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Exploring the link between digital financial inclusion and household welfare: Evidence from the Philippines

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Digital finance services (DFS)

Financial services (e.g. payments, credit, savings, transfers) delivered through mobile phones, personal computers, the internet or cards linked to a reliable digital platform/infrastructure (Ozili, 2018; Manyika, Lund, Singer, White, and Berry, 2016).

Digital financial inclusion

Access to and use of DFS by the unbanked and underserved segments of the population.



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Empirical findings and observations on DFS, digital financial inclusion, and household (HH) welfare

- Access to DFS is expanding financial inclusion, even in areas where traditional financial inclusion is declining (Sahay et al., 2020).
- Digital financial inclusion can reduce income inequality (Demira et al., 2022), lessen vulnerability to poverty (Wang and He, 2020), and improve HH income and consumption (Lin and Zang, 2022; Kanga et al., 2022).
- Positive effects of digital financial inclusion are observed to be more significant for female-headed households (Suri and Jack, 2016).
- Estimates show that digital financial inclusion could boost GDP by 2 percent to 3 percent in Indonesia and the Philippines, and 6 percent in Cambodia (Wyman, 2017).



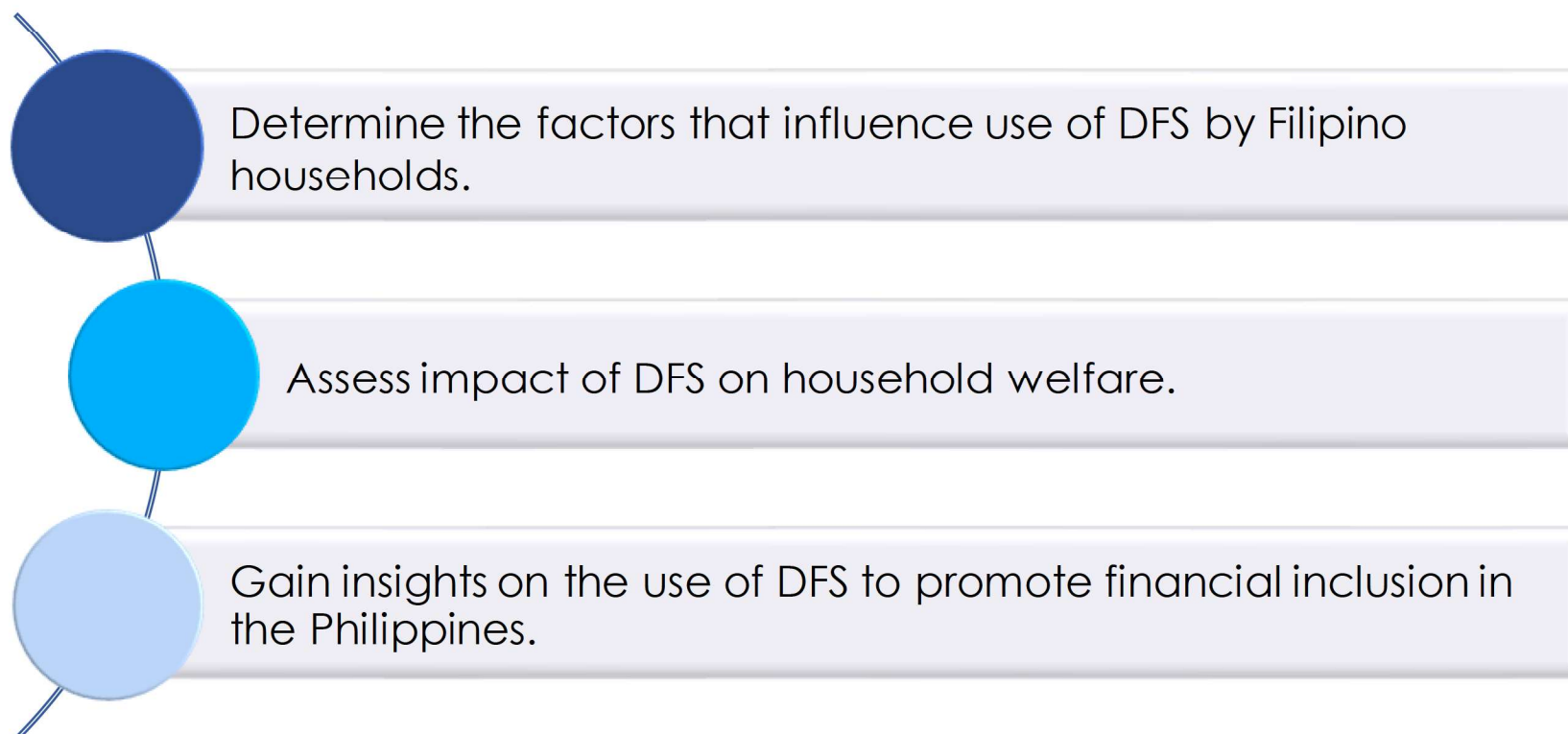
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Research objectives





