at a financial institution). Globally, nearly all adults who reported owning an account in 2014 said that they have an account at a financial institution: 60% of adults reported having a financial institution account only, 1% having both a financial institution account and a mobile money account, and 1% having a mobile account only [See: Demirguc-Kunt et al., 2015].

Source: All figures are extracted from Demirguc-Kunt et al., 2015.

1.4.2. Technology is also affecting consumer behaviour

In countries with more developed economic systems, technological means are replacing use of physical money, and people are widely buying and selling goods and services over the Internet and through mobile platforms, or are actively involved in performing different financial transactions via internet and mobile banking. An international survey in 15 countries highlights the increasing number and diversity of payment methods now available to customers, noting that half of Europe's population reported using physical cash less than 12 months ago, with Turkish and Polish citizens giving up physical money at the fastest pace (ING, 2015). In addition, 58% of European and American consumers have shopped on a mobile device in the last year, while 41% of European consumers, on average, declared having already used mobile banking for financial transactions (ING, 2015). The impact of digitalisation on consumer behaviour will be more thoroughly addressed in section 3 of this report.

At the same time, consumer behaviour and demands may also influence providers, particularly by pushing the industry (incumbents and FinTechs) to meet clients' emerging needs through further innovation, transformation and the creation of new tools.

1.5. Supply-side challenges

Today, new players such as FinTechs, are delivering digital finance services more quickly and efficiently, attracting an increasing number of customers, and challenging traditional business conduct in novel ways (Kantox, 2014). Not only are there increased numbers of new digital finance players, but they are also taking over financial markets typically run by more traditional actors. For example, according to TransferWise, almost every financial service that is offered by a bank is now also offered – or soon will be

– by a financial technology company.¹⁵ Such diversification is creating some key supply and demand side barriers to the development of DFS around the world, as pointed out by INFE survey respondents in Box 5.

Box 5. Barriers to the development of DFS cited by most respondents

Supply-side challenges

1. Lack of trust in digital systems and transactions, security and privacy concerns such as fear of fraud (Bangladesh, Colombia, New Zealand, Portugal, Spain, Switzerland)
2. Lack of adequate digital infrastructure – e.g. low digital penetration, lack of POS terminals, limited agents' distribution outlets, network issues, reliability – (Bangladesh, Indonesia, New Zealand, Peru, Philippines)
3. High costs of digital services by providers (Colombia, New Zealand)
4. Interoperability issues (Colombia, Philippines)
5. Absence of legislation and regulation on DFS (Belarus, British Virgin Islands)
6. Product design, complexity and suitability (Colombia, Indonesia)

Demand-side challenges

1. Low levels of awareness, knowledge and education about DFS (Bangladesh, India, Indonesia, Philippines, Portugal)
2. Low levels of financial education and financial literacy (Bangladesh, Colombia, Peru, Spain)
3. Lack of digital skills and knowledge (Indonesia, Spain, Turkey)

Two key supply-side challenges are discussed below because of their strong implications for both providers and consumers of digital financial services.

1.5.1. Enhancing regulation, supervision and market conduct while ensuring an enabling framework

A total of 30 institutions responded to this part of the INFE survey, and a large majority indicated that regulatory aspects (24), monitoring/surveillance/supervisory issues (22), and competition/market conduct (20) represent the most important policy challenges or concerns in relation to the provision of DFS in their countries (Figure 3).¹⁶ This is not surprising given the importance of regulation in creating an open and level playing field for digital finance providers, ensuring effective market conduct and competition, and establishing adequate rules of the game for bank and non-bank agents, mobile network operators and other relevant actors, equally and fairly. Regulation needs to be flexible enough to accommodate rapid changes in markets, technologies and business models, while ensuring sufficient regulatory confidence for companies to take risks and spearhead innovation. In addition, regulation needs to be implemented by institutions with the jurisdiction and expertise to consider all the alternatives, and should be designed to

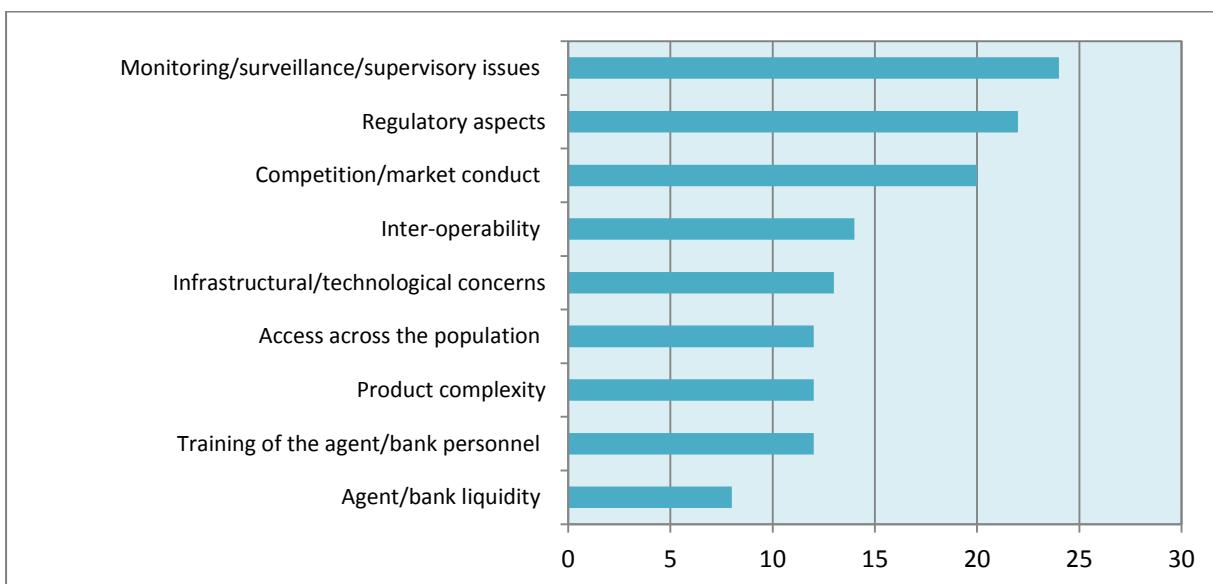
¹⁵ TransferWise is a money transfer platform and FinTech company based in the UK. See TransferWise (2015), [The Future of Finance](#).

¹⁶ It is important to emphasise the inter-related nature of regulation, supervision and market conduct which have been outlined here separately but only for the purpose of the questionnaire and to facilitate analysis.

protect consumers from potential harm associated with a particular service, regardless of the type of firm or technology used to provide it (GSMA, 2016b).

Figure 3. Supply-side challenges to the development of digital financial services¹⁷

Number of institutions indicating that a given aspect is a policy concern or priority



Source: OECD/INFE stocktaking survey, 2015/16.

There is increased recognition that poor regulation may distort digital markets, harming competition and trust, slowing innovation, and ultimately depriving consumers of the benefits of technological progress. For example, GSMA research finds that an increasing number of regulators across all regions have begun to acknowledge the major role that non-bank mobile money providers can play in fostering financial inclusion, and are establishing balanced and proportionate regulatory frameworks to better enable the provision of mobile money services, with new regulations having been issued in Colombia, India, Kenya and Liberia in 2014 only (GSMA, 2015a). Australia, Austria, Bangladesh, British Virgin Islands, Colombia, India, Indonesia, Malaysia and Thailand reported that at least seven out of the nine proposed supply-side challenges in Figure 3 above were key priority issues or concerns in their economies. For the priority areas related to monitoring/surveillance/supervisory issues, regulatory aspects, and competition and market conduct, survey respondents put forward proposals or solutions as highlighted in Table 1.

¹⁷ Please note that only regulation and product complexity are described briefly in this section of the report, particularly in light of their importance as core digital finance market components, but also because they both play an essential role in enabling effective consumer protection and financial education in a digital context. For example, if financial consumer protection regulation is weak and product design/complexity too high, consumers may be left unshielded, confused and overexposed to new digital market risks.

Table 1. Improving regulation, supervision and market conduct

Solution areas, priorities and opportunities for further work	Countries or economies explicitly supporting
Ensuring clearer/better regulatory and supervisory roles and guidelines is important for effectively overseeing emerging DFS.	Australia, Estonia, India, Indonesia, Malaysia, Portugal, Thailand
Updating regulation, policies and guidelines to keep up with the pace of change of technological advancements (e.g. cyber security threats).	Australia, Hong Kong, China, Indonesia, Philippines, Portugal, Thailand
Fostering innovation through effective competition/market conduct without compromising security/rules . Competition can boost efficiency while increasing consumer choice.	Australia, India, Malaysia, Philippines, Slovak Republic, Thailand
Ensuring liability for any losses arising from a digital transaction is key.	Australia, Estonia, India, Indonesia, Malaysia, Portugal, Thailand
Striking the right balance between openness of the market (to facilitate entry of new participants) and financial stability/efficiency requirements (appropriate access) is necessary for success.	Australia, India, Malaysia, Philippines, Slovak Republic, Thailand

Source: OECD/INFE stocktaking survey, 2015/16.

1.5.2. Achieving adequate digital design while ensuring low product complexity

Another important supply-side challenge with high relevance for consumers relates to the proliferation of highly technology-enhanced or advanced digital devices with often difficult-to-understand designs or customer-unfriendly interfaces. In effect, if digital products are too complex for consumers to use, then the technological possibilities offered by such products' advanced functionalities may be in vain or remain largely unexploited.

Technology-enabled products such as DFS need to be designed from an ease-of-transaction perspective, and tailored as much as possible to the needs of different users. Complex and confusing menus and user interfaces make it difficult for consumers to operate DFS and can expose them to risks such as mis-selling and the purchase of unsuitable products. Product complexity was emphasised as a key policy challenge or concern by 12 countries participating in the INFE survey. Austria and New Zealand underscored that digital finance product complexity is rather high, and that low levels of financial literacy may have an impact on the quality of people's decision-making over products/services. Colombia explained the complexity of DAVIPLATA (a mobile wallet used for electronic deposits) given that it works differently on each device (e.g. smartphones, basic phones, tablets). Indonesia underscored that currently each DFS provider in the country has different mechanisms to perform transactions, thus adding to the complexity of DFS products. Germany, India and Indonesia noted that addressing product complexity issues will require simplified standards to make DFS more user-friendly. These countries also called for DFS providers to ensure further simplicity in product design in order to increase DFS uptake and use, while noting that consumers need to be properly informed of product complexity in advance or before purchase (see also parts 2 and 3 of report).

Several INFE survey respondents also identified some key policy measures and solutions to address infrastructural/technological/access concerns, as well as agent/bank liquidity, and personnel training issues in Table 2.

Table 2. Achieving more effective DFS provision

Solutions and priority areas for further action	Countries or economies explicitly supporting
Establishing common standards to offer greater efficiency, convenience and accessibility to DFS. Collaboration and co-operation among all relevant stakeholders will be the key to this.	Brazil, India, Malaysia, Peru, Philippines, Thailand
Ensuring appropriate physical and technological infrastructure is critical to fostering DFS growth.	Australia, Austria, Colombia, India, Malaysia, Peru, Portugal, Switzerland, Thailand
Promoting access across the population and mass adoption of DFS , notably by allowing non-financial institutions to participate.	India, Indonesia, Malaysia, Philippines, Thailand
Enhancing the security of electronic data systems is a key priority to furthering the development of DFS.	British Virgin Islands; Malaysia; Switzerland
Supporting the development and training of bank/agent personnel requires increased co-ordination and collaboration with different stakeholders; formal training is essential for agents to eliminate errors and promote trust in DFS.	Colombia, India, Indonesia, New Zealand
Introducing a minimum required capital fund to ensure agent/bank liquidity ; there is also need for stringent monitoring and evaluation of DFS providers' liquidity management framework specifically for e-money transactions.	Malaysia, Philippines, Thailand

Source: OECD/INFE stocktaking survey, 2015/16.

2. Ensuring financial consumer protection in the digital age

Key messages

- Consumers around the world are facing diverse and multiple financial consumer protection risks as they increasingly access and use DFS.
- Nearly three quarters of survey respondents underline that disclosure requirements and fraud/mis-selling represent the most important policy concerns or priorities in their jurisdictions. Access to complaint handling mechanisms, data privacy and security, and fund protection mechanisms were also mentioned as relevant issues.
- Financial consumer protection risks and challenges can be mitigated in different ways depending on national circumstances. Although most countries lack a proper financial consumer protection framework that addresses DFS challenges.
- Going forward, it will be critical to establish more responsible digital financial practices to protect consumers, as outlined in Principle 5 of the G20 High-Level Principles for Digital Financial Inclusion. The G20/OECD Task Force on Financial Consumer Protection and the International Financial Consumer Protection Organisation (FinCoNet), among other international actors, have an important role to play in this regard.

Alongside prudential regulation, both financial consumer protection and financial education are critical complementary elements in ensuring an enabling framework for digital finance. Notably, as with all forms of financial innovations, technology and digital financial services also bring about various new challenges for consumers around the world. This section of the report builds on the results from the INFE survey and existing research on how to start addressing the risks and challenges to effective financial consumer protection in a digital context (Box 6). In doing so, it will focus on the most pressing financial consumer protection issues which are also relevant from a financial education perspective.¹⁸

Financial consumer protection has gained considerable traction as a key international policy priority in recent years and has been high on the global agenda, particularly since the 2008 world financial crisis. This led notably to the endorsement of the High-level Principles on Financial Consumer Protection by G20 Leaders in 2011. The Principles highlight the need for dedicated policy action to reinforce and integrate financial consumer protection with other financial inclusion and financial education policies in order to contribute to overall financial stability.

More broadly, and in practical terms today, consumer protection in financial services entails empowering consumers to make informed financial decisions, exercise their rights and meet their obligations, and providing them with access to adequate, timely and efficient redress for their complaints. It also implies establishing a comprehensive approach to consumer and data protection that focuses on issues of specific relevance to digital financial services, as per Principle 5 of the G20 High-Level Principles for Digital Financial Inclusion.

¹⁸ Further work and more detailed guidance on financial consumer protection for digital finance is expected to be developed by the G20/OECD Task Force on Financial Consumer Protection and the International Financial Consumer Protection Organisation (FinCoNet).

Box 6. International efforts on mitigating consumer risks in a digital age

The G20 Global Partnership for Financial Inclusion (GPFI) identified digital finance as a top priority in 2016, including work on the challenges to global standard-setting bodies (GPFI, 2016) and through the inclusion of a financial consumer protection pillar as part of the new G20 High-Level Principles for Digital Financial Inclusion. Indeed, regulatory and supervisory experience in addressing DFS consumer risks (beyond safeguarding customer funds) is emerging and sharpening its focus. For example, the Alliance for Financial Inclusion (AFI) has produced key guidelines for supervisors on consumer protection in mobile financial services (AFI, 2014). The CGAP has conducted research on digital finance risks from the consumer perspective, with a particular focus on the experiences and perceptions of low-income users.¹ The International Financial Consumer Protection Organisation (FinCoNet), which convenes supervisory authorities charged with financial consumer protection supervision, is also conducting work on the risks to consumers, including security risks, associated with the increased use of online and mobile payments by consumers (FinCoNet, 2016). The impact of digitalisation will also be an important part of the future work of the G20/OECD Task Force on Financial Consumer Protection.

