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The Role of FinTech and 'Edutainment' in Financial Education*

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ABSTRACT

Financial education refers to any initiative with the potential to increase peoples' financial literacy. The quality of the educational content represents a pivotal driver of the success (or failure) of a financial education program. However, a pivotal role is played even by the way the content is organized and delivered to the final recipients. This article analyses the main available options and stresses the potential role of FinTech and Edutainment in the evolution of financial education. The pros and cons of different delivery options are described to highlight how developers of financial education programs can take benefits from one or another according, for instance, to the age of the target group, or the digital literacy of the recipients. Some best practices are described to show how FinTech and Edutainment can reshape the approach to financial education.

Keywords: financial education pedagogy, fintech, edutainment, digital literacy

1. Introduction

The last 20 years of research on consumer interests related to financial literacy and financial education strongly support the hypothesis that those who are more financially literate tend to show positive financial behaviours (Allgood and Walstad 2011, Almenberg and Dreber 2015, Song 2020), to be more likely to avoid financial mistakes (Gutiérrez-Nieto et al. 2017, Ranyard et al. 2017, Engels et al. 2020, Wei et al. 2021), and doing so they can achieve financial well-being more easily than people who lack financial knowledge, skills, and attitudes (Zhong et al. 2017, Fan and Henager 2021).

The positive role of financial literacy on peoples' financial well-being supports the will to promote financial

education, under the assumption that financial education helps people to increase their financial literacy and doing so they will be better financial consumers, being more knowledgeable of the functioning of financial products, financial services, and financial markets, and being more aware of the possible consequences of their financial decisions.

However, if the chance to increase financial literacy by financial education sounds reasonable, we need evidence about that. We need to test if financial education is able to affect peoples' financial literacy, we need to assess the magnitude of such improvement, and we need to test how long the effect of financial education last, accounting for a possible decay of the acquired knowledge over time.

When addressing these research topics (which can be summarized as the assessment of the effectiveness of financial education) it is easy to understand the complexity of this area of research. The chance that financial education curricula will increase peoples' financial literacy is affected by several factors, including (1) the initial degree of financial literacy of the participants, (2) the motivation to learn

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of the attendees, (3) the innate quality of the materials, and (4) the ergonomics of the financial education initiatives.

A course cannot increase peoples' financial literacy when it is too easy or too complex for the recipients. Those who already knows the topics addressed by a financial education program will not take any benefit in terms of improvement of their financial literacy. At the same time, those who attend a course that is too advanced, because it requires some preliminary basis knowledge that the participant lack, will not take any (or small) advantage from the course.

People without a strong motivation to learn about finance may not pay enough attention and will not be really engaged in the learning process. Of course, the quality of the materials and the whole learning process matters, and the effectiveness of the financial education, for instance, will suffer from a poor quality of the learning experience. However, another pivotal element we need to account for when we want to assess the effectiveness of financial education is the possibility that different delivery methods of financial education fit better with different targets of recipients and in different scenarios than others.

Regardless of the contents and the quality of the financial education, the motivation of the participants and other aspects able to affect the success or the failure of financial education, the delivery methods of financial education represent a pivotal point that we need to take into account, and that can strongly affect the success of a financial education program. The aim of this study is to stress the relevance of the delivery options in financial education, and to stress the potential of new delivery options based on FinTech and Edutainment.

The following paragraphs will analyse the alternative available options to deliver financial education, stressing how some of them fit better with some targets of recipients than others. Special attention will be paid to alternative options that recently developed to take advantage of the linking of new technologies and finance (the so-called FinTech) and the opportunity to apply schemes and logics from gaming and entertainment environments in the delivery of financial education. A description of some best practices of the joining of financial education, FinTech, and Edutainment completes the analysis of the study.

II. How to Deliver Financial Education

The typical standard options to help people learn about finance are those related with teaching. Hence, an on-site course or class is one option to deliver financial education contents. People will be physically gathered in a room to attend a single or multiple classes interacting with a teacher. This option fits pretty well when the target of recipients are students, who will add the class (or the course) to their schedule. The pros of such delivery option include the interaction between students and teachers and the chance for the teachers to adjust the contents of the course according to the interest of the attendees. For instance, they can use some personal experiences shared by the audience to address some topics of the course, and to make the course experience more personal and empathic. If students show more interest in some topics, the teacher will have the chance to spend a bit more time on them than others. There are also some cons with on-site classes. To gather people in a single place at the same time can be challenging when the target audience is not students. In case of adults, an on-site class risks becoming a time-consuming initiative that includes spending the time of the class, and the time to go and come back from the class. The fact that the class is scheduled on a certain day of the week and at a certain time represents an additional constraint that could discourage attendance of those who do not have a strong motivation. If these cons can be already enough to jeopardize the success of a financial education initiative, from the organizational point of view this option might not fit for a program or a campaign that targets a massive audience. To target thousands or more recipients the organization and the logistical issues can become a critical point of the initiative. A massive on-site financial education campaign will even require coordinating the work of several teachers, including "teaching the teacher".