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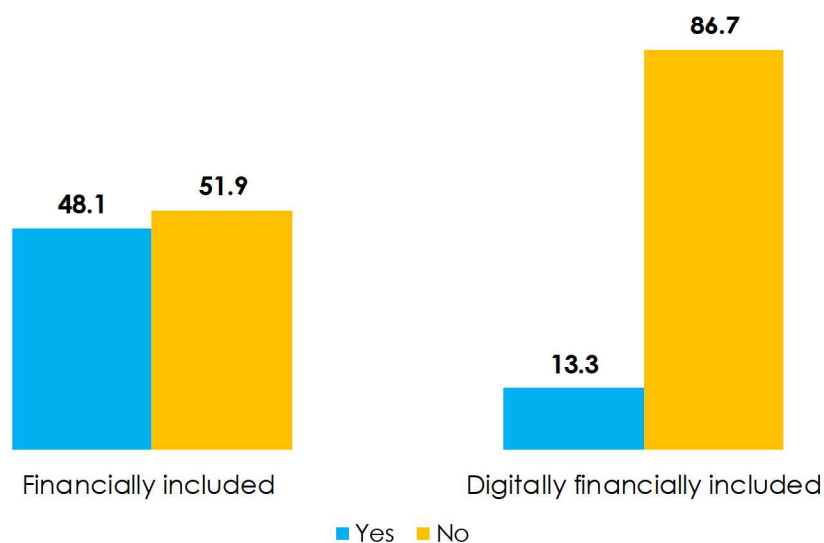
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Financially and digitally financially included HHs in the Philippines (Based on 2018 BSP Consumer Finance Survey^{1/})

Financially and digitally financially included HHs
(as percentage of total surveyed HHs; weighted)



Region	Financially included	Digitally financially included
NCR	16.0	16.5
CAR	1.3	1.4
REGION I	4.3	4.3
REGION II	3.0	3.7
REGION III	11.6	11.6
REGION IV-A	23.9	22.2
REGION IV-B	5.9	7.0
REGION V	3.6	3.0
REGION VI	6.7	6.2
REGION VII	6.7	5.5
REGION VIII	2.2	2.6
REGION IX	3.0	3.4
REGION X	2.5	2.5
REGION XI	4.5	4.3
REGION XII	3.4	4.7
CARAGA	1.5	1.1

^{1/}Digital financial services include e-money; mobile banking; internet banking; ATM/debit card, credit card and financial transactions via digital payment platforms and mobile applications



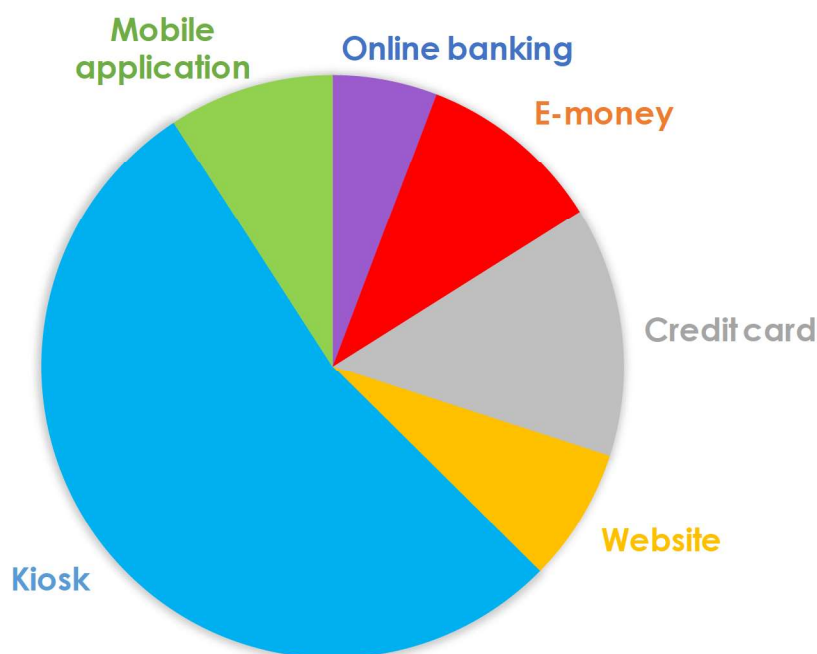
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- Payments is the most common financial transaction of Filipino households.
- Many Filipino households make payment transactions via kiosks, credit cards, and e-money.



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Preliminary observations and findings

- Household demand for DFS is affected by income, level of education, age, access to internet and digital platforms, receipt of transfers (e.g., remittances), ownership of business, among others.
- Digital financial inclusion positively contributes to better household welfare.