¹ CGAP (2015), Doing Digital Finance Right: The Case for Stronger Mitigation of Consumer Risks. See also on risk mitigation in health and agriculture through financial inclusion: CGAP (2016), Achieving the Sustainable Development Goals. The Role of Financial Inclusion

2.1. Financial consumer protection challenges and solutions in digital finance

DFS may present and compound several challenges to effective financial consumer protection, including issues of transparency, disclosure and communication of terms, conditions, fees, and customer rights often via a small screen; fair treatment of customers and clear provider liability for unauthorised digital transactions and for the conduct of agents; privacy and security of customer transactional and/or personal data; poor recourse and dispute resolution mechanisms; and protection against misuse, fraud and/or seizure of consumers' assets.

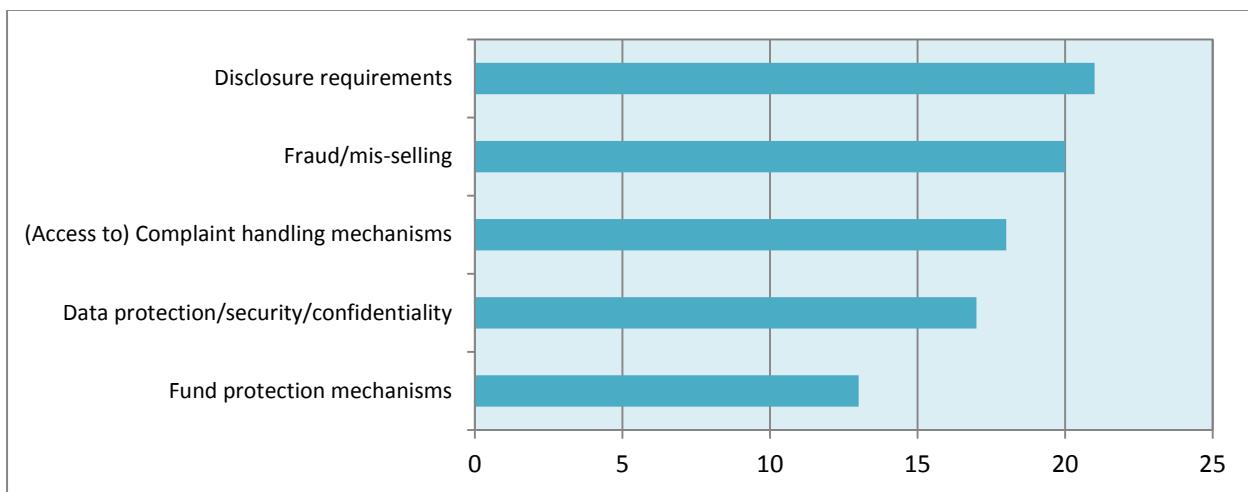
Consumers can also be exposed to “newer” threats including, notably, the risk of digital fraud and abuses, misuse of personal financial data, lack of transparency and inadequate information on products and related redress mechanisms, data privacy and security vulnerabilities, cybercrime, etc. Additional potential consumer risks can derive from the digitally delivered product itself (e.g. product unsuitable for the customer, or over-indebtedness in the case of digitally delivered credit) or from the way the product is delivered (e.g. mis-selling by agents with limited or no knowledge about the product).¹⁹ Excessive exposure to these risks can undermine consumers’ confidence and trust in the financial system and technological innovation, thus compromising the potential of DFS as drivers of financial inclusion.

Consumers are facing diverse and multiple financial consumer protection challenges as they increasingly access and use DFS, with nearly three quarters of survey respondents underlining that disclosure requirements and fraud/mis-selling represent the most important policy concerns or priorities in their jurisdictions (Figure 4). The access to complaint handling mechanisms and the protection/security/confidentiality of data were also highlighted as major concerns or issues in a number of countries. Less than half of survey participants mentioned fund protection mechanisms as a policy constraint or challenge.

¹⁹ GPFI (2016), *Global Standard-Setting Bodies and Financial Inclusion: The Evolving Landscape*.

Figure 4. Policy priorities for financial consumer protection

Number of countries and economies indicating that a given aspect is a policy concern or priority



Source: OECD/INFE stocktaking survey, 2015/16.

Several economies from a wide geographical spread (Australia, Austria, Bangladesh, Brazil, British Virgin Islands, Germany, Hong Kong, China, Indonesia, Italy, Latvia, Philippines, Portugal, Thailand, Turkey) reported that at least four out of the five financial consumer protection aspects listed in Figure 4 were key policy priorities or concerns in their jurisdictions. While the specific nature of the risks/vulnerabilities and their incidence, consequences, and impact on consumer behaviour may vary from one DFS market to another, overall consumer research evidence shows that the risks consumers perceive and experience with DFS can definitely harm their trust, adoption, and use of these services (CGAP, 2015).

Against this backdrop, only areas of concern with direct financial education implications and linkages (i.e. disclosure, fraud/mis-selling and access to complaint handling mechanisms) are discussed in the sections below. Further work on the needs and policy solutions related to financial consumer protection in a digital environment is expected to be undertaken by other bodies focusing on financial consumer protection aspects such as the G20/OECD Task Force on Financial Consumer Protection and FinCoNet.

2.1.1. Disclosure requirements

Twenty-one countries participating in the INFE survey highlighted disclosure issues as the most pressing financial consumer protection challenge in their jurisdictions. More specifically, it was noted that disclosing adequate and relevant information through digital devices may be problematic (e.g. for reasons of limited display space on small screens). Another major barrier may relate to consumers' generalised reluctance to take the time to read and understand disclosure information. In Australia, the current disclosure regime for financial services is not technology-neutral and favours printed disclosure formats and posted/personal delivery over digital formats and digital delivery by making printed and posted disclosures the default option (ASIC, 2015). Overall lack of transparency leaves consumers without a full understanding of the prices, terms, and conditions of the financial services in use, and also makes them more vulnerable to other risks, including agent misconduct, such as charging unauthorised fees. Often, the terms for more complex DFS, such as credit or insurance, are poorly disclosed, as is the case in Rwanda where only half of borrowers report knowing their loan terms or interest rates (CGAP, 2015).

There is ample room for policymakers and industry actors to address and reduce consumer vulnerability, even in developed markets (EC, 2016),²⁰ particularly by stepping up efforts to ensure that DFS information is presented in an accessible and salient manner, devising methods and tools that can facilitate comparison among digital finance products, as well as by increasing overall financial knowledge and literacy (see also section 3 of this report). More specifically, complex or misleading information, along with confusing digital interfaces, makes it difficult for consumers to operate DFS and exposes them to new risks such as reliance on others (agents, friends, etc.) to accomplish transactions. For example, consumers participating in a CGAP study in several countries reported having major difficulties understanding mobile money menus that are in English or a formal style of the local language, thus creating a challenge for consumers who are illiterate or only understand colloquial language (CGAP, 2015). Similarly, the study also notes several risks stemming from the inadequate handling of sensitive information and passwords for mobile money accounts, with consumers often being unable to create and memorise PINs, choosing easy number combinations, writing them down, and even sharing them with relatives or agents. Assisted transactions (i.e. with help from others) are particularly common in rural areas where literacy levels are low or with elderly customers. For example, in East Africa, registered users reported having agents walk them through every step of an entire mobile money transaction or letting them conduct it fully on their behalf (CGAP, 2015).

Accurate and well-targeted information can assist DFS user decision-making, enabling consumers to better compare all available digital finance products and services, while safeguarding them from deceptive commercial practices. Also, when disclosure statements are consistent from one mobile provider to another, the consumer is able to compare and choose the best option that fits their needs. Some survey respondents suggested legal measures to require DFS actors to provide more detailed information about all products and services. Other potential solutions for improving disclosure requirements and overall financial consumer protection are presented in Table 3.

FOCUS: Philippines – Enhancing financial consumer protection for DFS

The Central Bank of the Philippines (BSP) requires information disclosure for e-services. Institutions and DFS providers (banks, non-banks and e-money issuers) must comply with all legal requirements relating to e-services, including the responsibility to protect customer data and to provide clients with appropriate recourse and redress mechanisms. DFS providers need to ensure that consumers have reasonable understanding of the products and services in order to empower them to make informed financial decisions. Consumers have the right to access information that accurately represents the nature and structure of the product or service, its terms and conditions, as well as its fundamental benefits and risks.

²⁰ European Commission (2016), Consumer vulnerability across key markets in the European Union, final report.

Table 3. Ways to improve financial consumer protection in a digital context

Policy ideas and solutions for disclosure and transparency	Country/Economy
Ensuring that authorised institutions provide consumers with key information on the fundamental benefits, risks and terms of a specific DFS , including applicable fees, charges and commissions. All promotional materials should be fair, reasonable, and not misleading.	Hong Kong, China, Indonesia
Promoting transparency and facilitating comparison on the various e-payment services offered needs to be a policy priority. Appropriate and accurate standards for disclosure of information , fees and charges must be ensured.	Malaysia
Fostering innovative/digital disclosure (e.g. interactive web-based disclosures, apps, videos, games and audio presentations). ¹	Australia
Policy ideas and solutions for addressing fraud and mis-selling	Country/Economy
Ensuring that digital finance institutions regularly provide financial knowledge, news, and information about digital fraud to their customers in order to enhance consumer self-protection mechanisms and maintain trust in DFS security.	Thailand
Preventing digital fraud through the implementation of periodical IT controls on electronic products and services such as ATMs, online and mobile financial services, mobile and e-payment services, point of sale (POS) devices, and electronic payment cards.	Philippines
Requiring DFS providers to have in place robust internal controls to prevent or detect irregularities and to be solely responsible for the robustness of their scheme and bear the full loss of the value stored in a user account where there is no fault on the part of the user.	Hong Kong, China
Strengthening regulation to hold financial institutions accountable for mis-selling particularly in the insurance sector. ²	India
Policy ideas and solutions for client fund protection	Country/Economy
Requiring licensed issuers of stored value facilities to have adequate float account protection mechanisms to ensure that there will always be sufficient funds for the redemption of the stored value that remains in the facility.	Hong Kong, China
Drafting new/adequate regulation on the separation of the sums advanced by users for e-money services (i.e. float account) from the working capital or investment accounts of e-money service providers. This regulation should aim to protect customers' financial assets in case of insolvency by e-money providers.	Thailand

¹ ASIC (2015), Regulation impact assessment – Facilitating digital financial services disclosures.

² <http://timesofindia.indiatimes.com/business/india-business/Banks-to-face-action-for-mis-selling-insurance-policies/articleshow/49189786.cms>. See also: Insurance Regulatory and Development Authority of India Journal, (May 2015), Mis-selling in insurance industry – Things to know and learn.

Source: OECD/INFE stocktaking survey, 2015/16.

2.1.2. Fraud and mis-selling

The G20 principles on financial consumer protection and Principle 5 of the new High-Level Principles for Digital Financial Inclusion strongly emphasise the need to appropriately safeguard consumers' assets against financial fraud, misappropriation or other misuses. Yet, new forms of fraud are emerging with technological advancement, resulting in significant monetary losses for consumers, negative reputation risk for providers, and general lower confidence in DFS. For example, digital fraud today can take several complex forms, including:

- SIM swaps (e.g. a fraudster moves a customer's phone number to a different SIM card, changes or learns the PIN associated with that user's mobile money account, and withdraws the balance);
- social engineering scams such as fraudulent emails, SMS messages or calls (e.g. phishing) requesting a customer's PIN or other sensitive financial information;
- counterfeit ATMs that read and copy card numbers; and,
- unauthorised account access by internal or external fraudsters through hacking (CGAP, 2015).

The misrepresentation and reckless sale of unsuitable products to customers' needs may also be exacerbated through digital channels, as consumers rush through or skip the fine print in online terms and conditions. Furthermore, the involvement of agent networks in DFS delivery has introduced further types of fraud, theft, and abusive treatment, or failure to handle customer data confidentially. The role of agents as intermediaries has also reduced clarity and transparency about risks, liability, and recourse mechanisms.

Fraud and mis-selling were emphasised as key financial consumer protection problems by at least 20 countries across INFE survey respondents (Figure 4), with Australia, Austria and Latvia explicitly noting that consumers have fallen prey to concerted fraudulent attacks and phishing schemes in their jurisdictions. Thailand underlined that payment fraud has become a significant threat in the country, particularly deterring e-payment users. Some types of fraud included identity theft where data was used to make electronic withdrawals inside and outside the country; attacks via telephone calls where victims were lured into making transfers over ATMs; phishing schemes where personal data (e.g. username and password) was stolen over the internet, or a One Time Password (OTP) was transmitted to a thief's mobile phone. Brazil also stressed the need to find new and faster ways to prevent identity theft and fraudulent digital financial operations, which are becoming increasingly common and widespread.

2.1.3. Access to complaint handling and redress mechanisms

With their digital finance undertakings, consumers need to know that they are able/have the right to access relevant complaint resolution systems, and seek redress for any errors on the part of DFS providers as well as for any illegal digital activities performed without their consent by other parties.²¹ Traditionally, jurisdictions need to ensure that consumers have access to adequate complaint handling and redress mechanisms that are accessible, inexpensive, accountable, timely and efficient. Such mechanisms must not impose unreasonable cost, delays or burdens on consumers (G20/OECD, 2011). Likewise, in the case of disputes between a customer and DFS providers and/or their authorised agents, consumers should have access to redress mechanisms that are straightforward, affordable, fair, speedy, and easy to understand and use. When complaints are not satisfactorily resolved via a provider's internal dispute resolution mechanisms, DFS users should be able to have recourse to an independent, impartial and free redress process.

Weak performance in resolving complaints and queries are major issues in consumer protection. This is a significant concern in many countries and was cited as a barrier to DFS use by consumers in Bangladesh, Colombia, Tanzania, and Uganda (CGAP, 2015). Similarly, 18 countries in the INFE survey underscored that access to complaint handling mechanisms represented a key challenge in their

²¹ For a more specific list of consumer protection issues in mobile financial services, see www.afi-global.org/sites/default/files/publications/mfswg_guideline_note_7_consumer_protection_in_mfs.pdf. For a more general discussion on the benefits and risks involved in digital financial inclusion models, see www.gpfi.org/sites/default/files/documents/Issues%20Paper%20for%20GPFI%20BIS%20Conference%20on%20Digital%20Financial%20Inclusion.pdf.

jurisdictions, with some countries noting that there is no clear understanding on how and whom to complain to when it comes to DFS. A study in Canada also shows that access to dispute resolution and redress mechanisms is inconsistently applied to mobile payments as obligations vary between service providers. Due to the multiplicity of parties involved in digital finance, this can make it difficult for consumers to understand whom to turn to in case a problem arises, or they are dissatisfied with the product or level of service provided. One practical solution would be for regulators and supervisors to ensure that all DFS institutions provide consumers with practical information about internal and external complaint procedures and mechanisms. In addition, the ease with which cross-border transactions can be carried out through DFS suggests the need for addressing barriers to participation in complaint handling and redress mechanisms in the case of cross-border complaints, where the consumer is situated in a country other than the country of the financial service provider. Other possible solutions for improving complaint handling mechanisms put forward by survey respondents are also illustrated in Table 4.