The recent experience of the COVID-19 pandemic pushed most of the educational organizations and companies online. Distance learning is now more familiar than it was, and it represents an alternative delivery method for contents and materials. Online financial education initiatives were available even before the pandemic, but the chance to access contents remotely in a learning experience is probably now less perceived as a weird option. The use of real-time video-streaming classes can reduce

the access cost of an on-site class (e.g. time, transportation, etc.) and makes financial education more accessible, for instance, to individuals who live in rural areas and could not attend financial education initiatives if organized in the city. The remote access can extend the number of potential attendees quite beyond the capacity of a single room and can gather in a single virtual room participants from different cities or different countries. However, the interaction between the speaker and the audience, and the interaction between participants are not as good as those of an on-site class. But online financial education can be based not only on real-time video classes, but on other materials — including pre-recorded videos, reading, case analysis, etc. — that do not require interaction between participants or teachers. Distance learning makes financial education easier to access and quite scalable: participants have no time constraint in the attendance (which is possible 24h/7d), and the financial education program can be accessed by a large number of participants at the same time with almost null marginal costs. However, these pros are not free. The lack of interaction with teachers and a lack of flexibility in the learning experience represent cons of online curricula. For example, the need to use devices that may not be available and the possible lack of "digital literacy" represent two additional challenges of this delivery options, and risks making financial education not accessible to some groups (e.g. the elderly) or in some areas (e.g. areas with poor internet connections).

Sometime financial education curricula are promoted as part of national strategies or public campaigns whose main goals are to raise awareness of the need to be financial literate and to stimulate people to take care about their finances. These campaigns are usually placed out of educational institutions (e.g. schools, colleges, universities, etc.) and concentrated in a specific timeframe (e.g. "financial literacy month", "world investor week", etc.). These kinds of events have the pro to benefit from high visibility from the media and help people to develop consciousness of the need to take care about their finances and help them to develop their motivation to learn. Keeping in mind that motivation to learn is a pivotal trigger to convince people to approach a financial education program, the utility of such events is clear. The main con of these initiatives is the short available time to really transfer financial knowledge and, by consequence, the short-term horizon of the stimulus effect: with the end of the campaign and the media coverage on the initiative, people tend

to lose interest and do not keep going on their learning path.

III. Alternative Options for Financial Education: the role of Fintech and Edutainment

Traditional delivery options for (financial) education, based on the interaction between teachers and students remain a useful and effective alternative when the chance to gather people in a program based on face-to-face classes is not an issue (e.g. K-12 students, colleges, universities, military programs, etc.). At the same time, online courses can help to provide financial education, targeting those who will be otherwise hard to reach, and to promote knowledge of basic financial principles through an entire population. However, the set of the available options for financial education is not limited to traditional teaching methods. Two interesting areas of development in financial education concern the potential benefit of FinTech in educating people, and the chance to apply the logics and the schemes of gaming and entertainment industry to make the learning experience of individuals more engaging and effective.

About FinTech, Morgan (2021) states that "*Financial technology (Fintech) refers using software, applications, and digital platforms to deliver financial services to consumers and businesses through digital devices such as smartphones*" (pp. 239). For instance, smartphones represent in many countries a common personal device used not only to communicate by phone, or messaging, but even to organize our lives in a much broader sense (e.g. personal agendas, notes and alarms, maps, etc.), that includes specific areas such physical wellness (e.g. step counting apps, alert in case of extended seating, etc.), health (e.g. monitoring of heartbeats, blood pressure, etc.), and finance (e.g. e-banking, mobile payments, etc.).

The daily use of smartphones is an opportunity to make people think about their finances and to improve their financial knowledge and skills out of the traditional learning schemes. The possible pros of the use of FinTech in financial education include the chance to use FinTech to make a financial decision easier to take. FinTech can help to compare different products or to visualize data in an easier-to-use format, helping people to take the

most from their financial literacy. In the meantime, FinTech can support individuals providing "pills" of financial education unpacking and reshaping the learning process of a typical curriculum in several micro-contents to be delivered when they are more needed in a just-in-time delivery approach. Doing so, it is possible to avoid the risk that people will not be willing to attend an entire course on finance if they are more open to invest their time when the topic of a learning unit will not take too much time and it is perceived as relevant to a real financial decision. Moreover, FinTech can play a role to help people to keep track of their finances, reminding people of their coming expenses or alerting them when relevant information is available.

