

Digitalization, financial Knowledge and ...

Daniela Marconi, Marco Marinucci Giovanna Paladino

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Main result

Concluding remarks Digitalization, Financial Knowledge and Financial Decisions

Daniela Marconi¹, Marco Marinucci¹, Giovanna Paladino²

¹Banca d'Italia ²Museo del Risparmio IntesaSanpaolo

8-9 may 2023

Disclaimer: The views herein are those of the authors and not of the institution represented.



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Motivation

Digitalization is rapidly changing the financial landscape: People are exposed to new instruments, apps etc.

- easier access to financial markets, payments etc.
 ⇒ > inclusion
- non-digital people excluded + simplistic approach to new techs

 \Rightarrow < inclusion and > risk

- growing attention to digital skill and financial knowledge (gender gap)
- !! financial well-being and financial inclusion!!



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- Fintech improves financial culture/behavior (French et al., 2020; Viviano & Michelangeli (2021) ... but could also be detrimental to financial well-being (Lee et al., 2022; Lyons & Kass-Hanna 2022)
- Financial culture and risky digital financial products (Panos et al. 2020; Engels et al., 2020)
- Digitalization and financial inclusion (Bianco et al. 2022)
- Financial literacy and gender gap (Bucher-Kœnen et al., 2021; Guiso and Zaccaria, 2021; Paladino 2022)



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Research questions

- Is the propensity to save and then to invest related to digital skills and financial knowledge?
- Do digital skills and financial knowledge affect people's attitudes towards digital payments and digital financial services?

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• Is (still) there a gender gap as digitalization $\uparrow \uparrow \uparrow$?



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Contribution to the literature

First survey-based evidence (Italy)

- ... on how digital and financial skills correlate with saving, investment decision and the attitudes towards digital payments and finance.
- ... on the relative importance of these two skills in financial decisions
- ... of gender gap in moving from saving to investment decisions



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The survey

Two waves of a novel survey on the financial and digital skills of the Italian population

- aged between 16 and 64 years old
- 1st wave in December 2019 (2,020 obs.)
- 2nd wave in December 2021 (2,001 obs.)
- no panel component but comparable in terms of socio-demographic characteristics of the interviewees



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- Socio-demographic (gender, age, residence, family type, education etc.)
- Economic situation (life style, independence, profession etc.)
- Digital skills (perceived)
- Financial knowledge (perceived)
- Financial decisions (savings, (non) financial investment, payment means)
- Opinion (Risk/benefits of digital financial services, digital payments)



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Financial behavior

financial				
Knowledge		Propensity to save	Investment (yes/no)	Empirical strategy
and	digital skill (self-eval.)	0.040***	0.016	Empirical strategy
Deviale		(0.012)	(0.016)	
Daniela Marconi,	financial knowledge (base			
Marco	low	0.260***	0.481***	
Marinucci, Giovanna	moderate	(0.063) 0.517***	(0.110) 0.915***	Probit (investment
Paladino	high	(0.066) 0.964***	(0.110) 1.300***	
		(0.115)	(0.145)	
ntro	female	0.058	-0.148***	
Data		(0.039)	(0.050)	digital skill shows
Main results	age	-0.014*** (0.002)	0.016*** (0.002)	positive link with
	education (base= primary		(0.002)	
Concluding	secondary degree	0.089	0.319***	
emarks	boothaaly abgroo	(0.058)	(0.083)	
	tertiary degree or +	0.122*	0.509***	
	, ,	(0.064)	(0.089)	no link with
	income/life style	yes	yes	investment desision
	family status	yes	yes	investment decision
	location	yes	yes	
	financially independent	yes	yes	\Rightarrow investment is a
	profession	yes	yes	
	N	4021	4021	complex activity
	Pseudo-R2	0.113	0.200	



Digitalization

Financial behavior

financial				
Knowledge	-	Propensity to save	Investment (yes/no)	
and	digital skill (self-eval.)	0.040***	0.016	Er
Daniela		(0.012)	(0.016)	
Marconi,	financial knowledge (bas	e= none)		
Marco	low	0.260***	0.481***	
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		(0.115)	(0.145)	-
ntro	female	0.058	-0.148***	_
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/lain results	age	-0.014***	0.016***	
nam results	-	(0.002)	(0.002)	
Concluding	education (base= primar			
emarks	secondary degree	0.089	0.319***	
omanto		(0.058)	(0.083)	
	tertiary degree or +	0.122*	0.509***	
	in a second different dis	(0.064)	(0.089)	
	income/life style	yes	yes	
	family status location	yes	yes	
	financially independent	yes ves	yes ves	
	profession	ves	ves	
	N	4021	4021	-
	Pseudo-R2	0.113	0.200	

mpirical strategy

Ordered probit

• Probit (investment decision)

digital skill shows . . .

