The More You Know:
Energy Labelling Enables More Sustainable Cryptocurrency Investments

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Background

- From an end-user perspective, cryptocurrencies provide such benefits as decentralization, security, pseudonymity, convenience, and low transaction fees.
- The cryptocurrency landscape remains exposed to strong criticism for its excessive electricity consumption.
- There is a wide range of consensus mechanisms that result in cryptocurrencies with an equally wide range of energy demands.

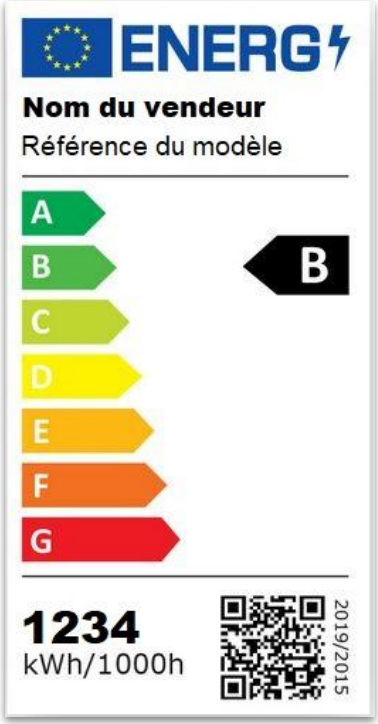
Background

Type	Permissioning	Consensus	Avg. Electricity Demand (kW h/tx)
I	Permissioned	Non-PoW	.00000145
II	Permissionless	Non-PoW	.00202
III	Permissionless	PoW	273

I. Agur, J. Deodoro, X. Lavayssière et al., 'Digital currencies and energy consumption,'
International Monetary Fund, Washington, D.C., USA, FinTech Notes 2022/006, Jun. 2022, 30 pp. [Online]. Available:
https://www.imf.org/en/Publications/fintech-notes/Issues/2022/06/07/Digital-Currencies-and-Energy-Consumption-517866
(visited on 14/09/2022).

Hypothesis

Cryptocurrency users are less likely to acquire energy-inefficient cryptocurrencies when presented with energy labels during acquisition.



Success of Energy Labels in Other Domains

- The field of household appliances, where energy labels are common, give cause for optimism: here it was found that customers are aware of the information on labels and comprehend it.
- Early research into measures to reduce the carbon impact of digital behaviours has produced promising results

Method

- A control/treatment test with ½ users in each group was conducted
- Participants took part in the test via an online survey
- The study targeted Romanian internet users, 18 years of age and older, with an interest in holding cryptocurrencies
- Target *n=200*
- Survey participants selected via “organic random device engagement” (RDE) sampling (voluntary response sampling method that relies on advertising networks)

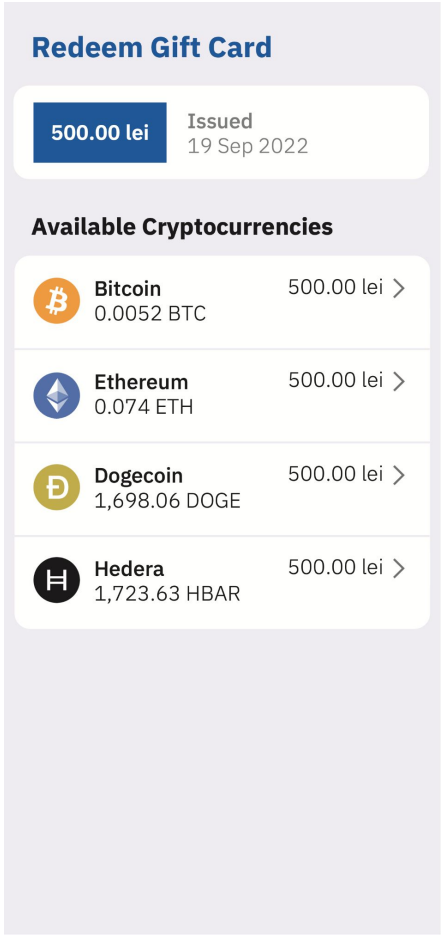
Survey Design

1. Screening question
    - Indicate products considered holding: *stocks*, *cryptocurrencies*, *indices*, *exchange-traded funds*, *commodities*, and/or *foreign currencies*
    - Only participants who selected *cryptocurrencies* were considered
2. Assess cryptocurrency experience
3. Assess environmental attitude
4. Acquisition scenario