However, the several pros related with the use of FinTech in financial education are counterbalanced by some cons. For instance, Morgan (2021) highlights how the benefits of FinTech could not be equally distributed across the population, due to the presence of a digital gap, for instance, across generations. Those who are less prone or less comfortable in using technology will not be able to benefit from the financial education delivered by FinTech solutions. At the same time the author (Morgan 2021) reports results from studies of FinTech adoption in different countries (e.g., China, Japan, and Vietnam), where it seems that the adoption of FinTech is more likely in high-income groups than low-income groups, and that men are more prone than women to adopt technology in their financial management (Morgan and Trinh 2020; Yoshino et al. 2020). Keeping in mind that usually income is positively related with financial literacy, and men tend to systematically outperform women in financial literacy tests, the risk is that financial education provided by FinTech solutions will not reach those that need it the most.

An alternative (and fascinating) way to educate people about finance is one that tries to merge financial education, gaming, and entertainment to develop an output that is at the same time an educational tool and an entertainment tool, to be used not necessarily as a formal learning tool but even in leisure time for entertainment. The cross between those areas is referred to as "Edutainment" and it stresses both the educational and entertaining nature of the output. Kalmi and Sihvonen (2021) provides a clear overview and a classification of the possible applications of gaming and entertainment logics and schemes to financial education. To support the chance to develop financial literacy by

games they report results from previous studies that have already proven the effectiveness of games in education (Harter and Harter, 2010; Kalmi and Rahko, 2020; Maynard et al., 2012). If gaming has already been used in general education, there is room to extend its application to other areas, such as financial education.

A potential pro of the edutainment approach is the chance to help people develop not only financial knowledge (e.g. "what it a financial product and how it works"), but even financial skills (e.g. "when and how to use it to solve an issue"). This precious ability could be developed thanks to a learning process based on a learning-by-doing effect, where individuals play and learn at the same time. An additional pro of edutainment is the chance to bypass the diffidence and the lack of motivation to learn about finance of those who think finance is "too complex", thinking that any investment in financial education is worthless. To play a game can be perceived as more interesting and more fun than to read materials about financial topics. If the chance to deliver the contents of an entire financial education program by gaming activities can be too optimistic, the chance to use edutainment to make people be more familiar with basic financial principles and more prone to advance their knowledge represent a valuable goal. Even in this case, as in others, the pros of the edutainment are counterbalanced by some cons. The main issues of such financial education projects are the fact they are usually big budget projects and require cooperation between different areas of knowledge (e.g. finance, ICT, etc.), with the resulting organizational and cooperation costs.

IV. Some Best Practices

Both FinTech and Edutainment represent the current frontiers of financial education, but their potential and applications are still mainly unexpressed and need to be investigated. This section describes some examples of these kinds of initiatives to help to appreciate the possible outputs of these alternative options to deliver financial education.

A. Financial Football by VISA

Financial Football by VISA is an example of gamification of financial education. This app is one of the initiatives promoted by the payment circuit VISA and provided by the <https://practicalmoneyskills.com/> website. The age target of Financial Football is quite large, for individuals with the age of 11 and upwards. The interesting trigger used in this app is (American) football. People can play individually or as a team, and "head-to-head" games with two opponents playing against each other is also possible. People can select teams from the official list of the NFL (National Football League) and the graphic of the game visualizes the teams on the playing fields, including the background noise of the crowd. The player(s) can choose between a quick 5-minute game, or one of the longer options available (10 minutes, 20 minutes, 30 minutes). During the game, the performance of the team is driven by the answers to true/false or multiple-choice questions. There are different topics to deal with, that include debt, budgeting, saving, and life events. For each topic there are questions with different degrees of difficulty: the higher the difficulty, the higher are the points received for a correct answer. Correct answers help the team to play well (e.g. to gain yards or to achieve a touch-down), while wrong answers penalize the team's performance.

The game can be played online or downloaded as an app from the website <https://www.financialfootball.com>.