- positive link with saving behavior
- no link with investment decision

⇒ investment is a complex activity



Financial behavior

Digitalization, financial						
Knowledge		Propensity to save	Investment (yes/no)			
and	digital skill (self-eval.)	0.040***	0.016			
Daniela		(0.012)	(0.016)			
Marconi.	financial knowledge (base= none)					
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Falauliiu	high	0.964***	1.300***			
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Intro	female	0.058	-0.148***			
Data		(0.039)	(0.050)			
Dala		()	()			
Main results	age	-0.014***	0.016***			
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Concluding education (base= primary degree)						
remarks	secondary degree	0.089	0.319***			
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	tertiary degree or +	0.122*	0.509***			
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	income/life style	yes	yes			
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	N	4021	4021			
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Empirical strategy

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Digitalization, financial		
Knowledge	-	Propensity to save
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ntro		
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		(0.039)
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iain results		(0.002)
	education (base= primary of	legree)
	secondary degree	0.089
	, ,	(0.058)
	tertiary degree or +	0.122*
		(0.064)
	income/life style	yes
	family status	yes
	location	yes
	financially independent	yes

	(0.012)	(0.016)	
financial knowledge (base=	none)		
low	0.260***	0.481***	
	(0.063)	(0.110)	
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high	0.964***	1.300***	
	(0.115)	(0.145)	
female	0.058	-0.148***	
	(0.039)	(0.050)	0
age	-0.014***	0.016***	
	(0.002)	(0.002)	
education (base= primary of	legree)		
secondary degree	0.089	0.319***	
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tertiary degree or +	0.122*	0.509***	
	(0.064)	(0.089)	
income/life style	yes	yes	_
family status	yes	yes	
location	yes	yes	
financially independent	yes	yes	
profession	yes	yes	-
N	4021	4021	- (
Pseudo-R2	0.113	0.200	

Investment (yes/no)

0.016

(0.016)

Empirical strategy

- Ordered probit
- Probit (investment) decision)

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Financial behavior

Digitalization, financial						
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and	digital skill (self-eval.)	0.040***	0.016			
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Concluding		ation (base= primary degree)				
remarks	secondary degree	0.089	0.319***			
Tornarito		(0.058)	(0.083)			
	tertiary degree or +	0.122*	0.509***			
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	income/life style	yes	yes			
	family status	yes	yes			
	location	yes	yes			
	financially independent	yes	yes			
	profession	yes	yes			
	N	4021	4021			
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Digitalization

Financial behavior

financial Knowledge		Propensity to save	Investment (yes/no)	-
and Daniela	digital skill (self-eval.)	0.040*** (0.012)	0.016 (0.016)	-
Marconi,	financial knowledge (bas	e= none)		
Marco	low	0.260***	0.481***	
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Intro		()	(/	shows
Data	female	0.058 (0.039)	-0.148*** (0.050)	positive link with
Main results	age	-0.014*** (0.002)	0.016*** (0.002)	
Concluding	education (base= primar	/ degree)		
remarks	secondary degree	0.089 (0.058)	0.319*** (0.083)	 positive link with
	tertiary degree or +	0.122* (0.064)	0.509*** (0.089)	invest. decision
	income/life style	yes	yes	
	family status	yes	yes	
	location	yes	yes	
	financially independent	yes	yes	
	profession N	yes 4021	yes 4021	-
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Financial behavior

Digitalization, financial Knowledge		Propensity to save	Investment (yes/no)	
and	digital skill (self-eval.)	0.040***	0.016	-
	aightaí bhíní (bbín bhán)	(0.012)	(0.016)	
Daniela		()	(0.0.0)	
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		(0.115)	(0.145)	shows
Intro				5110W5
	female	0.058	-0.148***	
Data		(0.039)	(0.050)	positive link with
		-0.014***	0.016***	· · · · · · · · · · · · · · · · · · ·
Main results	age	(0.002)	(0.002)	saving behavior
	education (base= primary		(0.002)	Ŭ
Concluding	secondary degree	0.089	0.319***	positive link with
remarks	secondary degree	(0.058)	(0.083)	
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	tortially abgroot of t	(0.064)	(0.089)	invest. decision
	income/life style	ves	ves	
	family status	ves	ves	
	location	yes	yes	
	financially independent	yes	yes	
	profession	yes	yes	
	N	4021	4021	-
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	,,	(0.064)	(0.089)	
	income/life style	ves	ves	
	family status	ves	ves	
	location	ves	ves	
	financially independent	ves	ves	
	profession	ves	ves	
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Intro	female	0.058	-0.148***	other results
Data		(0.039)	(0.050)	
Main results	age	-0.014*** (0.002)	0.016*** (0.002)	gender gap arises only in investment issues
Concluding	education (base= primary	y degree)		investment issues
remarks	secondary degree	0.089 (0.058)	0.319*** (0.083)	
	tertiary degree or +	0.122* (0.064)	0.509*** (0.089)	
	income/life style	yes	yes	
	family status	yes	yes	
	location	yes	yes	
	financially independent	yes	yes	
	profession	yes	yes	
	N	4021	4021	
	Pseudo-R2	0.113	0.200	_