Table 4. Solutions for improving financial consumer protection in a digital context

Policy ideas and solutions for enhancing complaint handling	Country/Economy
Requesting that DFS providers set up call centres that are easily accessible and open to both customers and agents . Agents should have the capacity to handle minor customer complaints.	Indonesia
Ensuring that financial service providers establish procedures for dispute resolution arising from the use of e-services , as well as easy-to-access mechanisms for complaint handling and redress . Institutions must process and receive customer complaints (through electronic means or otherwise) concerning an unauthorised transaction, loss or theft in the e-services account.	Philippines
Establishing an online platform such as the European Online Dispute Resolution (ODR) which facilitates the electronic resolution of contractual disputes stemming from online sales or service contracts between a consumer resident in the EU and a trader established in the EU.	Portugal
Policy ideas and solutions for data protection/security/confidentiality	Country/Economy
Ensuring and appropriately handling the privacy of customers' data . Requiring DFS providers to have effective security policies and procedures in place to protect the service system against threats, unauthorised access, and data theft.	Thailand
Upholding the confidentiality of all the financial and personal information disclosed by their customers in the course of an electronic transaction. Financial institutions must have well-articulated information security guidelines, well-defined protocols, secure databases , and periodically re-validated procedures for handling the personal information of their customers.	Philippines
Ensuring that registers with consumers' credit and ratings data are open for consultation and verification by the client who may be able to request correction/changes in the information if needed. There should also be an authority to protect consumers from privacy right abuse .	Netherlands

Source: OECD/INFE stocktaking survey, 2015/16.

2.2. Adapting consumer protection frameworks to DFS

There are several ways of addressing or mitigating DFS risks and challenges. While in some contexts the rapid pace of change in innovation is increasingly overtaking traditional regulatory approaches, a number of countries have already devised ways to protect consumers against any potentially detrimental impact of DFS use. For example, several INFE survey respondents (23) noted that they have an existing financial consumer protection framework in place that applies to some aspects of DFS. Under such frameworks, DFS are either subject to general rules applicable to other financial services/products more

broadly (Australia, Colombia, Denmark, Indonesia, Italy, Korea, Malaysia, Philippines, Slovak Republic, Turkey, New Zealand), or they are governed by even more overarching provisions for any type of product/service under general consumer protection codes, acts, and legislation (Angola, Belgium, Brazil, Italy, Latvia, Peru, Romania, Spain).

In Hong Kong, China, authorised institutions are encouraged to treat customers fairly. This is mainly achieved through authorised institutions' compliance with recommended practices currently embodied in the industry's Code of Banking Practice, and circulars and guidelines issued by the Hong Kong Monetary Authority. The Bank of Thailand has issued a policy statement on the protection of DFS users that focuses on key consumer rights, such as the right to choose, to be informed, and to be heard. Some other countries also reported having developed separate provisions and legislation for ensuring consumer protection in the use of specific types of DFS such as digital banking (India), Laku Pandai or branchless banking (Indonesia),²² e-banking services and products (Malaysia), and electronic money (Peru).

With most countries around the world lacking a proper financial consumer protection mechanism that specifically targets DFS, it is critical to step up efforts to appraise suitability of existing financial/general consumer protection frameworks to DFS development and tailor them to emerging digital challenges (see also Principle 5 on financial consumer protection of the High-Level Principles for Digital Financial Inclusion). The G20/OECD Task Force on Financial Consumer Protection and FinCoNet can play an important role in supporting this process.

Policy approaches aimed at refining existing financial/general consumer protection guidelines will need to be flexible and proportionate to adapt swiftly to change and risk levels involved in digital finance interactions. Given the unpredictable nature of innovation, it may be difficult for regulators and supervisors to anticipate every challenge and respond suitably to evolving DFS problems. While classic regulatory responses might be limited or unsuitable to addressing new and more complex digital challenges, they can still provide guidance to strike a better balance between furthering innovation and suppressing its negative effects. One novel and promising option of using technology to develop innovative regulatory solutions is presented in Box 7. Policy makers, regulators and supervisors must ensure that all DFS users are covered (at a minimum) by basic/financial consumer protection provisions or by more specific consumer protection mechanisms targeting DFS as their primary objective.

Box 7. The promise of regulatory innovation

Technological innovation is being used as a way to facilitate compliance with regulatory requirements by new FinTech companies. Countries such as Australia, Japan, Singapore and the United Kingdom, have launched initiatives aiming, *inter alia*, to support FinTech development, encourage innovation in the interests of consumers and to promote competition through disruptive innovation (see side box for a specific example of a process to support the development of regulatory solutions developed in the United Kingdom).

UK – Improving regulatory frameworks for DFS

The Financial Conduct Authority (FCA) launched the Innovation Hub in October 2014 as part of 'Project Innovate'. The Innovation Hub allows the regulator to engage with new FinTech businesses to better understand their needs and the possible benefits and risks of their products and services. This engagement allows the regulator to identify areas where the regulatory framework needs to adapt and if any structural barriers should be removed to enable further innovation in the interest of consumers.

²² Indonesia has also issued a regulation on Information Technology-Based Lending Services that requires the implementation of consumer protection principles by DFS providers in order to safeguard DFS users.

3. Promoting financial education in the digital age

Key messages

- Innovation is posing some new risks for consumers including, among other things, the dangers of fraud, phishing, social media scams, digital profiling possibly resulting in financial exclusion, and personal data insecurity and misuse.
- Maximising the opportunities offered by the digitalisation of finance will thus require a better understanding of consumer behaviours and attitudes towards DFS, as well as the financial and digital literacy needs and demands resulting from technological uptake. Indeed, barriers to accessing and using digital finance effectively can stem from consumers' overall lack of awareness and knowledge about financial concepts and innovation.
- Financial literacy and education can play an important role in enhancing consumer protection, improving awareness and information about digital finance, increasing financial literacy for DFS use, and in strengthening overall consumer trust in DFS.
- The specific needs of disadvantaged or at-risk groups and first time or intensive users of financial services and technology will need to be particularly addressed (e.g. youth, women, elderly, low-income and rural populations, migrants and forcibly displaced persons). Financial education and awareness can also help consumers to better cope with personal biases (e.g. self-control issues, short-termism, loss aversion).
- The majority of financial literacy initiatives do not specifically address the impact of DFS. Although some programmes are starting to touch upon key DFS topics, such as availability of mobile money and its safe and effective use, mobile banking, and internet banking, only a few financial literacy initiatives are addressing the needs of vulnerable segments of the population.
- Going forward, policymakers in co-operation with relevant private and civil stakeholders should ensure that financial education strategies are flexible enough to address emerging DFS issues and challenges, as well as to support existing and, more importantly, new consumers in making the best use of DFS.
- The OECD/INFE will further explore such avenues through its newly created working group on digitalisation and financial literacy.

The OECD/INFE High-level Principles on National Strategies for Financial Education endorsed by G20 Leaders in 2012 formally recognised the importance of improving individuals' financial behaviour(s) as a long-term policy priority and the role of financial education as an important complement to overall market conduct and prudential regulation (OECD/INFE, 2012a). Financial education was also acknowledged as an indispensable condition for ensuring proper and effective consumer protection for all, particularly through its incorporation as one of the ten global pillars on financial consumer protection in 2011 (G20/OECD, 2011). The need for strengthening digital and financial literacy and awareness has also been emphasised as Principle 6 of the G20 High-Level Principles for Digital Financial Inclusion, endorsed by G20 Leaders in 2016.

The overall sophistication of financial markets worldwide (see section 1 of this report) suggests that the choice among once relatively straightforward products (e.g. savings accounts, loans, money transfers) has become quite complex to the average consumer who is now faced with a number of digital alternatives

to traditional products and services (e.g. online payday loans, mobile credit, virtual peer-to-peer lending, mobile insurance, etc.). Some innovations may require an understanding knowledge of more intricate financial concepts (e.g. debt maturity, durations, pay-out options, etc.), and/or a certain ease with digital technologies (OECD, 2013a). Understanding consumer behaviours and attitudes towards DFS, as well as the financial and digital literacy needs and demands resulting from technological uptake, will be essential to maximising the opportunities offered by the digital era.

The following section introduces the new challenges to consumers resulting from the uptake of technology from a financial education standpoint. Section 3.2 more closely explores the role of financial education in enhancing consumer protection through awareness, information and advice about digital finance, financial literacy for safer DFS use, and overall consumer trust. It focusses specifically on the financial and digital literacy needs of disadvantaged segments of the population, as well as on the role of financial education in addressing specific risks and behavioural biases. Finally, section 3.3 concludes this section of the report by showcasing selected financial education policy responses to digital financial services.

3.1. Consumer challenges resulting from technological advancement

Technology is changing the way in which individuals interact with the financial system, for instance by confronting them directly with problematic market practices online or via their mobiles, encouraging risk-seeking behaviour and exacerbating some personal biases.

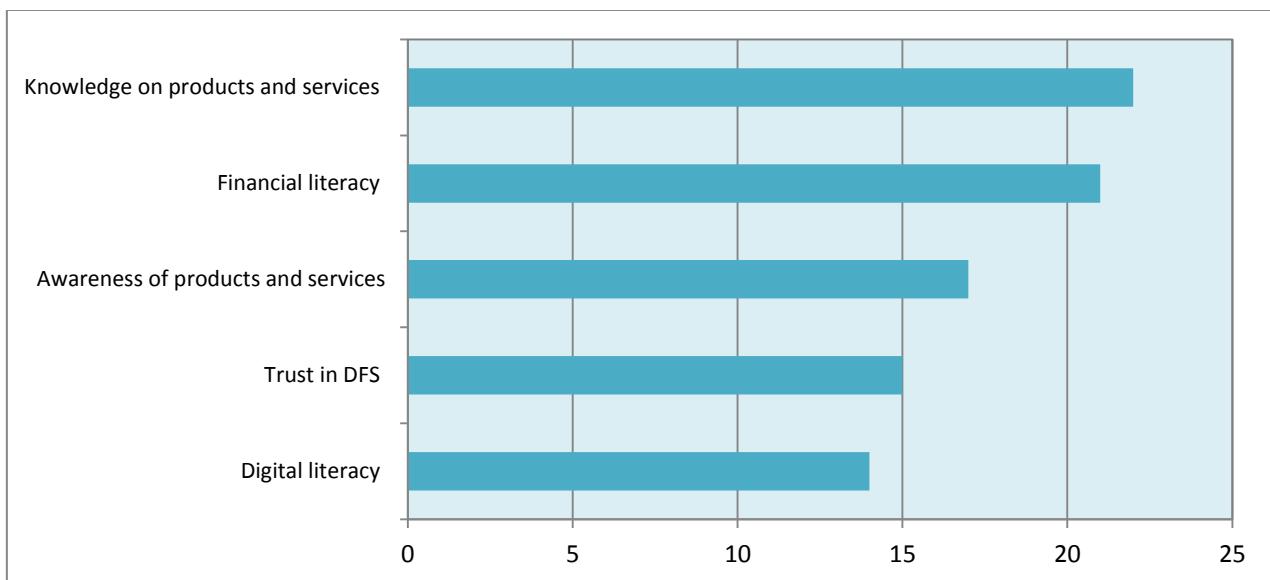
Challenges for consumers in accessing and using DFS may stem from an overall lack of awareness and knowledge about financial concepts and/or digital technologies which, in turn, may be due to:

- a lower level of general literacy and numeracy;
- limited general financial literacy competencies;
- unawareness or lack of knowledge about financial services and relevant regulation;
- no specific awareness or knowledge of DFS;
- an inadequate level of general digital skills and competencies; and,
- a lack of familiarity with technology and/or finance.

Several countries participating in the OECD/INFE survey underlined that financial literacy (21) and knowledge of products/services (22) represent the most important policy priorities or concerns in their jurisdictions (Figure 5). Similarly, the awareness of products/services and trust in DFS were also emphasised as key issues by at least half of the total number of respondents. Fourteen countries also mentioned digital literacy as a relevant policy aspect or challenge.

Figure 5. Policy priorities for financial awareness and financial education

Number of countries and economies indicating that a given aspect is a policy priority or concern



Source: OECD/INFE stocktaking survey, 2015/16.

Austria, Bangladesh, Colombia, Denmark, Estonia, India, Indonesia, Latvia and Turkey indicated that at least four out of the five proposed financial awareness and financial education aspects shown in the chart above were key policy issues or concerns in these countries.

3.1.1. Behavioural biases may be exacerbated in a digital environment

Behavioural economics research has shown that human beings are naturally biased and that they can be strongly influenced by the way information is presented (Kahneman, 2003). The advent of modern technologies and the Internet has thus made it easier for consumers to be directly exposed from the comfort of their home, to problematic digital market practices that encourage risky behaviour (e.g. making impulse purchases with a single click, buying before knowing how to use a digital product, etc.) and exacerbate inherent human biases and personal tendencies such as short-termism, self-control problems, confirmatory bias, etc. Today, giant e-commerce platforms such as Amazon, eBay and Google are also constantly adapting their advertising strategies to get consumers to buy and want more.²³

A recent study by the European Commission identifies personal traits (e.g. biases in decision-making, loss aversion, cognitive limitations) and situational circumstances (e.g. life changes, financial difficulties) as strong drivers of vulnerability, making consumers more susceptible to questionable market techniques such as:

- Drip pricing – drip pricing relates to consumers not being shown a full price up front, with additional costs and charges being shown only at later stages.
- Dynamic pricing – dynamic pricing or real-time pricing sets the value of a product in a fluid and adjustable manner depending on current market conditions.

²³ How online companies get you to share and spend more - http://www.wired.com/2011/06/ff_gamed/.

- Time limited offers – these offers indicate that a given offer will only be valid for a certain time.²⁴

In a digital environment, these risks and vulnerabilities can be exacerbated, as consumers may be unaware of and/or subject to unfair commercial online practices, which can easily take advantage of consumers' behavioural and situational biases. For example, some reports show that payday loan²⁵ companies are explicitly targeting students or young, inexperienced and vulnerable consumers by offering quick and easy access to online credit through alluring and suspect advertising techniques that target those in particularly dire financial situations.²⁶

In addition, while digital innovations may offer great benefits (see section 4.2.), policy makers and industry actors should remain vigilant about their negative potential for misleading customers towards poorer product/financial decisions. Such technologies can also take improper advantage of people's overall lack of financial/digital awareness (e.g. digital data collection use/misuse), and exacerbate (rather than ease) financial/digital exclusion tensions and inequalities (i.e. by targeting only the most profitable, privileged and easy-to-reach clients, not the least). For example, while mobile banking with real-time account updates may help users keep an eye on and better manage their money, some technologies have also made it easier to carelessly tap or wave a smartphone/contactless card for quick spending (which can be a problem for those consumers who are struggling with, or vulnerable to, impulse buying).²⁷ Some other examples of "bad" digital tools and offers are presented in the focus box below.

FOCUS: Potentially dangerous digital deals¹

Online instalment options – in some countries, digital products exist that allow consumers to purchase goods online without having to pay upfront. Instead, payments are due in instalments in the weeks and months following the original purchase. These products are typically offered with interest free instalments, and providers rely on late fees instead for their revenue. Such offers can be particularly damaging to vulnerable consumers who believe they will be able to pay but find themselves in financial difficulty after making the original purchase.

Credit to prevent unauthorised overdrafts – digital products exist to automatically top-up bank accounts that are about to be overdrawn. Such products may be intended to benefit a consumer seeking to protect their credit score, but they also require the consumer to grant the provider the right to automatically seize money from their account, when it becomes available, to pay for the service and repay the loan with interest.

¹ Schmalzried, M. (22 September 2016), [Fintechs: Milking the Poor](#).

²⁴ All definitions in these bullets are extracted from "EC (2016), Consumer Vulnerability across Key Markets in the European Union. Final Report". The report also notes that drip pricing, dynamic pricing and time-limited offers are widely used in e-commerce and online transactions (e.g. in the sale of airline tickets, taxes and extra fees are displayed only at the end of the online booking process, with lowest fares being available only for a given period of time, or adjustable based on the number of other people looking at the same offer) and often create a sense of urgency by suggesting consumers may incur a future loss if they do not buy the product immediately.

²⁵ Payday loans are very expensive cash advances, with extremely high annual percentage rates of about 400% to even 5000%. They can be easily obtained, often in less than an hour, through online lenders such as Smartpig in the UK. www.credit.com/loans/loan-articles/the-truth-about-payday-loans/. For more information, please see also this key report: "FCAC (2016), Payday Loans Market Trends".