B. One Million Dollar Question

This financial education game uses the scheme of typical TV-shows based on quizzes. The player is invited to answer a series of multiple-choice questions, and every correct answer allows them to move on in the path and to increase the jackpot of the game. As an educational tool, no real money is included. People can register by a nickname and put a game in stand-by, coming back later to complete the game. Players can play on specific areas of contents, choosing between one of ten available options: Cash and Money management, Financial History, Payment cards, Bank accounts, Debt, Bond and Stocks, Saving and Investments, Financial Derivatives, Insurance, Pension and Planning. Otherwise, the game can randomly select questions from all these areas. The path to the "one-million-dollar question" is made by 15 questions.

Each of the 15 levels has different questions, to allow the player to learn about different content and to make the gaming experience more entertaining. After each answer, the player receives feedback that can explain why the answer was right or, in case of a wrong answer, which is the right option and why it is so.

The game is available on a website (<http://www.consumer-finance.org/million2021/>) but it is optimized for use from tablets and mobile phones too. This tool is promoted by the Consumer Finance Research Center (CFRC)¹ and in the last years was regularly part of the program of the "Financial Literacy Month" promoted by the Italian National Committee for Financial Education². As an initiative that targets Italians, it is currently available only in Italian.

C. The Stock Market Game

The Stock Market Game is an example of portfolio simulation designed to support (mainly) students to foster knowledge and understanding of the financial markets. As a learning-by-doing tool, people experience the functioning of the stock market and its volatility through the management of a (virtual) \$100,000 investment portfolio, in order to develop awareness of the fundamental principles of risk-and-returns and other investment related concepts.

The initiative is promoted by the Securities Industry and Financial Markets Association (SIFMA) Foundation and the tool is available at <https://www.stockmarketgame.org/>.

D. Me and My City

Me and My City belongs to the category of role-playing games and simulation. It is a Finnish project that takes children from the sixth year of elementary education to spend a day in a miniature city where they simulate real life activities, including working life, earning a salary, paying taxes, and managing their own expenses. The program starts with teaching materials with ten lessons

¹ For details please refer to <http://www.consumer-finance.org/>

² "Comitato per la programmazione e il coordinamento delle attività di educazione finanziaria" or "Comitato EduFin" (<http://www.quellocheconta.gov.it/it/>).

based on the national curriculum. After these classes, there is a one-day-visit to the learning environment "My City". The location is a 500 square meter miniature city, built of mobile walls. As reported by the description of the initiative³, "the environment includes real businesses such as energy and telephone companies, public services, and its own banking system. For one day, the students work, earn a virtual salary and act as members of society and consumers, under the constant supervision of a teacher. Among the activities are applications for job vacancies and interviews. They also have to pay taxes and learn how to manage their expenses and their free time". To make the experience more real, each MyCity environment reflects the characteristics of business life in the region of the country.

This educational program, which goes even beyond financial education, took place for the first time in 2010 in Helsinki and currently 70% of the sixth-year elementary students in the country have had access to the program.

E. Conectadas

Conectadas is a clear example of the application of FinTech to financial education. This program is a financial and entrepreneurship education program promoted by Grameen Foundation and Millicom to support women entrepreneurs in South America. The full title of the program is "Conectadas: Building Financial Capabilities and Entrepreneurship Skills among Latin American Women and Girls via Mobile Technology".

The program is based on educational content that was developed to be delivered through a mobile phone application. The aim of the program is to teach women entrepreneurs how to grow their businesses and manage their finances using various technology platforms. The program includes short videos (one to two minutes), followed by quizzes to reinforce the learning.

Launched in Guatemala in 2017, it is planned to expand to other Latin American countries, such as El Salvador, Honduras, Costa Rica, Paraguay and Bolivia.

V. Conclusion

The aim of this study is to stress the relevance of the delivery options in financial education, and to stress the potential of new delivery options, based on FinTech and Edutainment. The analysis of different delivery options for financial education helps to understand that the success of a financial education program is driven not only by the quality of the educational contents, but several other aspects including the choice of the delivery options for the program. Traditional delivery options, based on face-to-face meetings between a speaker and an audience (e.g. teaching class) work well in some contexts and have several pros, like the interaction between participants and the chance to make a real time fine-tuning of the learning experience.

At the same time, the new opportunities offered by FinTech and the chance to take advantage of gamification of the learning experience are the evidence that financial education can be extended beyond traditional schemes with the hope of improving the effectiveness of financial education. A wide set of delivery options allows to customize financial education and to address different targets of recipients in different manners. Looking forward, the chance to advance the learning experience of financial consumers, offered by artificial intelligence and the meta-verse, looks like additional fascinating scenarios for financial educators.

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³ See <http://innoveedu.org/en/me--mycity>

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