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Traceable payments (TP)

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- Concluding remarks

Would you be in favour of			
	a law to trace payments?		
digital skill (self-eval.)	0.046***		
	(0.012)		
financial knowledge (base	= none)		
low	0.240***		
	(0.070)		
moderate	0.405***		
	(0.072)		
high	0.679***		
0	(0.120)		
female	-0.071*		
	(0.038)		
	(0.000)		
age	-0.003*		
ugo	(0.002)		
income/life style (base=ve			
low	0.215**		
1000	(0.097)		
0,000000	0.416***		
average	(0.093)		
la tarla	0.465***		
high			
	(0.109)		
very high	0.825***		
	(0.147)		
education (base= primary			
secondary degree	0.190***		
	(0.056)		
tertiary degree or +	0.266***		
	(0.064)		
family status	yes		
location	yes		
financially independent	yes		
profession	yes		
N	4021		
Pseudo-R2	0.040		

opinion on TP

support of TP $\uparrow\uparrow\uparrow$ with

- digital skill
- financial knowledge



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income/life style (base=ve	
low	0.215**
	(0.097)
average	0.416***
	(0.093)
high	0.465***
-	(0.109)
very high	0.825***
., .	(0.147)
education (base= primary	
secondary degree	0.190***
,g	(0.056)
tertiary degree or +	0.266***
	(0.064)
family status	yes
location	yes
financially independent	yes
profession	yes
N	4021
Pseudo-B2	0.040
	2.510

opinion on TP

support of TP ↑ ↑ ↑ with • digital skill

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 financial knowledge



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	2.510

opinion on TP

support of TP ↑ ↑ ↑ with o digital skill

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• financial knowledge



Digital finance: financial inclusion and financial knowledge

Digitalization, financial		Digital Finance and	Digital Finance and	
Knowledge		Financial Inclusion	financial knowledge	
U	digital skill (self-eval.)	0.071***	0.063***	
and	C	(0.013)	(0.013)	
Devided	financial knowledge (bas		0.017***	
Daniela	low	0.310***	0.317***	
Marconi,		(0.071) 0.579***	(0.070) 0.667***	
Marco	moderate			
Marinucci.	h i sh	(0.075) 1.019***	(0.073) 1.037***	
Giovanna	high	(0.122)	(0.117)	
		(0.122)	(0.117)	
Paladino	female	-0.007	0.049	are DFS useful?
	lemale	(0.039)	(0.038)	are Dr S userur:
Induce	age	-0.005***	-0.010***	
Intro	age	(0.002)	(0.002)	opinion of "conducive"
D .	income/life style (base=)		(0.002)	opinion of conducivo
Data	low	0.115	0.120	DFS increasing with
	1011	(0.102)	(0.095)	DES Increasing with
Main results	average	0.303***	0.211**	
	avolugo	(0.099)	(0.091)	digital skill
Concluding	high	0.433***	0.336***	
remarks		(0.116)	(0.108)	e finencial
	very high	0.843***	0.480**	financial
	., .	(0.187)	(0,190)	the second se
	education (base= prima	v degree)	()	knowledge
	secondary degree	0.104*	-0.041	
		(0.059)	(0.056)	
	tertiary degree or +	0.048	-0.118*	
		(0.067)	(0.064)	
	family status	yes	yes	
	location	yes	yes	
	financially independent	yes	yes	
	profession	yes	yes	
	N	4021	4021	
	Pseudo-R2	0.050	0.047	

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Digital finance: financial inclusion and financial knowledge

financial Knowledge and
Daniela

Giovanr Paladin

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	Digital Finance and	Digital Finance and
	Financial Inclusion	financial knowledge
digital skill (self-eval.)	0.071***	0.063***
	(0.013)	(0.013)
financial knowledge (bas		
low	0.310***	0.317***
	(0.071)	(0.070)
moderate	0.579***	0.667***
	(0.075)	(0.073)
high	1.019***	1.037***
	(0.122)	(0.117)
female	-0.007	0.049
	(0.039)	(0.038)
age	-0.005***	-0.010***
	(0.002)	(0.002)
income/life style (base=v	ery low)	
low	0.115	0.120
	(0.102)	(0.095)
average	0.303***	0.211**
	(0.099)	(0.091)
high	0.433***	0.336***
	(0.116)	(0.108)
very high	0.843***	0.480**
	(0.187)	(0.190)
education (base= primar	y degree)	
secondary degree	0.104*	-0.041
	(0.059)	(0.056)
tertiary degree or +	0.048	-0.118*
	(0.067)	(0.064)
family status	yes	yes
location	yes	yes
financially independent	yes	yes
profession	yes	yes
N	4021	4021
Pseudo-R2	0.050	0.047

are DFS useful?