²⁶ www.theguardian.com/education/2015/jan/07/students-payday-loans-are-not-your-only-option.

²⁷ www.rightaboutmoney.com/why-venmo-is-changing-the-rules-in-financial-education/.

Empirical evidence has also revealed that people spend more when using credit/debit cards instead of cash. Credit cards also help support the notion of ‘impulse buying’ in greater degree than cash does.²⁸ In a similar vein, in today’s digital age, it is likely that consumers may end up spending digital money more easily than when a payment is cash-based, thus making it harder to control and balance personal expenditures. Even so, it is important to note that digital technology can also offer several options and tools to help consumers better manage their personal finances and to possibly overcome some of their inherent personal biases (see section 4 of the report).

3.1.2. Digital profiling and other risks

Advances in technology have resulted in the increased digitalisation of daily life, with most consumers leaving important digital footprints behind and often being unaware of the use and misuse made by big data collection platforms of their personal/financial information, including the risk of digital profiling (see focus box below). Customers’ lack of knowledge of financial products and digital technologies can also make them vulnerable to abuse and other digital risks such as online fraud, phishing, social engineering scams, account hacking attacks, data theft, etc. To cope with these challenges, consumers need to have (at the very least) a basic level of awareness of the responsibilities and possible risks they incur when undertaking digital transactions. They may also need to be provided with information about their rights to redress and recourse, as well as with the skills and confidence to take full advantage of the benefits offered by the digital revolution. Educated consumers are better equipped to detect and avoid potentially fraudulent and deceptive commercial practices in a traditional or digital environment.

FOCUS: The use of consumer data – benefits and drawbacks

Technology has created opportunities for DFS providers to better use consumers’ digital trails to infer an individual’s cash flows, assess credit risk, and tailor product characteristics to specific needs. For example, research indicates that a number of providers have already begun to use mobile data (i.e. call and SMS records, mobile money transaction data) to prepare credit scores and offer loans to customers without requiring collateral (CGAP, 2015). At the same time, the fact that every aspect of a person’s digital life (purchases via credit cards, location records via mobile phones, interests via web-surfing behaviour) is being recorded by a digital entity also creates major data privacy and security issues, with consumers increasingly losing control over their own information to the advantage and mercy of “big data” platforms such as Google, Apple, Facebook and others (Newman, 2014).

In addition to the challenges of ensuring data confidentiality and protection, consumers are increasingly confronted with the broader aggregation of their personal information through ‘algorithmic profiling’ which allows companies to discriminate, slot consumers into marketing categories, and potentially exclude them from access to certain digital finance products and wider opportunities. For example, if big data analytics incorrectly predict that particular consumers are not good candidates for prime online credit offers, educational opportunities, or certain jobs, such opportunities may never be offered to these consumers, thus perpetuating existing disparities (FTC, 2016). Many consumers are unaware of the use (or misuse) made of their personal information by big data collection platforms. (Newman, 2014).

While big data techniques can allow better matching/pricing of products to customers, the use of big data to the disadvantage of consumers by offering inappropriate or unnecessary, expensive financial products or services is worrisome and may outrun its benefits. For example, in the United States, there is growing concern about the use of big data by online companies that are charging consumers in different zip codes different prices, which is leading to higher-priced goods and services for lower-income communities (FTC, 2016).

²⁸ Prelec, D. and D. Simester (2000), Always Leave Home Without It: A Further Investigation of the Credit-Card Effect on Willingness to Pay; and Runnemark, E., J. Hedman and X. Xiao (2015), Do consumers pay more using debit cards than cash? See also: <https://www.nerdwallet.com/blog/credit-cards/credit-cards-make-you-spend-more/>.

Some policy options for mitigating the effects of marketing practices that exploit people's vulnerable situations and age differences could involve measures to help young people overcome the feeling of being unassertive, ask themselves the right questions before clicking and buying, and improve their capacity to compare deals through digital devices (EC, 2016). In the case of older populations, closer guidance and support with navigating the intricacies of accessing, using and engaging in transactions through digital channels could help. More specific policy alternatives and solutions for enhancing overall financial and digital literacy skills when dealing with DFS are presented in sections 3.2 and 3.3.

3.2. The role of financial education in the digital finance age

In today's digital finance world, financial education may play an important role in supporting effective financial consumer protection frameworks, developing key competencies especially among specific groups, while addressing specific risks and behavioural biases.

3.2.1. Supporting financial consumer protection frameworks

While there has been some research on identifying and addressing challenges to financial consumer protection in a digital world (see section 2), more could be said about the role of financial education in helping consumers recognise and deal with both DFS benefits and detriments. At a practical level, by enabling DFS users to understand and mitigate the potential risks involved in using new technologies, financial education and financial consumer protection *both* play a crucial role in ensuring that DFS are more of an opportunity rather than a threat.

Having access to DFS is not sufficient; people also need to know how to use them to their benefit. Insights from behavioural economics research also show that information alone does not necessarily lead to informed consumer choices. Therefore, to be protected against the dangers and risks involved in the use of DFS, consumers need to have the knowledge and skills to understand often complex information, as well as feel capable and confident in their ability to deal effectively with all kinds of financial service providers (through all delivery channels, digital or not).

The lack of financial literacy and the lack of familiarity with digital technologies can result in generalised consumer financial vulnerability and represent significant barriers to the adoption of DFS and to greater financial inclusion. Financial education policies can help address some of these challenges, particularly by acting on low financial literacy and improving consumers' awareness of digital financial products, services and providers, and ultimately increasing consumers' confidence in them. Furthermore, financial education has a critical role to play in helping ensure that DFS users are empowered with the necessary knowledge and skills to make better and more informed decisions when it comes to choosing the appropriate financial/digital services for their needs, and using them effectively and safely.

Improving awareness and information on DFS

Inadequate information and insufficient knowledge about DFS can be a major source of vulnerability leading to consumers' diminished capacity to assimilate relevant concepts and ideas that could help them make a better choice of the type of DFS suitable to their needs. Discrepancies between what consumers understand to be offered and what is actually being offered may result in inaccurate assumptions, errors and even financial losses. Some countries participating in the INFE survey explicitly underlined the need of further improving information and knowledge about DFS as a critical condition for minimising key consumer protection risks such as fraud and phishing (Indonesia). Hong Kong, China indicated that a

Consumer Education Programme²⁹ has been launched to help expand knowledge about DFS by promoting “smart and responsible” use of banking services, including ATM, internet banking, and mobile banking. In other countries, information about DFS products and services is also being provided through online videos to teach customers how to conduct fund transfers at ATMs and via online banking (Malaysia), and through seminars and online courses for seniors and new users (Latvia).

Public authorities, private and other relevant stakeholders can play a more proactive role in ensuring appropriate information and consumer education about DFS, particularly by implementing financial education programmes geared towards improving consumers’ knowledge and understanding of the nature, features and diversity of DFS (see some examples of financial education initiatives that address DFS in section 3.3 below). Improving information about digital finance can also be a first step towards helping to strengthen consumers’ knowledge of strategies, tactics and habits to avoid compromising their financial and personal information when using digital channels (self-protection mechanisms such as not letting others see as they enter their PIN at an ATM, or quickly checking the authenticity of a website before providing sensitive information, etc.). Awareness raising and more widespread information about DFS can also help alert consumers to potential dangers such as big data use and misuse, fraud and digital profiling.

Increasing financial literacy for safer DFS use

With just over half of adults (58%) around the world showing an understanding of basic financial concepts such as simple interest (OECD/INFE, 2016), it will be important for policymakers to ensure that people not only access digital financial services, but that they also have the necessary financial literacy skills and knowledge to use them safely without running the risk of high debt, insolvency, or payment default.

Research shows that a significant share of DFS users, especially in developing countries, are often new to both formal finance and technology, and often live precarious financial lives that allow little room for error (CGAP, 2015). Similarly, this evidence also indicates that consumers’ attempts to mitigate digital finance risks on their own through self-protection mechanisms often fail or remain quite limited (CGAP, 2015). Against this backdrop, financial literacy skills can significantly enhance consumer protection by enabling users to better understand the terms, conditions and fine print for specific DFS, making it possible for them to tell different digital finance products apart and make informed choices, and by increasing their ability to more effectively manage the potential risks involved in DFS use.

An essential dimension of empowering consumers to make the most of DFS while keeping them ‘safe’ is to support, strengthen and increase consumers’ financial literacy and financial competencies. Financial literacy³⁰ has been recognised as a key life skill for individuals in a majority of economies (OECD/INFE, 2012a), and financial education can help enhance it by increasing their financial knowledge, skills and attitudes (OECD/INFE, 2015). The international community has also recognised the relevance of financial literacy as a crucial complement to consumer protection regulation, without which the regulation itself cannot adequately protect consumers (G20, 2010; OECD/INFE, 2012a).

²⁹ One of the initiatives undertaken by the Hong Kong Monetary Authority that includes showing informative videos conveying safety tips on DFS usage in a website.

³⁰ Financial literacy is “the combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial wellbeing.” See Atkinson, A. and F. Messy (2012), “Measuring Financial Literacy: Results of the OECD / International Network on Financial Education (INFE) Pilot Study”.

Strengthening consumer trust in DFS

As a complement to financial inclusion and financial consumer protection, financial education is also important to restore confidence and trust in financial markets, and can support global financial and economic stability (OECD/INFE, 2015). In the context of digital financial services, financial education policies can increase trust in DFS by deepening knowledge about them, and fully equipping consumers with the necessary understanding of potential risks and available coping mechanisms to manage and mitigate any losses. Increased trust in DFS can, in turn, translate into further uptake and use of DFS.

The notion of trust (or lack thereof) in financial institutions is central to understanding the rapid evolution of innovative financial services. A TransferWise survey suggests that consumers are ambivalent about trusting their bank to look after their finances, and that this may have motivated people to consider alternative providers of digital finance services such as FinTechs. Lack of trust is significantly higher among early adopters of technology who are almost three times as likely not to trust a bank (54%).³¹ A total of 73% of consumers reported that they would consider using alternative technology providers for services that they usually use their bank for. The survey also found some marked differences in trust levels among different age groups – the 55+ adults were the least trustful of DFS providers (only 25% trusted such providers), while the group with the least trust in banks was those aged 35-44 (TransferWise, 2015).

Lack of trust and limited confidence in their ability to use DFS can also deter customers from trying, or even considering, engagement in digital transactions altogether. Women deserve special attention as they display lower confidence in their own financial competencies and skills, when compared to men (OECD, 2013b). Low trust has also been identified as the biggest barrier to using mobile payments, with 42% of people in Europe reporting, for instance, to not have used a mobile payment application because of a lack of trust (ING, 2015). In spite of this, customer trust in mobile financial services seems to be increasing today, particularly when measured by overall growth in usage. GSMA data shows that the share of accounts with a positive balance reached 46% in June 2015, suggesting an increasing level of trust amongst mobile money users (GSMA, 2016b).

3.2.2. The financial and digital literacy needs of specific groups

OECD evidence shows that overall levels of financial literacy are still low worldwide, and that lack of financial competencies is even greater among particular segments of the population such as youth, women, migrants and low-income groups (OECD/INFE, 2013). In today's digital context, awareness of digital financial services also varies depending on key socio-economic characteristics such as income, education level, gender and age. Given their high use of digital services in general, the specific financial literacy needs and behavioural biases of younger generations such as “digital natives” and “millennials” will need to be particularly addressed. Lack of digital literacy skills, especially among poorer and older populations, is also a key concern across all countries that participated in the INFE survey.

DFS awareness and literacy

Many consumers around the world, particularly those from low-income and rural backgrounds, are often new to both technology and formal financial services (CGAP, 2015), and thus lack the knowledge, financial literacy and basic literacy skills to understand and cope effectively with DFS and the risks involved in their use. Financial literacy can make a huge difference in helping address some of the particular challenges faced by specific segments, such as low-income populations and rural dwellers. These groups are more vulnerable to DFS risks given that they are just beginning to use formal financial services

³¹ TransferWise (2015), [The Future of Finance](#).

and have limited knowledge/power to protect themselves from unfair commercial practices (AFI, 2014). For instance, and at a practical level, basic financial literacy is necessary to ensure that the most vulnerable of all DFS users are aware of and understand:

- correct usage of PINs;
- simple financial concepts such as account balances, charges, payment instalments; and,
- what to do if a digital financial transaction goes wrong (i.e. knowledge of available redress and recourse mechanisms, and who or where to turn when a mistake is made, or to file a complaint, ask for advice or further information).

Box 8. Improving awareness of DFS

Some countries reported using different means and strategies to increase awareness of DFS, including: mass scale awareness campaigns by banks/financial Institutions (India); educational websites and enhanced national education curricula (Latvia); roadshows and awareness programmes (Malaysia); and financial empowerment seminars, as well as financial education exhibitions (Philippines). The Bank of Portugal has launched an awareness campaign to combat online fraud that proposes relevant information and security tips to its customers.

Concerning gender, there is strong evidence suggesting that women face additional social, cultural, and systemic barriers that limit their use of digital finance services. Globally, and on average, women are less financially knowledgeable (OECD, 2013b) and have more limited access to technology (GPFI, 2015) than men. GSMA research also shows that over 1.7 billion women in low- and middle-income countries do not own mobile phones, which translates into a gender gap in mobile ownership of 200 million fewer women than men owning mobile phones (GSMA, 2015b). Women, on average, are 14% less likely than men to own a mobile phone, and even when they do, there is a significant disparity in mobile phone usage, with women using phones less frequently than men, especially for more sophisticated services such as mobile internet. Women are also further limited in their access to and use of digital finance when two or more socio-economic factors combine to their disadvantage. For example, a study of a government cash transfer program to low-income women in Bangladesh illustrates some of the challenges that come with making digital payments to a population that is, for the most part, illiterate – many recipients failed to understand the cash-out process at the banking agent, or were simply unable to use an ATM on their own to withdraw payments (World Bank Development Research Group, 2014).

Other studies also indicate that mobile money customers are mostly urban and male users (GSMA, 2015a), and that younger smartphone owners are using DFS (e.g. mobile banking) more regularly than consumers over the age of 66.³² Some INFE survey respondents noted that overall consumer awareness of DFS in their countries is high but further efforts could be made to increase use particularly among older generations (Austria, Estonia).

Increasing overall levels of financial literacy, including through the introduction of financial education in schools, is essential to ensuring that DFS users are equipped with the minimum, or necessary, knowledge to make more informed decisions when it comes to choosing the right digital finance services for their needs. Financial literacy and education firstly needs to reach the poorest of all to ensure that they know how to use DFS effectively, safely and to their advantage, before DFS can fulfil their potential as effective levers of financial inclusion. It is also important for policymakers, providers and other relevant actors, to step up efforts to enhance financial education approaches to DFS (see section 3.3 below), particularly for those that need them the most, including rural, female, migrant and other specific groups.

³² Credit Union Times (26 January 2016), [Mobile payments bring consumer fears](#).

Digital literacy gaps persist particularly among poorer and older populations

There is, however, a real concern across INFE survey countries that less digitally knowledgeable individuals, as well as older, rural and low-income segments of their population, may be missing out on important financial information and/or the benefits of the digital revolution because of their lack of digital skills (Australia, Brazil, Colombia, India, Peru, Thailand). Digital literacy - the skills needed to access and use content via digital devices and different online formats - is an essential complement to financial literacy and can further help drive DFS adoption and usage.