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Seemingly unrelated regression

Equations: digital financial inclusion; HH per capita income (in pesos)

	Coefficient (Standard errors)
Digital financial inclusion	
HH per capita income	0.0555 (0.0026)***
Urban	0.0004 (0.0089)
Age	0.6089 (0.2746)**
Age (squared)	-0.0824 (0.0368)**
Sex	0.0180 (0.0102)*
Marital status	0.0336 (0.0113)**
Educational attainment	0.0300 (0.0025)***
Employment status	0.0145 (0.0131)
Financial status	-0.0033 (0.0099)
Financial attitude	0.0035 (0.0033)
Risk attitude	-0.0069 (0.0087)
Time discounting	0.0347 (0.0092)***
Ownership of business	-0.0033 (0.0191)
Remittance-receiving	-0.0161 (0.0137)
Ownership of smartphone	0.0828 (0.0086)**
No. of banking offices in city/municipality	0.0044 (0.0022)**
Dependency ratio	-0.0054 (0.0218)
Constant	-1.6810 (0.5046)
Observations	7, 154
R-squared	0.08

*** significant at 1% level; ** significant at 5% level;

* significant at 10% level



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Seemingly unrelated regression

Equations: digital financial inclusion; HH per capita income (in pesos)

	Coefficient (Standard errors)	
Household per capita income		
Digital financial inclusion	1.0591	(0.0505)***
Urban	0.4604	(0.1093)***
Age	1.5128	(1.8785)
Age (squared)	-0.2317	(0.2516)
Sex	0.2358	(0.0599)***
Marital status	0.4618	(0.1659)**
Educational attainment	0.6169	(0.1722)***
Employment status	1.6876	(0.4450)***
Financial status	0.6392	(0.2031)**
Financial attitude	0.1079	(0.0359)**
Risk attitude	-0.0517	(0.0404)
Time discounting	0.3773	(0.1257)**
Ownership of business	1.3065	(0.3168)***
Remittance-receiving	1.5996	(0.3081)***
Ownership of smartphone	1.0060	(0.2829)***
No. of banking offices in city/municipality	0.1043	(0.0343)**
Dependency ratio	-0.8216	(0.1011)***
Constant	-12.9991	(8.7099)
Observations	7, 154	
R-squared	0.09	

*** significant at the 1% level

* significant at the 10% level

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Seemingly unrelated regression

Equations: digital financial inclusion; HH per capita expenditure (in pesos)

	Coefficient (Standard errors)	
Digital financial inclusion		
HH per capita expenditure	0.0684	(0.0033)***
Urban	0.0069	(0.0063)
Age	0.0962	(0.1947)
Age (squared)	-0.0135	(0.0259)
Sex	0.0149	(0.0073)**
Marital status	0.0240	(0.0078)**
Educational attainment	0.0241	(0.0019)***
Employment status	0.0595	(0.0073)***
Financial status	0.0057	(0.0070)
Financial attitude	0.0061	(0.0023)*
Risk attitude	-0.0034	(0.0064)
Time discounting	0.0231	(0.0067)***
Ownership of business	0.0412	(0.0155)**
Remittance-receiving	0.0417	(0.0122)***
Ownership of smartphone	0.0749	(0.0063)***
No. of banking offices in city/municipality	-0.0003	(0.0016)
Dependency ratio	0.0419	(0.0157)*
Constant	-0.9803	0.3648
Observations		11, 195
R-squared		0.08

*** significant at 1% level; ** significant at 5% level;

* significant at 10% level



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Seemingly unrelated regression

Equations: digital financial inclusion; HH per capita expenditure (in pesos)

	Coefficient (Standard errors)	
Household per capita expenditure		
Digital financial inclusion	0.4442	(0.0213)***
Urban	0.0217	(0.0493)
Age	-2.5222	(0.8194)**
Age (squared)	0.3372	(0.1095)**
Sex	-0.0095	(0.0263)
Marital status	-0.1935	(0.0740)**
Educational attainment	0.0099	(0.0783)
Employment status	-0.1540	(0.1977)
Financial status	-0.0637	(0.0918)
Financial attitude	-0.0279	(0.0158)*
Risk attitude	0.0314	(0.0170)*
Time discounting	-0.0694	(0.0566)
Ownership of business	-0.0059	(0.1450)
Remittance-receiving	-0.0797	(0.1390)
Ownership of smartphone	0.1150	(0.1281)
No. of banking offices in city/municipality	0.0296	(0.0155)*
Dependency ratio	-0.8629	(0.0411)***
Constant	17.1369	3.9215
Observations		11, 195
R-squared		0.17

*** significant at the 1% level

* significant at the 10% level

*** significant at 1% level; ** significant at 5% level;
* significant at 10% level



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Policy insights

- Increasing and improving digital access of the general population through better digital infrastructure; mitigating digital divide.
- Financial education and digital literacy are important to ensure that digitalization leads to positive outcomes and minimize risks (e.g. cyber scams and frauds).
- Creating opportunities and possibilities for digital financial inclusion.



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