opinion of "conducive" DFS increasing with • digital skill

> financial knowledge

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Digitalization

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Digital finance: financial inclusion and financial knowledge

Digital Finance and financial knowledge 0.063*** (0.013) 0.317*** (0.070) 0.667*** (0.073) 1.037*** (0.117) 0.049 (0.038) -0.010***

(0.002)

0.120 (0.095)

0.211**

(0.091) 0.336*** (0.108)

0.480**

-0.041 (0.056) -0.118* (0.064) yes yes yes

yes

4021

0.047

yes

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0.050

igitalization,		
financial		Digital Finance and
		Financial Inclusion
Knowledge	digital skill (self-eval.)	0.071***
and		(0.013)
	financial knowledge (base	
Daniela	low	0.310***
Marconi,		(0.071)
Marco	moderate	0.579***
Marinucci,		(0.075)
	high	1.019***
Giovanna		(0.122)
Paladino		
	female	-0.007
		(0.039)
	age	-0.005***
		(0.002)
	income/life style (base=ve	
	low	0.115
ain results		(0.102)
	average	0.303***
		(0.099) 0.433***
	high	
		(0.116) 0.843***
	very high	
	education (base= primary	(0.187)
	secondary degree	0.104*
	secondary degree	(0.059)
	tertiary degree or +	0.048
	ter tial y degree of +	(0.067)
	family status	ves
	location	ves
	financially independent	ves
	independent	,50

profession

Pseudo-R2

are	DF	Sι	usefu	?
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opinion of "conducive" DFS increasing with • digital skill

• financial knowledge

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Outline

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Key takeaways

- Digital skills and financial knowledge are both important in shaping financial behavior and attitudes towards digital financial services
- Digital skills are
 - useful complement to manage saving money
 not related with investment decisions ⇒ financia knowledge still matters
- Women have a lower propensity to invest than men, even controlling for digital skills and financial knowledge



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Policy implications

- Improve educational attainment from young ages to upgrade financial behaviors and attitudes towards DFSs
- > active participation to financial markets transition accompanied by raising the general level of financial literacy

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Digital skills, saving and investment

Digitalization, financial Knowledge and ...

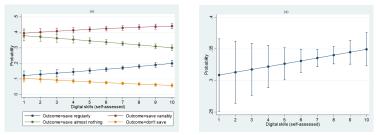
Daniela Marconi, Marco Marinucci Giovanna Paladino

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Note: Predictive margins with 95% confidence intervals based on probit regressions.



Financial knowledge, saving and investment

Digitalization, financial Knowledge and ...

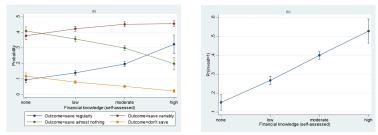
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Note: Predictive margins with 95% confidence intervals based on probit regressions.



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- The opinions towards the use of digital technologies in finance did not change
 - 70% in favor of the use of digital payment technologies. (Same share of opinion that (DFSs) will improve the access to finance)
 - 60% of the respondents agree that DFSs will increase the knowledge of the mechanism behind finance and economics
- The self-assessment of digital skills/financial knowledge significantly lower in the second wave
 - respondents declared no financial knowledge at all = 15.7% after the pandemic (4.2% before the pandemic)



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Pandemic and self confidence towards digital skills and financial knowledge

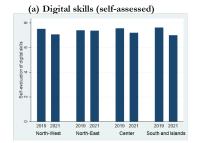
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Intro Data

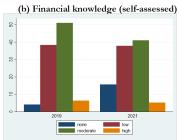
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Note: the scale is from 1 to 10

Digital skills and financial knowledge before and after the pandemic



Note: the level of financial knowledge is assessed on a likert scale form 1 (no knowledge) to 4 (high knowledge)

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	Financial knowledge	Digital skill
Digital skill	+***	
Financial knowledge (self assessed)		+***
female	_***	-***
age	-	-***
income	+***	+**
education	+***	+***
family status	yes	yes
location	yes	yes
financially independent	yes	yes
profession	yes	yes
sources of information	yes	no
N	4021	4021

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