At the most basic level, a consumer's lack of digital literacy skills may result in erroneous transactions (i.e. sending money to a wrong account or mistaking payment for a bill), failure to complete a transaction, weak PIN choices and carelessness in safeguarding personal information (AFI, 2014). In addition, the widespread practice of sharing mobile phones, particularly in low-income households, may also introduce another level of vulnerability when phones are used for financial transactions, often by first-time users. Unsurprisingly, lack of digital skills and locally relevant content represent the biggest barriers to digital inclusion in both Asia and Latin America (GSMA, 2015c; GSMA, 2016d). For example, recent research shows that despite having basic literacy rates that are higher than the global average, the Latin American and Caribbean region still suffers from a significant gap in digital literacy skills. Even developed economies, such as the United Kingdom, are facing digital exclusion problems, with 21% of the British population lacking the basic digital skills and capabilities required to benefit from the internet.³³

With nearly 800 million new mobile internet subscribers forecast to come online in Asia by 2020 (GSMA, 2015c), it is important for policymakers, industry actors and others to start addressing the barriers to digital inclusion, particularly by establishing education programmes aimed at improving the skills (both digital and financial) and awareness needed to deal more effectively with DFS (see section 3.3 on financial education initiatives targeting DFS). At the other end of the spectrum, youth and millennials should also be considered, as they may more easily fall prey to personal biases such as overconfidence in their own digital capabilities to manage DFS risks. Some other explicit concerns and suggestions for enhancing digital literacy put forward by INFE survey respondents are presented in Table 5.

Table 5. Ways to enhance digital literacy

Solutions for improved digital literacy	Country/Economy
Undertaking targeted efforts to increase digital literacy skills, especially among older generations.	Austria, Denmark, Estonia
Ensuring that industry actors, such as banks, provide financial education for consumers with the objective of increasing digital and financial literacy.	Indonesia
Providing IT support and education , through the Information Technology Security Incidents Response Institution, via a website for experts and a different medium for the general public.	Latvia
Implementing a national programme which seeks to improve and create new opportunities for the education of older people , including supporting development of their digital skills.	Slovak Republic

Source: OECD/INFE stocktaking survey, 2015/16.

³³ UK Government (2014), Government Digital Inclusion Strategy, www.gov.uk/government/publications/government-digital-inclusion-strategy/government-digital-inclusion-strategy.

Addressing specific risks and personal biases

In addition to deepening understanding of DFS (e.g. through specific awareness campaigns) and empowering individuals with a sufficient set of both financial and digital skills (i.e. core competencies), financial education can also play a role in making consumers more aware of the specific dangers they may incur when undertaking digital financial transactions (e.g. fraud, profiling, scams, data misuse), as well as of their own personal biases and limitations, thus discouraging risk-seeking behaviour and bad financial habits in a digital environment. Therefore, financial education can not only help consumers cope better with risks, but also to take full advantage of benefits brought about by the digital age.

3.3. Financial education policy responses to digital financial services

The growing relevance of financial education at the country level is exemplified by the development of an increasing number of national strategies around the world. Today, over 60 economies are implementing national strategies for financial education aimed at improving financial literacy with a view to promoting healthier financial behaviours and financial wellbeing. A significant number of countries are also seeking to improve financial inclusion through their national strategies for financial education (OECD/INFE, 2015). This section of the report looks at whether, and to what extent, existing financial education initiatives are seeking to endow consumers with the necessary knowledge, skills and information about DFS and/or their most effective use.

3.3.1. Most financial education initiatives do not specifically target DFS

In a majority of countries and economies, most financial education initiatives mentioned by INFE survey respondents aim to develop the financial literacy skills needed to understand general financial concepts and information. These initiatives do not specifically target DFS, are mostly national in scope and broader in nature and objectives, while some seek to spread general knowledge about financial matters, and others actively seek to influence individuals' financial behaviour, particularly in the area of money management.

Financial education on DFS in Malaysia

Malaysia has been organising national e-payment roadshows since 2015 which aim to create awareness of payment industry developments and educate the public on e-payment services. Some key DFS and consumer protection topics covered by this initiative include online banking, electronic payments, and fraud prevention measures. The programme periodically collects data to monitor migration to e-payments and adoption of DFS.

Drawing on over 60 national strategies for financial education developed and implemented worldwide to date, the majority of financial education programmes aim at broader audiences such as children, adolescents and teachers through general school programmes (Brazil, Italy, Malaysia, Peru, Portugal, Slovak Republic, United Kingdom, Switzerland, among others)³⁴ or at the general population through nationwide online portals, websites and personalised learning dashboards that enable consumers to learn outside a classroom (e.g. Money Smart in Australia, Wikifin in Belgium, Financial Citizenship in Brazil, Money Matters in British Virgin Islands, Money Wise Platform in the Netherlands, Money Fit in Switzerland, etc.). The main focus of all these initiatives is not to address digital financial services as such, but rather to increase citizens' overall financial knowledge and skills.

Countries such as China, Croatia, Estonia, India, New Zealand, Portugal and Spain are providing financial education with some DFS elements, either as a sub-topic or as part of their overall work on

³⁴ Regular surveys conducted within the OECD/INFE and for the PISA financial literacy assessment from 2008- 2013 show that an increasing number of countries (over 40 at present) have introduced financial education initiatives in schools (including in elementary and secondary/high schools). See OECD (2014), *Financial Education for Youth: The Role of Schools*.

financial education. Some others noted that financial education itself is relatively new, and that they are still in the process of developing or implementing their national financial education strategies (Bangladesh, Brazil and Turkey). This means that governments are choosing to strengthen their general policy frameworks to enable, support and consolidate financial education as their first priority before considering a financial education policy with a specific focus on DFS.

3.3.2. Some financial education programmes are starting to cover key digital finance topics

In some countries, financial education initiatives have started to address certain DFS topics such as the availability and effective usage of mobile money, mobile banking, and internet banking (Denmark, Malaysia and Switzerland). Some other financial education programmes are also touching upon key consumer protection issues, such as ways of identifying and preventing online fraud, ensuring online banking safety, and providing security tips for using ATMs, credit cards, e-payments, etc. (Czech Republic, Hong Kong, China, Malaysia and Portugal). Indonesia highlighted the need for financial education interventions to explain to consumers that their money is safe, even if they lose their mobile phone.

A limited number of initiatives seek to develop digital literacy skills. One example includes the remittances marketing campaign programme by the Consumer Financial Protection Bureau in the United States which aims to educate consumers about their protection when sending money abroad, and helps consumers understand their rights, as well as comparison shop for money transfer services.

According to its particular national context, each country has a different answer to the question of “who” should be responsible for educating consumers about digital financial services. Overarching strategies for spreading knowledge about the availability, potential benefits and risks of DFS, may be needed to ensure that all consumers are properly informed of the possibilities and challenges involved when conducting financial transactions electronically or digitally. This will be more naturally led by public authorities to avoid any potential conflicts of interest. At the same time, some DFS providers, such as mobile money actors, are already developing initiatives aimed at providing useful information about their own digital products via their websites and online portals. In both cases, it is important to recognise the importance of financial education and to ensure it is free from marketing or commercial purposes (see also section 4 of this report). In this respect, private and not-for-profit stakeholders seeking to participate in financial education activities, including on digital finance, are encouraged to review and adhere to the OECD/INFE Guidelines for Private and Not-for-Profit Stakeholders in Financial Education (2014).

Selected solutions and policy options for enhancing financial literacy attitudes and skills on digital financial services, identified by INFE survey respondents, are presented in Table 6.

Table 6. Ways to enhance financial literacy for DFS

Solutions for increased financial literacy for DFS use	Country/Economy
Organising large scale financial literacy campaigns with the objective of bringing financial services – including digital – to unbanked populations and areas.	India
Planning, in collaboration with strategic partners, yearly activities to increase financial literacy attitudes to innovative products and digital fraud prevention .	Latvia
Conducting exhibits in several parts of the country. The project “Alerto Ako” in the Philippines aims to increase awareness of different financial services (including e-money) in the market, and of the factors to consider before using any financial product. It also seeks to alert the public and increase its knowledge about different types of frauds, text scams, phishing, credit card skimming, spoofing perpetuated in the financial market. The programme also teaches the public how to protect themselves against such criminal activities.	Philippines
Ensuring the implementation of the National Plan for Financial Education (including school programmes) which continues to develop financial education initiatives that incorporate topics on the various products and services available on digital platforms , and the prevention of their fraudulent use.	Portugal
Equipping consumers, through the Financial Consumer Protection Centre (FCC), with financial knowledge in order to raise awareness and understanding of consumer rights and responsibilities, enable informed decision-making, and prevent fraud such as online phishing . The FCC also provides information on digital financial products and services through seminars, booklets, and leaflets.	Thailand

Source: OECD/INFE stocktaking survey, 2015/16.

3.3.3. Few financial education programmes focused on DFS are addressing the needs of vulnerable groups

Overall, financial education programmes are more effective when they are designed and tailored to the needs and the financial literacy level of their target audience (OECD, 2005). In the case of the financial education initiatives for DFS, reported by INFE survey respondents, while the majority of initiatives target broad audiences (i.e. students, general public, regular consumers, etc.), some focus particularly on preparing the financially excluded (e.g. poor, women and youth) to learn more about basic finance and the use of digital financial services. For example, since 2014 financial education is provided to the recipients of a government-to-person (G2P) social transfer payments programme (Keluarga Harapan) for the poorest households in Indonesia, with the objective of improving their financial capabilities and their access to finance. The programme covers relevant DFS topics such as the definition of electronic money, and provides consumer protection with tips on how to use DFS safely (PIN code usage, importance and security, as well as how to handle e-money related issues and complaints, etc.).

Meeting the financial education and consumer protection needs of newly financially included populations in a digital era requires close co-operation and co-ordination among governments, regulators, policy-makers, providers and other relevant actors. It should also involve the development of balanced and effective policy frameworks that safeguard consumers from potential risks as a matter of priority, and seek to empower them with the necessary knowledge, confidence and skills to make more informed financial/technology choices.

Going forward, policy makers should ensure that wider financial education strategies and related financial literacy school initiatives, where they exist, are flexible enough to address emerging digital finance issues and challenges, as well as to support existing and, more importantly, new consumers in making the best of digital financial services. More targeted financial education guidance should probably

involve both the development of core competencies and the delivery channels enabling this process. Possible directions to be explored in the future concerning these two aspects are sketched out below.

Core competencies development could include:

- Expand awareness and deepen understanding of digital finance.
- Support knowledge and learning about the effective and safe use of digital financial services.
- Empower individuals with a sufficient set of both financial and digital skills to cope with DFS risks and take full advantage of the benefits brought about by the digital age.
- Provide opportunities to increase experience with and trust in DFS in a secure community setting (this may, in turn, help build shared knowledge and understanding of the links between financial literacy and digital capability).
- Alert consumers to the potential dangers of digital finance, including big data use and misuse, and digital profiling. It may also be important to define general concepts and “thumb rules” concerning digital and financial risks.
- Develop competencies and meet the particular needs of vulnerable groups including the elderly, illiterate, low-income, and new users of digital financial services.

Relevant delivery channels couldn't include:

- Awareness campaigns, educational websites, enhanced national education curriculum, financial and digital empowerment seminars, roadshows and exhibits.
- Practical training and workshops beyond formal school settings, especially for consumers and small businesses.
- In and out of school programmes, financial and digital literacy initiatives focused on DFS, interactive online and mobile resources such as websites, applications, courses, games, etc.
- Innovative initiatives and programmes where financial content is shared through digital devices (e.g. tablets, laptops) that can be circulated among users, classic training and information modules in a classroom setup.
- Information security workshops, DFS seminars and fairs, practical videos and story-telling regarding DFS threats and how to mitigate them, improved financial, digital and risk literacy.³⁵
- Targeted programmes, initiatives and training, easy-to-use digital tools, practical and adaptable seminars and workshops.

Public, private and other stakeholders may also consider further enhancing their co-operation in order to better assess the impact of DFS on consumers in one country, taking into account cross-border operations. Further work and possibly guidance on financial literacy and digitalisation will be elaborated in 2017/2019 by the new INFE working group on digitalisation and financial literacy based on desk research and ongoing monitoring and analysis of emerging developments.

³⁵ Allianz (2017), [When Will the Penny Drop? Money, financial literacy and risk in the digital age](#).

4. Making digital tools part of the financial education solution

Key messages

- Technology and innovation can be instrumental in supporting positive financial education outcomes for all.
- Higher levels of financial literacy, training and wellbeing may be achieved by using digital tools, particularly to:
 - improve access to financial education;
 - reinforce core competencies, confidence and experiences with finance;
 - enhance money management skills and control over finances, and
 - address, and possibly overcome, consumers' personal biases (confirmatory bias, post-purchase rationalisation, short-termism, etc.).
- Digital tools can complement and leverage traditional financial education approaches and mechanisms. They may be particularly useful to provide vulnerable and hard to reach groups with actionable and digestible guidance to help them navigate ever more complex digital finance products and tough financial times.
- The progress of digital technologies and financial education programmes for digital finance will require regular monitoring as well as further research and in-depth evaluation to assess its impact on the financial wellbeing of consumers.

Achieving financial education outcomes through technology

The fast pace of technological innovation has made it possible for millions of people around the world to access information and become knowledgeable about almost any imaginable topic by the medium of the Internet. Education, just as many other fields, has not been left untouched by the digital revolution, and the delivery of core literacy and numeracy skills over digital platforms has become increasingly commonplace, including in developing economies where mobile phones, laptops and other technologies are being used in new and innovative ways, and with varying degrees of success (Winthrop and Smith, 2012). Even in emerging and developed countries, well-known organisations such as the Khan Academy³⁶ and Doorways to Dreams³⁷ have been successful in leveraging the power of technology to design basic, as well as financial, education programmes and content that can be affordably rolled out to thousands of people, while still catering to the needs of each student.³⁸ Such financial education is individualised and increasingly delivered through tablet computers, smartphones, or other personal devices. Against this backdrop, this section looks at how digital tools can be harnessed to advance financial education outcomes for all.

³⁶ www.khanacademy.org/about

³⁷ www.d2dfund.org/overview

³⁸ Stephen, S. and P. Wagh (16 December 2014), *Financial Education in the Digital Age: It's affordable, it's scalable – but does it work?*

FOCUS: Potential advantages of digital tools

Some advantages of digital tools, when compared to more conventional mechanisms of financial education delivery, include:

- their interactive and agile nature;
- their increased adaptability to consumers' learning needs in terms of time, rhythm, format and space;
- their user-friendliness; and,
- their power to appeal to younger audiences (especially millennials).

Some INFE survey respondents also noted that digital channels for financial education are easier to update in real-time if anything newsworthy occurs (e.g. law/policy changes), as well as more easily scalable (i.e. able to reach greater audience numbers very quickly and cost-effectively). Challenges are also present though, including the need to be responsive to changing platforms and the introduction of new devices with different screen sizes and functionality.

4.1. The role of public, private and not-for profit stakeholders in the development of digital tools

In over 60 countries, the formal provision of financial education as part of a comprehensive framework or national strategy for financial education is mainly led by public authorities, but also often involves the participation of, and co-ordination with, private and not-for-profit stakeholders (OECD/INFE, 2015). Most INFE survey respondents (all public institutions) emphasised the development of specific digital tools as key channels for delivering financial literacy content and supporting their national strategies for financial education (e.g. websites and personalised learning dashboards such as Money Smart in Australia, Wikifin in Belgium, Life & Money and Financial Citizenship in Brazil, Money Matters in British Virgin Islands, Everybody Counts in Portugal, etc.). But the digital tools currently in use to facilitate access to financial advice or information have not necessarily been developed by public actors alone. Some of these digital channels (including many of the innovative applications highlighted in the remainder of this report) have been designed, developed and marketed by the private financial sector (often start-ups and FinTechs) and not all are intended to deliver financial education (even if they may benefit consumers by simplifying specific/complex financial content or personal finance management operations, see for example, *Guide Me*, *Flexiscore*, *Moven*, and others below). Such innovations should be thought of as additional general services or products offered by a given financial institution, private company or DFS provider. For instance, most banks nowadays offer their clients the option to receive digital alerts about real-time account balance and transactions, use personalised finance management tools, and engage in internet/mobile banking.

Not-for-profit organisations may also be engaged in developing or using digital tools to deliver financial education content, as described in the focus box below. Often these organisations work in close co-ordination with public, private or other stakeholders in order to incentivise financial behaviour change and promote overall financial education. For example, United Way Ottawa (a not-for-profit organisation) partnered with a private bank and the Financial Consumer Agency of Canada (FCAC) to create a new application *Small Change* that allows people to save money while helping fund financial education programmes delivered by non-profit organisations in the community. The app empowers users to track their savings and set financial goals.³⁹ Each time they record a positive behaviour on the app (such as

³⁹ <https://www.unitedwayottawa.ca/smallchange/>

reducing spending on coffee or lunch), a donation (from a corporate sponsor) goes to support financial education programmes and the user receives a financial literacy tip through the app.

Attention should be paid to the type of stakeholder (public, private, not-for profit actor) involved in the creation or promotion of a specific digital tool. It is also critical to differentiate between:

- *a digital tool's functionalities* – e.g. online budgeting tools are innovative products or software that help consumers, households and businesses improve their overall financial management; and,
- *a digital tool's fundamental/existential purpose* – e.g. tools that are explicitly designed (or not) to educate consumers (i.e. by conveying useful knowledge, skills and behaviours) on how to improve their personal money management electronically, as part of an overarching and co-ordinated national strategy, programme or initiative seeking to achieve broader financial literacy and education.

Digital tools with an educational purpose should be promoted in an impartial manner and independently of the tool/channel/product/software itself (i.e. if another innovative technology can achieve the ultimate financial education objective in optimal ways, then it should replace the current digital tool or product).

Transparency about this key distinction (*what* a digital tool does vs. *why* it does it) is essential to forming more knowledgeable consumers capable of distinguishing between impartial sources of financial information and advice, and those free, appealing and easy-to-access digital resources that may rely on the support of advertisement income or commercial sponsorship to make a profit. For example, some digital tools may include hidden marketing (i.e. advertising a specific loan or insurance company rather than indicating the benefits/limitations of such financial products or services). Some technologies may also be a type of marketing device themselves (i.e. tools provided as an incentive to get people to take up particular products/services, which may not be accessible if the consumer switches providers).

Private and not-for-profit entities working in a digital environment should take note of and comply with the criteria set forth in the “OECD/INFE Guidelines for Private and Not-For-Profit Stakeholders in Financial Education (2014)”.

FOCUS: Enhancing financial and digital literacy through training of trainers and digital tools in rural China¹

The Banking on Women (“BoW”) project is a three-year financial education initiative by Positive Planet (a not-for-profit foundation) in partnership with Diageo (a private company). It aims to empower women by educating recipients of microloans and equipping them with the skills necessary to make responsible and informed financial decisions. The programme’s target beneficiaries are female clients of microloan distributor Huimin Microcredit Company.

Positive Planet developed two disseminating channels to share content: a tiered-system of classroom training and a social media mobile app account. Both channels are adapted to the unique needs of Ningxia clients (China) using a client-centric process of regular assessments. The classroom-based curriculum is accompanied by discrete educational tools. This content is then reinforced through household finance tips, business knowledge and peer success stories shared on an online platform.

Training of Trainers

The project largely operates on a “training of trainers” (ToT) model, which entails Positive Planet experts training Huimin staff, who then train their female clients (end-beneficiaries). In this project, the basic ToT model is adapted into a system that brings community leaders into the training process. Post-training evaluation points to strongest attitude changes in relation to saving, digital opportunity, and how to use financial management tools such as budgeting, and highlights impressive results, including:

- 39% increase in ability to identify items to save towards, rather than to spend on
- 46% increase in ability to identify a positive use of digital finance
- 107% increase in ability to correctly describe budgeting
- 74% increase in intentions to plan a monthly budget

WeChat

At the start of the second year, it was determined that a digital component to the BoW tool set would reinforce the programme’s impact. In particular, a digital platform would cater towards younger clients (ages 21-40), and generate innovative and interactive content. After client interviews, it became clear that common digital mediums like SMS were nearly impossible to use effectively, due to clients changing their phone numbers/contact information as often as every three months. WeChat quickly emerged as a strong alternative. As a messaging-social media hybrid app that combines features of platforms like WhatsApp and Facebook, WeChat shows huge potential in influencing the lives of rural residents in China. In Ningxia, WeChat is the first mobile social messaging app being widely used.

The ability to share messages and content by subscription is the primary drivers behind using WeChat in BoW, but there are broader reasons as well. In addition to its communication (video chat, voice calling and text messaging), social media, and news capabilities, WeChat also hosts several important financial functions, including a digital wallet. After linking a bank card to their WeChat account, users can transfer money with other WeChat users. This combination of functions, as well as extremely high usage rates, even in rural China, allow Huimin clients to simultaneously benefit from new, easy-to-use features and become more digitally knowledgeable in the process.

1 Positive Planet (April 2016), [Banking on Women: Financial Education in Rural China](#).

4.2. Harnessing digital technologies to advance financial education

Increasing use of technology may present several opportunities for achieving financial education outcomes. Higher levels of financial literacy, training and wellbeing may be attained globally by using digital channels to improve access to financial education, reinforce core financial competencies, enhance money management skills, and to possibly overcome personal biases.

4.2.1. Improve access to financial education

Different kinds of digital tools are being used around the world to facilitate access to and comparison of financial information. All INFE survey respondents highlighted the existence or creation of a multiplicity of digital channels that support access to financial information and advice in their jurisdictions, such as: websites; mobile and online applications (which may include several features such as budgeting and spending meters, financial goal trackers, notifications and alerts on particular financial circumstances, such as running out of money, etc.); digital calculators; Twitter/Facebook/YouTube accounts; email newsletters; digital banners; online courses and instructional videos; e-learning platforms; interactive games; credit and mortgage simulators; SMS reminders, etc.

Most of these digital tools are often used in combination with more conventional means of delivering financial education, such as workshops; textbooks; pamphlets; financial education campaigns; radio; television; classroom and school content. Among all these digital tools, websites and mobile/online applications remain the most commonplace and are used by nearly all INFE countries to support the delivery of financial education.

Making financial information, instruction, training and advice more affordable and accessible

INFE survey respondents also highlighted the scalability and affordability of digital tools as two of their key strategic advantages over traditional methods of delivering financial information. In the current international climate of general economic uncertainty, digital tools do offer significant opportunities for delivering financial information and possibly instruction to great numbers of people for low or no direct cost at all to the recipient (see, for instance, the global success of massive open online courses). But, even beyond the classroom, digital channels provide access to significant amounts of financial or specific product information for free and with just one click. For example, the US Federal Reserve has been conducting surveys since 2011 to investigate consumers' use of mobile technology to access financial information and services (FED, 2015). The 2015 survey analysed how smartphones are changing the way people shop and make financial/product decisions, highlighting that in the previous 12 months leading up to the survey:

- Almost half of smartphone owners have used their phone while at a retail store to see whether the item is available elsewhere under better terms, or have used their phone to scan a product's barcode to find the best price for the item. This often resulted in the purchase of the product in a different place because of the information found.
- About four in ten smartphone users have used their phone to browse product reviews or get product information while shopping at a retail store, with most of them choosing to buy a different item than the one they originally intended to buy, based on the information found.

Some digital platforms are also being used to provide training for trainers. The effective implementation of financial education strategies and programmes requires the appropriate training of disseminators and persons providing financial education (OECD/INFE, 2012a). The development of dedicated training materials and methods (e.g. through manuals, workshops, videos, e-learning platforms, etc.) for the trainers is essential to enhancing the reach, coverage and impact of any financial education initiative. For example, Brazil reported training trainers through a combination of face-to-face exchanges and a digital platform which provides trainers with the opportunity to practice their skills before dissemination.

In the context of digital finance, training for trainers can usefully target all those involved in providing information, instruction and advice about digital financial products and services (e.g. public servants,

employees, teachers, journalists, etc.). Training-the-trainers on digital finance should aim to go beyond theoretical definitions and discussions about DFS features to incorporate practical elements on how to actually use some of the digital finance platforms, applications and services already out there (e.g. making mobile money transactions or online transfers and deposits, signing up for digital loans and credit, simulating and recognising scams and frauds), all as part of a comprehensive training model. More importantly, training-the-trainers on digital finance must cover and follow the evolution of the technologies themselves (as opposed to focusing on specific products/services), while addressing both their advantages as well as any potential risks.

At the same time, increased demand and the surge in prices for accessing quality financial information is also further driving innovation, resulting in more interactive and intelligent technologies.⁴⁰ For example, the increasing costs of accessing professional financial advice (e.g. financial advisors, investment coaches) in the United Kingdom (Deloitte, 2012) has spearheaded the development of alternative and more affordable means of obtaining financial counsel such as robo-advice and/or robo-guidance solutions for key financial issues and more complex products such as pensions and retirement planning (Box 9). Robo-advice is, however, a new tool even in developed economies. Depending on its design and the particular circumstances of individuals, it may not be suited to the needs of all consumers, and cannot fully replace traditional face-to-face advice in all countries.⁴¹ In addition, some regulatory requirements/issues will need to be met and resolved, particularly in terms of ensuring adequate consumer protection from “wrong” or misleading robo-advice, as well as in assigning responsibility for any errors and oversights of such services.⁴²

Box 9. Robo-advisors for investments, pensions and retirement planning

Robo-advisors, a term coined to refer to digital platforms which offer automated portfolio management services, have multiplied exponentially in recent years. Their business models rely heavily on automation and algorithms, allowing them to offer services at significantly lower costs compared to traditional investment services due to gains in efficiency.

Several platforms offer self-directed tools that the individual can use to help them plan for their financial goals, particularly for retirement. Such tools can recommend how much an individual needs to save to maintain their desired standard of living, taking into account factors such as spousal income, desired location and tax implications. Others can help individuals decide how to draw down their pension savings. Evalue, for example, has created a pensions freedom planner following the abolition of a compulsory annuity purchase for retirees in the United Kingdom, helping individuals to decide what to do with their assets at retirement. Some platforms also promote financial education, such as Yellow advice, which provides easy-to-read articles on financial news and incorporates gamification on its website to improve investment knowledge.

Making financial education palatable for all

Because of their flexible, dynamic and graphic ways of depicting information, digital channels and new technologies hold great promise and possibilities for overcoming social, economic, geographical and cultural barriers to financial education, particularly for those living in rural areas, low-income or illiterate households, and insecure environments prone to violence against women and girls. In today’s digital world, innovative mobile and online applications are displaying often complex financial information and

⁴⁰ There is a new and increasing level of interest in using artificial intelligence (AI) by the financial industry. See for instance: www.finance-monthly.com/2016/09/habito-launches-the-worlds-first-ai-mortgage-advice-chat-bot/

⁴¹ Benwell, S. (18 November 2015), [Robo-advice is an important tool in the pensions armoury](#).

⁴² Ibid.

concepts in accessible ways through pictures, graphics, drawings, and visually easier-to-understand representations which can be powerful, particularly when reaching out to illiterate populations and communities. For example, Money Desktop's *Guide Me* provides an attractive visual representation of an individual's financial goals in bubbles whose size is based on how much money they will require.⁴³

Very few INFE survey respondents reported knowing of, or having designed, digital tools to specifically address the financial education needs of disadvantaged groups. However, In Colombia, for example, beneficiaries of a conditional cash transfer programme are getting access to financial education through an app that runs on tablets and which provides training via simulators that allow learners to practice the use of ATMs and mobile banking, interactive exercises, games and video testimonials. The app also provides practical information on savings, responsible debt, and risk management, as well as suggestions on how to manage household finances.⁴⁴ More specifically, community leaders circulate the tablet among users who can study in the privacy of their own homes, repeating training modules until they feel confident, and then sharing the content with their families. The "Colombia Lista" programme was initially piloted by women and mothers of the national conditional cash transfer programme (Más Familias en Acción) and is now being scaled up with the goal of reaching 100,000 users in the course of the year.

Yuk Sikapi – an application for women entrepreneurs in Indonesia

Yuk Sikapi is a mobile application that aims to educate women who have micro, small, or medium-size enterprises about financial planning and to change their behaviour so that they start using financial products and services. The application provides chat rooms for users to ask questions to the administrator and a platform for all users to discuss about how to best manage their money. In order to change users' behaviour, the Indonesia Financial Services Authority (in charge of running this digital tool) sends users some reminders/text messages to save. The Yuk Sikapi app is still in pilot phase among 500 women from different SMEs, but it has also just been made available through Play Store. The impact of this application is expected to increase overall financial literacy and inclusion levels.

In light of the pressing global outlook with low levels of financial literacy worldwide (as discussed in Section 3 of the report), further attention needs to be given to devising smarter means and more tailored strategies to leverage digital technologies for bringing quality financial education and learning to the poorest, most financially vulnerable, and hardest to reach, including in developed nations.

Tailoring financial education to individual needs

Digital technologies, such as websites (e.g. the Money Advice Service's website in the United Kingdom), make it possible for consumers to sign up and create an individual profile or account, and to obtain personalised financial information and advice tailored to their specific needs (e.g. buying a car or house, saving for university fees, planning for retirement, etc.). The Central Bank of Brazil has also put in place an online platform with key financial information delivered through short videos ("Me and my money") to educate consumers about ways to better manage their finances, adopt more responsible consumption habits and resist aggressive selling techniques, while alerting them to the consequences of impulse buying and a lack of household financial planning.⁴⁵ Other digital tools also facilitate access to personalised content and information for consumers to improve their overall financial knowledge or specific financial performance (see below).

⁴³ www.forbes.com/sites/nextavenue/2013/09/13/4-new-online-money-management-tools-worth-a-try/#140972d3795c

⁴⁴ <http://fundacioncapital.org/digital-solutions/lista-initiative/iniciativa-lista-colombia/?lang=en>.

⁴⁵ <https://cidadanianefinanceira.bcb.gov.br/14-destaque-02/64-videos-euemeudinheiro>.

FOCUS: Personalising and adapting financial content and information through SMS¹

An interactive SMS project for users of mobile money savings and credit products has targeted farmers in rural Tanzania through a personalised learning tool, *Arifu*, which provides them with customised learning content based on their own preferences and responses.

The project involved developing a series of interactive SMS scripts that let farmers guide their own learning on their phones, and to do so when they wanted and on the content they desired. For instance, those farmers more interested in loans could learn how to check their loan limits or how to use a cost calculator tool; while those interested in savings could read a story about a farmer like them who has saved for his business or set their own personal savings goal.

The initial results from this pilot project suggest that farmers who accessed the learning platform saved at rates more than five times those of farmers who did not use the Arifu tool.

Mazer, R. (10 August 2016), [Interactive SMS Drives Digital Savings and Borrowing in Tanzania](#).

4.2.2. Reinforce core competencies, confidence and experiences with finance

Information and advice are not sufficient in themselves. Financial literacy is also about behaviours and attitudes. Technology can help shape consumers' habits and attitudes to finance, as well as increase their personal confidence by allowing individuals to test financial concepts and products in real time, learn by trial and error, and experience failure (e.g. through interactive online/mobile games) – thus strengthening the overall financial decision-making process. By making it possible for consumers to learn at their own pace and rhythm, digital channels can help enhance core financial competencies through endless possibilities for repetition and reward, and through a format that is adapted to individual learning needs. For example, gamification (the process of integrating game-like actions into everyday tasks) is increasingly being used for making financial education more accessible and entertaining for all. Mindblown Labs, a cutting-edge technology social enterprise, has been working to integrate game play into financial education including through *Thrive 'n' Shine* which tasks players with guiding avatars forward through life and away from bankruptcy. The game makes financial systems discernible by embedding them in the context of play. The interactive environment of the game also allows players to encounter new layers of complexity as the player becomes capable of handling them, by presenting challenges in the form of “quests” that unlock as previous quests are completed. This quest system allows players to feel a consistent sense of progress toward new challenges and marks mastery over previous concepts. *Thrive 'n' Shine*'s clear long term goals serve as a sort of lighthouse to guide players forward, and as a reason to develop and practice positive financial behaviours. Saving money becomes a more compelling activity when it is a stepping stone towards owning a car.⁴⁶

There are also several websites targeting both children and adults and offering a myriad of free online and mobile games which aim to improve personal financial capability, knowledge and self-confidence including *Financial Entertainment* and *Practical Money Skills*. Other games such as *Mad Money* challenges players to save up for the all things they love (they get 30 “days”, or playtime units, to earn money, pay for things they need, and save up for their goal), while *My Life* gives children an opportunity to learn savings skills to make tough money management decisions.⁴⁷

Some technologies can also offer financially vulnerable people their first experience with formal/digital finance. For example, *Monese* is a mobile only current account designed for migrant workers

⁴⁶ York, T. (6 October 2015), [How to Use Games for Financial Education](#).

⁴⁷ <https://www.nerdwallet.com/blog/finance/learn-online-financial-literacy-games/>

who need a UK account before they can start employment. It allows individuals to quickly open an account without a UK address or credit history, just using a driving licence or passport as ID. In addition, the application also offers a spending analytics feature, as well as better deals on international money transfers.⁴⁸

4.2.3. Enhance money management skills and control over finances

Digital tools and applications can also be used to strengthen consumers' capacity to manage their personal finance (e.g. through budgeting and spending meters, financial goal trackers), as well as to provide long-distance learning (e.g. through instructional videos and online courses), particularly amongst vulnerable populations (see focus box below). Innovative digital interfaces are also seeking to directly influence an individual's behaviour and choices by providing them with a broader overview of their finances and spending patterns, as well as free and personalised financial tips and counselling. For instance, the startup *Moven* is experimenting with applications that provide users a comprehensive view of their finances to improve decision-making. *Mint* provides advice based on personal transactional patterns and helps consumers set spending plans and financial goals. *Cash Tank* is an application by Westpac bank in New Zealand that allows users to instantly check their bank balance to help control spending.⁴⁹

FOCUS: Addressing the particular money management needs of millennials

A recent report by Bank of America/USA Today indicates that there is room for more effective financial management efforts to enable millennials to take better control of their finances. It finds that 82% of millennials in the United States worry about money once a month or more, and that no matter where they live, the cost of living is a key concern for a majority of them. Millennials' top areas of financial stress include: not putting enough money into savings; spending more than they should; and facing adulthood.¹ Furthermore, even if millennials are technologically proficient and prefer interactive, competitive and entertaining forms of financial education, the average student loan debt has risen 56% in the last 10 years to nearly 30,000 USD.²

To the relief of millennials though, some FinTech companies are competing in ingenuity and creativity to help them overcome some of the financial hurdles they face. For instance, in the United States, *Tuition.io* shows young people how to best manage their multiple student loans, how much is still due, and when they will be paid off. It does this by sorting the student's loans graphically and highlights which loan has the highest interest rate and must therefore be paid off first.

¹ Bank of America/USA Today (Fall 2015), [Better Money Habits Millennial Report](#).

² www.newsday.com/business/study-5-million-millennials-don-t-have-a-checking-account-1.11607064

Digital tools also offer good opportunities to strengthen consumers' money management skills by providing them with a greater sense of control over their finances and choices. An ING survey finds that many European adults reported feeling more in control of their money since they switched to mobile banking technologies, with one in five mobile bank customers noting that they have not missed a payment since using mobile banking (ING, 2015).

⁴⁸ Wallace-Stephens, F. (16 September 2016), [Is Fintech Just for The Rich?](#)

⁴⁹ Faz, X. (24 September 2014), [5 Sources of Untapped Innovation in Digital Finance](#).

The majority of INFE survey respondents reported having national online portals or websites with specific sections focused on enhancing citizens' awareness and knowledge of basic money management concepts and good habits. Banks have also been making good use of digital innovations for years to help their customers better manage their finances, particularly by notifying them promptly (e.g. via automated text and email messages and alerts) when there is an overdraft or when account balances drop below a specified level, as well as by transferring funds periodically from one account to another, as needed and as requested by the customer.⁵⁰ Other newer tools, such as *Flexscore*, also calculate and provide consumers with an interactive personal finance score based on how well they are managing their money.

Australia - Keeping track of expenses with TrackMySPEND

This easy-to-use application allows consumers to keep track of their personal expenses by helping them to:

- Nominate a spending limit (per week, fortnight, month or year) and track their progress;
- Separate 'needs' and 'wants' to identify opportunities to save;
- Create 'favourites' so they can track frequent expenses;
- View their expense history;
- Add 'tags' to categorise expenses and set spending limits for each category;
- Create expense reminders sent as text messages to their phone, and
- Auto-fill expenses based on past entries.

4.2.4. Address consumers' personal biases

Digital channels can help counteract and limit the negative impact of consumers' inherent biases on financial decision-making such as procrastination or limited attention. Overcoming these human biases can be difficult but technology offers some opportunities to do so.

Self-applied nudges

The habit of pushing back decisions, and particularly those concerning delicate, difficult or 'boring' financial matters (e.g. choosing a life insurance policy or a retirement plan, or setting up a new business) is widespread and commonplace.⁵¹ By nudging consumers into specific action (e.g. through automated reminders, notifications and alerts to save or pay back a loan), digital tools can provide consumers with a chance to fight off inertia or break bad financial habits (e.g. not putting any money aside for savings on a regular basis, never setting personal financial goals or targets, impulse buying, or shopping to feel happy) and help modify consumer behaviour positively towards better financial decision-making and smarter choices.

For example, Juntos Finanzas, a startup in Silicon Valley, has demonstrated the impact of an automated messaging algorithm that creates personalised dialogues with customers to keep them engaged in savings. In a recent pilot, they showed how these automated dialogues doubled the intensity with which savers saved (average balance increased by 74% as opposed to 37% in the control group).⁵²

Some applications, such as *Osper*, are marketed specifically at students or the parents of young people with the goal of teaching them to spend and save their pocket money more wisely as well as better manage their allowance. *Osper* can also help young people become more aware of their spending choices and

⁵⁰ www.bankofamerica.com/onlinebanking/education/checking-account-features.go

⁵¹ Gensler, L. (26 December 2015), **5 Bad Financial Habits to Kick in 2016**.

⁵² Faz, X. (24 September 2014), **5 Sources of Untapped Innovation in Digital Finance**.

patterns by allowing them to regularly tag and track their spending (they receive a mobile notification when they spend).⁵³

Similarly, a new application, *Squirrel*, aims to help low income households better manage their salaries and set aside money automatically. This application diverts their wages into a special account that they cannot access immediately and helps to prevent overspending by releasing small amounts of money at timely points each month, with larger amounts released when big bills are due. It also helps people save by holding back a monthly amount which will contribute to established targets.⁵⁴

Just-in time information

Some digital tools can help address consumers' personal biases by providing information about a product or similar alternatives (e.g. through virtual price/product/offer comparisons) or opportune, just-in time information at the point of sale or immediately after, thus creating opportunities for timely changes in financial behaviour and decisions. For example, in the United States, almost two in three mobile banking users have checked their account balance on their phone before making a large purchase, and over half of them decided not to purchase an item as a result of their account balance or credit limit (FED, 2015). *Monzo* is a mobile banking app that analyses users' spending in real-time and then enables them to see how much they spend on travel, groceries, bills and entertainment every month. Other applications such as *Pariti* give users an overview of all their bank and credit card accounts and, after they input their anticipated expenses, along with any money they want to save, it uses an algorithm to predict whether (and by how much) they will overspend each month. Some traditional financial institutions have also developed modern applications such as the *Santander's SmartBank* app which uses artificial intelligence to respond when people ask their smartphone questions such as "how much did I spend last week?" or "how much have I spent at the coffee shop this month?".

By providing relevant and useful financial information when it is most needed, digital tools can better exploit "teachable moments" when consumers are more open to learning. In addition, they can also help consumers take advantage of more common daily situations, for example, when they are about to make a financial transaction over the internet, via a mobile application, or in front of an ATM. For example, *RevolutionCredit* is a start-up that is demonstrating how bite-sized, "gamified" financial education videos offered at the point of transaction improve how individuals use their credit cards. Customers who choose to watch a series of one minute videos and pass corresponding tests, prove to use their loans better. In a recent pilot, loan delinquency rates decreased from 12% to 9%.⁵⁵

4.3. Develop impact evaluation of new initiative delivery channels

More research is needed on the impact and effectiveness of both financial education programmes focused on DFS (discussed in Section 3), and the digital tools currently in use globally to achieve financial education outcomes. Monitoring and evaluation are essential to ensuring that a programme or technology is effective, as well as to identify areas for improvement (OECD/INFE, 2012b). This is highly relevant to the delivery of financial education initiatives targeting DFS, most of which have not yet undergone a process of impact evaluation mainly because of their newness.

Only a few INFE survey respondents are assessing the overall impact of their programmes and financial education initiatives targeting DFS. Assessments are mainly focused on tracking usage of

⁵³ <https://osper.com/homepage>.

⁵⁴ Wallace-Stephens, F. (16 September 2016), [Is Fintech Just for The Rich?](#)

⁵⁵ Faz, X. (24 September 2014), [5 Sources of Untapped Innovation in Digital Finance](#).

available digital financial education platforms, as measured by the number of page views, downloads and visitors. Similarly, the effectiveness of some digital technologies, (e.g. social media accounts) currently in use by INFE members for delivering financial education messages, is also being measured only by the number of likes and comments left by users.

A closer look and more rigorous evaluation will be needed to go beyond anecdotal evidence towards identifying the actual effects and impact of specific digital technologies on consumer behaviour and financial knowledge. More broadly, the results of an impact evaluation can also provide helpful guidance on how to best allocate public and private resources, shifting money to where it can produce more impact and leverage benefits for all.

A key policy priority for all policymakers interested in the opportunities offered by the digital revolution will be to closely follow the progress of both emerging digital tools and financial education programmes focused on DFS, and to undertake further research and more in-depth evaluation of their impact.⁵⁶

Finally, while digital technologies offer important benefits in terms of access, reach and flexibility in use, so far they remain a complement, rather than a substitute, to more traditional tools and approaches to achieving financial education outcomes. It will therefore be important to ensure and promote a dynamic mix of both, as well as their proper evaluation.

Such digital tools, their use, evaluation and their impact on consumers will be one of the core tasks of the newly created OECD/INFE Working Group on digitalisation and financial literacy.

⁵⁶ This will notably be reflected through the OECD/INFE project to develop a database of evaluated financial literacy initiatives.

References

- AFI (2014), Mobile Financial Services. Consumer Protection in Mobile Financial Services, Alliance for Financial Inclusion, Bangkok. www.afi-global.org/sites/default/files/publications/mfswg_guideline_note_7_consumer_protection_in_mfs.pdf
- Allianz (2017), “When Will the Penny Drop? Money, financial literacy and risk in the digital age”, International Pension Papers, 1/2017, Allianz SE, Munich. <http://projectm-online.com/app/uploads/Allianz-international-pensions-financial-literacy-2017-report.pdf>
- ASIC (2015), Regulation impact assessment – Facilitating digital financial services disclosures, Australian Securities and Investments Commission. <http://download ASIC.gov.au/media/3309666/ris-facilitating-digital-financial-services-disclosures-published-28-july-2015.pdf>
- Atkinson, A. and F. Messy (2012), “Measuring Financial Literacy: Results of the OECD / International Network on Financial Education (INFE) Pilot Study”, OECD Working Papers on Finance, Insurance and Private Pensions, No. 15, OECD Publishing, Paris. <http://dx.doi.org/10.1787/5k9csfs90fr4-en>
- A.T. Kearney (2014), Going Digital: The Banking Transformation Road Map, Andrew Thomas Kearney, Inc., Chicago. www.atkearney.com/documents/10192/5264096/Going+Digital+-+The+Banking+Transformation+Road+Map.pdf/60705e64-94bc-44e8-9417-652ab318b233
- Bank of America/USA Today (Fall 2015), “Better Money Habits Millennial Report”, Bank of America webpage, <https://bettermoneyhabits.bankofamerica.com/content/dam/bmh/pdf/fall-2015-millennial-report.pdf>
- Banking Technology (17 November 2015), “Digitising the banks”, Banking Tech webpage, www.bankingtech.com/402362/digitising-the-banks/.
- BBA (2015), Digital Disruption: UK Banking Report, British Bankers’ Association, London. www.bba.org.uk/publication/bba-reports/digital-disruption-uk-banking-report-2/
- BBVA Research (2015), “Smart Contracts: The Ultimate Automation of Trust”, Digital Economy Outlook October 2015, Banco Bilbao Vizcaya Argentaria Research, Madrid. www.bbva.com/en/wp-content/uploads/2016/11/Digital_Economy_Outlook_Oct15_Cap1.pdf
- Benwell, S. (18 November 2015), “Robo-advice is an important tool in the pensions armoury”, Pensions Insight, www.pensions-insight.co.uk/robo-advice-is-an-important-tool-in-the-pensions-armoury/14746742.article.
- CFPB (2015), Mobile financial services. A summary of comments from the public on opportunities, challenges, and risks for the underserved, Consumer Financial Protection Bureau, Washington, DC. https://s3.amazonaws.com/files.consumerfinance.gov/f/201511_cfpb_mobile-financial-services.pdf
- CGAP (2016), Achieving the Sustainable Development Goals. The Role of Financial Inclusion, Consultative Group to Assist the Poor, Washington DC. www.cgap.org/sites/default/files/Working-Paper-Achieving-Sustainable-Development-Goals-Apr-2016.pdf
- CGAP (2015), Doing Digital Finance Right: The Case for Stronger Mitigation of Consumer Risks, Consultative Group to Assist the Poor, Washington DC. www.cgap.org/sites/default/files/Focus-Note-Doing-Digital-Finance-Right-Jun-2015.pdf

Christopher, C. (2016), “Mobile Banking: The Answer for the Unbanked in America?”, Catholic University Law Review, Vol. 65, Issue 2, Winter 2015, Article 6, Washington DC.
<http://scholarship.law.edu/cgi/viewcontent.cgi?article=3360&context=lawreview>

Credit Union Times (26 January 2016), “Mobile payments bring consumer fears”, Credit Union Times webpage, www.cutimes.com/2016/01/26/mobile-payments-bring-consumer-fears-pew?&slreturn=1490102731

Deloitte (2014), “Sales force effectiveness in the insurance industry and the impact of the digital transition”, Deloitte Digital, www2.deloitte.com/content/dam/Deloitte/lu/Documents/technology/lu-sales-force-effectiveness-insurance-digital-transition-29102014.pdf

Deloitte (2012), “Bridging the advice gap: Delivering investment products in a post-RDR world”, A Deloitte Insights report, www2.deloitte.com/content/dam/Deloitte/uk/Documents/financial-services/deloitte-uk-fs-rdr-bridging-the-advice-gap.pdf

Demirguc-Kunt, A. et al. (2015), “The Global Findex database 2014: Measuring financial inclusion around the world”, World Bank Policy Research Working Paper 7255, World Bank, Washington, DC. <http://golec.org/wp-content/uploads/2015/09/GlobalFindex2015.pdf>

Deutsche Bank Research (2015), Fintech Reloaded – Traditional Banks as Digital Ecosystems, Deutsche Bank AG, Frankfurt. www.dbresearch.de/PROD/DBR_INTERNET_EN-PROD/PROD0000000000356835.pdf

EC (2016), Consumer Vulnerability Across Key Markets in the European Union. Final Report, European Commission, Brussels. http://ec.europa.eu/consumers/consumer_evidence/market_studies/docs/vulnerable_consumers_approved_27_01_2016_en.pdf

Faz, X. (24 September 2014), “5 Sources of Untapped Innovation in Digital Finance”, CGAP blog, www.cgap.org/blog/5-sources-untapped-innovation-digital-finance.

FCAC (2016), Payday Loans Market Trends, Financial Consumer Agency of Canada, Ottawa. www.canada.ca/content/dam/fcac-acfc/documents/programs/research-surveys-studies-reports/payday-loans-market-trends.pdf

FED (2015), Consumers and Mobile Financial Services 2015, Board of Governors of the Federal Reserve System, Washington DC. www.federalreserve.gov/econresdata/consumers-and-mobile-financial-services-report-201503.pdf

FinCoNet (2016), Online and mobile payments: Supervisory challenges to mitigate security risks, International Financial Consumer Protection Organisation. www.finconet.org/FinCoNet_Report_Online_Mobile_Payments.pdf

Finextra Research (2016), Banking on Blockchain: Charting the Progress of Distributed Ledger Technology in Financial Services, Finextra Research Ltd, London. www.ingwb.com/media/1609652/banking-on-blockchain.pdf

FTC (2016), Big Data: A Tool for Inclusion or Exclusion? Understanding the Issues, US Federal Trade Commission, Washington DC. www.ftc.gov/system/files/documents/reports/big-data-tool-inclusion-or-exclusion-understanding-issues/160106big-data-rpt.pdf

G20 (2016), G20 High-Level Principles for Digital Financial Inclusion. www.gpfi.org/sites/default/files/G20%20High%20Level%20Principles%20for%20Digital%20Financial%20Inclusion.pdf

G20 (2010), G20 Principles for Innovative Financial Inclusion. www.gpfi.org/sites/default/files/documents/G20%20Principles%20for%20Innovative%20Financial%20Inclusion%20-%20AFI%20brochure.pdf

- G20/OECD (2011), High-level Principles on Financial Consumer Protection.
www.oecd.org/daf/fin/financial-markets/48892010.pdf
- Gensler, L. (26 December 2015), “5 Bad Financial Habits to Kick in 2016”, Forbes webpage,
www.forbes.com/sites/laurengensler/2015/12/26/bad-financial-habits/#273143296033
- GPFI (2016), Global Standard-Setting Bodies and Financial Inclusion: The Evolving Landscape, Global Partnership for Financial Inclusion, Washington DC.
www.gpfi.org/sites/default/files/documents/GPFI_WhitePaper_Mar2016.pdf
- GPFI (2015), Digital Financial Solutions to Advance Women’s Economic Participation, Global Partnership for Financial Inclusion, Washington DC. www.gpfi.org/sites/default/files/documents/03-Digital%20Financial%20Solution%20to%20Advance%20Women....pdf
- GSMA (2016a), The Mobile Economy 2016, Groupe Speciale Mobile Association, London.
www.gsmaintelligence.com/research/?file=97928efe09cdba2864cdcf1ad1a2f58c&download
- GSMA (2016b), 2015 State of the Industry Report Mobile Money, Groupe Speciale Mobile Association, London.
www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/04/SOTIR_2015.pdf
- GSMA (2016c), Infographic: Unique subscribers: Understanding the true reach of mobile, Groupe Speciale Mobile Association, London. www.gsmaintelligence.com/research/2016/02/infographic-unique-subscribers-understanding-the-true-reach-of-mobile/550/
- GSMA (2016d), Digital Inclusion in Latin America and the Caribbean, Groupe Speciale Mobile Association, London.
www.gsma.com/mobilefordevelopment/wp-content/uploads/2015/02/Connected-Society-Digital-inclusion-in-Latin-America-and-the-Caribbean-1.pdf
- GSMA (2015a), 2014 State of the Industry Mobile Financial Services for the Unbanked, Groupe Speciale Mobile Association, London. www.gsma.com/mobilefordevelopment/wp-content/uploads/2015/03/SOTIR_2014.pdf
- GSMA (2015b), *Bridging the Gender Gap: Mobile Access and Usage in Low- and Middle-income Countries*, Groupe Speciale Mobile Association, London. www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/02/GSM0001_03232015_GSMAReport_NEWRAYS-Web.pdf
- GSMA (2015c), Mobile internet usage challenges in Asia — awareness, literacy and local content, Groupe Speciale Mobile Association, London. <http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2015/07/150709-asia-local-content-final.pdf>
- GSMA (2013), Sustainable Energy & Water Access through M2M Connectivity, Groupe Speciale Mobile Association, London. www.gsma.com/mobilefordevelopment/wp-content/uploads/2013/01/Sustainable-Energy-and-Water-Access-through-M2M-Connectivity.pdf
- ING (2015), ING International Survey: Mobile Banking, New Technologies and Financial Behaviour – The rise of mobile banking and the changing face of payments in the digital age, International Netherlands Group, Amsterdam. www.economics.com/ing_international_surveys/mobile_banking_2015/
- Kahneman, D. (2003), “Maps of Bounded Rationality: Psychology for Behavioural Economics”, The American Economic Review, 93 (5), December 2003, pp. 1449-1475.
www.princeton.edu/~kahneman/docs/Publications/Maps_bound rationality_DK_2003.pdf
- Kantox (2014), The Rise of Fintech in Finance, Kantox Ltd, London. http://cdn2.hubspot.net/hub/310641/file-1445626583-pdf/Rise_of_Fintech_in_Finance/Fintech_DEF.pdf?t=1413451665739
- Mazer, R. (10 August 2016), “Interactive SMS Drives Digital Savings and Borrowing in Tanzania”, CGAP blog, www.cgap.org/blog/interactive-sms-drives-digital-savings-and-borrowing-tanzania

Newman, N. (2014), Comments to the FTC workshop: “How Big Data Enables Economic Harm to Consumers, Especially to Low-Income and Other Vulnerable Sectors of the Population”, US Federal Trade Commission webpage, www.ftc.gov/system/files/documents/public_comments/2014/08/00015-92370.pdf.

OECD (2015), OECD Digital Economy Outlook 2015, OECD Publishing, Paris.
<http://dx.doi.org/10.1787/9789264232440-en>

OECD (2014), Financial Education for Youth: The Role of Schools, OECD Publishing, Paris.
<http://dx.doi.org/10.1787/9789264174825-en>

OECD (2013a), Advancing National Strategies for Financial Education. A Joint Publication by Russia’s G20 Presidency and the OECD. www.oecd.org/finance/financial-education/G20_OECD_NSFinancialEducation.pdf

OECD (2013b), Women and Financial Education. Evidence, Policy Responses and Guidance, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264202733-en>

OECD (2005), Recommendation on Principles and Good Practices for Financial Education and Awareness, OECD Publishing, Paris. www.oecd.org/finance/financial-education/35108560.pdf

OECD/INFE (2016), OECD/INFE International Survey of Adult Financial Literacy Competencies, OECD Publishing, Paris. www.oecd.org/daf/fin/financial-education/OECD-INFE-International-Survey-of-Adult-FInancial-Literacy-Competencies.pdf

OECD/INFE (2015), National Strategies for Financial Education: OECD/INFE Policy Handbook.
www.oecd.org/daf/fin/financial-education/National-Strategies-Financial-Education-Policy-Handbook.pdf

OECD/INFE (2013), Financial Literacy and Inclusion: Results of the OECD/INFE Survey across Countries and by Gender. www.oecd.org/daf/fin/financial-education/TrustFund2013_OECD_INFE_Fin_Lit_and_Incl_SurveyResults_by_Country_and_Gender.pdf

OECD/INFE (2012a), High-level Principles on National Strategies for Financial Education.
www.oecd.org/finance/financial-education/OECD_INFE_High_Level_Principles_National_Strategies_Financial_Education_APEC.pdf

OECD/INFE (2012b), INFE High-level Principles for the Evaluation of Financial Education Programmes.
www.oecd.org/daf/fin/financial-education/49373959.pdf

Parada, M. and G. Bull (2014), In the Fast Lane: Innovations in Digital Finance, International Finance Corporation, Johannesburg. www.ifc.org/wps/wcm/connect/d2898b80440daa039453bc869243d457/In+The+Fast+Lane+-+Innovations+in+Digital+Finance+IFC.pdf?MOD=AJPERES

Positive Planet (April 2016), “Banking on Women: Financial Education in Rural China”, Positive Planet webpage, www.positiveplanet.ngo/wp-content/uploads/Banking-on-Women_Financial-Education-in-Rural-China-April-2016.pdf

Prelec, D. and D. Simester (2000), Always Leave Home Without It: A Further Investigation of the Credit-Card Effect on Willingness to Pay, Massachusetts Institute of Technology, Cambridge.
<http://web.mit.edu/simester/Public/Papers/Alwaysleavehome.pdf>

Runnemark, E., J. Hedman and X. Xiao (2015), “Do consumers pay more using debit cards than cash?”, Electronic Commerce Research and Applications, Volume 14, Issue 5, September–October 2015, pp. 285–291.
www.sciencedirect.com/science/article/pii/S1567422315000149

Schmalzried, M. (22 September 2016), “Fintechs: Milking the Poor”,
www.linkedin.com/pulse/fintechs-milking-poor-martin-schmalzried (last accessed 22 March 2017).

Stephen, S. and P. Wagh (16 December 2014), “Financial Education in the Digital Age: It’s affordable, it’s scalable – but does it work?”, Next Billion webpage, <http://nextbillion.net/financial-education-in-the-digital-age/>.

TransferWise (2015), “The Future of Finance”, TransferWise webpage, <https://transferwise.com/guides/global-finance/future-of-finance>.

UK Government Office for Science (2016), Distributed Ledger Technology: Beyond Block Chain, Government Office for Science, London. www.gov.uk/government/uploads/system/uploads/attachment_data/file/492972/gs-16-1-distributed-ledger-technology.pdf

UK Government website (2014), Government Digital Inclusion Strategy, www.gov.uk/government/publications/government-digital-inclusion-strategy/government-digital-inclusion-strategy (last accessed 22 March 2017).

Wallace-Stephens, F. (16 September 2016), “Is Fintech Just for The Rich?”, RSA blog, www.thersa.org/discover/publications-and-articles/rsa-blogs/2016/09/is-fintech-just-for-the-rich.

Winthrop, R. and M. Smith (2012), “A New Face of Education: Bringing Technology into the Classroom in the Developing World”, Brooke Shearer Working Paper Series, Working Paper 1, Brookings, Washington DC. https://www.brookings.edu/wp-content/uploads/2016/06/01_education_technology_shearer.pdf

World Bank Development Research Group (2014), The Opportunities of Digitizing Payments: How digitization of payments, transfers, and remittances contributes to the G20 goals of broad-based economic growth, financial inclusion, and women’s economic empowerment, The World Bank, Washington DC. http://siteresources.worldbank.org/EXTGLOBALFIN/Resources/8519638-1332259343991/G20_Report_Final_Digital_payments.pdf

York, T. (6 October 2015), “How to Use Games for Financial Education”, CGAP blog, www.cgap.org/blog/how-use-games-financial-education.

Annex 1. List of institutions that participated in the survey

1. Capital Market Commission, Angola
2. Australian Securities and Investments Commission, Australia
3. Oesterreichische Nationalbank, Austria
4. Bangladesh Securities and Exchange Commission, Bangladesh
5. National Bank of Belarus, Republic of Belarus
6. Financial Services and Markets Authority, Belgium
7. Central Bank of Brazil
8. BVI Financial Services Commission, British Virgin Islands
9. China Banking Regulatory Commission, People's Republic of China
10. Central Bank of Colombia
11. Croatian National Bank, Republic of Croatia
12. Ministry of Finance, Czech Republic
13. Danish Financial Supervisory Authority, Denmark
14. Estonian Financial Supervision Authority, Estonia
15. Federal Financial Supervisory Authority, Germany
16. Investor Education Centre, Hong Kong, China
17. Reserve Bank of India
18. Indonesia Financial Services Authority (OJK) and Bank of Indonesia
19. Bank of Italy
20. Bank of Japan
21. Financial Services Agency, Japan
22. Financial Supervisory Service, Republic of Korea
23. Financial and Capital Market Commission, Latvia
24. Bank Negara Malaysia (Central Bank)
25. Securities Commission Malaysia
26. Ministry of Finance, Netherlands
27. Commission for Financial Capability, New Zealand
28. Superintendence of Banking, Insurance and Private Pension, Peru
29. Bangko Sentral ng Pilipinas, Philippines
30. Banco de Portugal
31. Financial Supervisory Authority, Romania
32. National Bank of Slovakia, Slovak Republic
33. Securities Market Agency, Slovenia
34. SG Treasury and Financial Policy, Spain
35. Swiss National Bank, Switzerland
36. Bank of Thailand, Thailand
37. Banking Regulation and Supervision Agency, Turkey
38. US Department of the Treasury for the Financial Literacy and Education Commission, United States

ABOUT “ENSURING FINANCIAL EDUCATION AND CONSUMER PROTECTION FOR ALL IN THE DIGITAL AGE”

This report has been prepared by the OECD International Network on Financial Education (OECD/INFE) through an iterative consultation process between 2015 and 2017. It is based on initial contributions from 38 public institutions in Africa, Asia, Europe and the Americas through a stocktaking survey and an extensive desk research and literature review. The report has benefited from several rounds of comments made by the large OECD/INFE membership and relevant G20 and international bodies. Final comments by the OECD/INFE, the G20/OECD Task Force on Financial Consumer Protection, FinCoNet and GPFI were incorporated in February 2017. As the report constitutes an integral part of the programme of work of the OECD Committee on Financial Markets and Insurance and the Private Pensions Committee, it was reviewed and approved for dissemination to the G20 by these two OECD bodies in March 2017. This report is a contribution to the priorities of Germany's G20 presidency on digitalisation and financial inclusion and is transmitted to G20 Financial Ministers and Central Bankers at their meeting in Washington DC on 20-21 April 2017. Highlights from the report were circulated to the G20 in 2016 and mentioned in the annex of the G20 Leaders' communiqué.

ABOUT THE OECD AND ITS INTERNATIONAL NETWORK ON FINANCIAL EDUCATION

OECD governments officially recognised the importance of financial literacy in 2002 with the launch of a unique and comprehensive project. In 2008 the project was further enhanced through the creation of an International Network on Financial Education. The OECD/INFE has high-level membership from over 240 public institutions - including central banks, financial regulators and supervisors, ministries of finance and ministries of education - in over 110 countries. Members meet twice a year to share country and member experiences, discuss strategic priorities and develop policy responses.

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