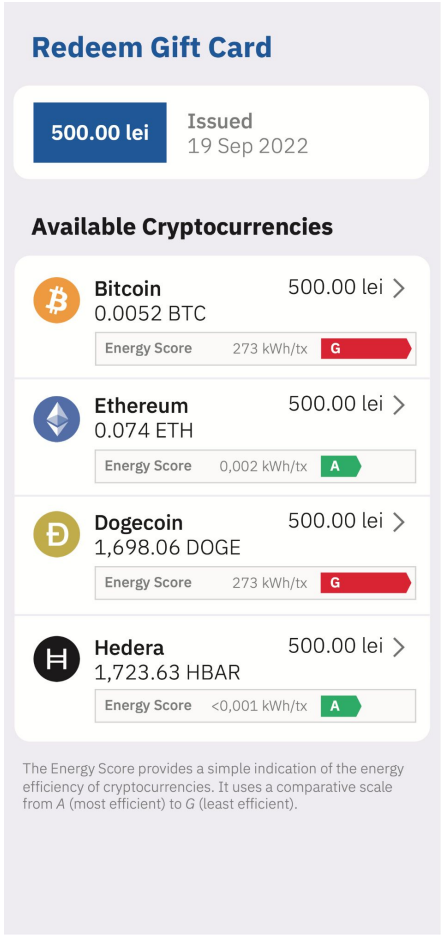
Acquisition Scenario

- Imaginary scenario: The user had received a $100 gift card that could only be redeemed at a fictitious CEX
- Both groups were shown a UI that mimicked standard CEXs
- Both UIs offered a choice between four different cryptocurrencies covering a spectrum of energy consumption characteristics (Bitcoin, Ethereum, Dogecoin, and Hedera Hashgraph) with variations in what was displayed:
  a. *Control Group:*
     name, ticker symbol, number of units
  b. *Treatment Group:*
     name, ticker symbol, number of units, *energy label*

Control Group



Treatment Group



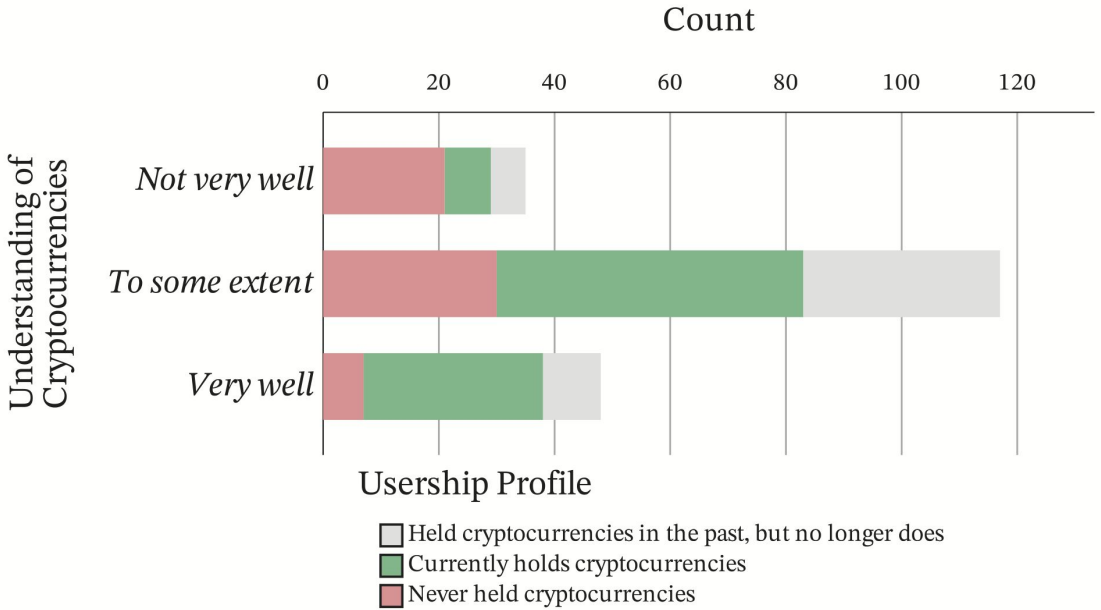
Scenario

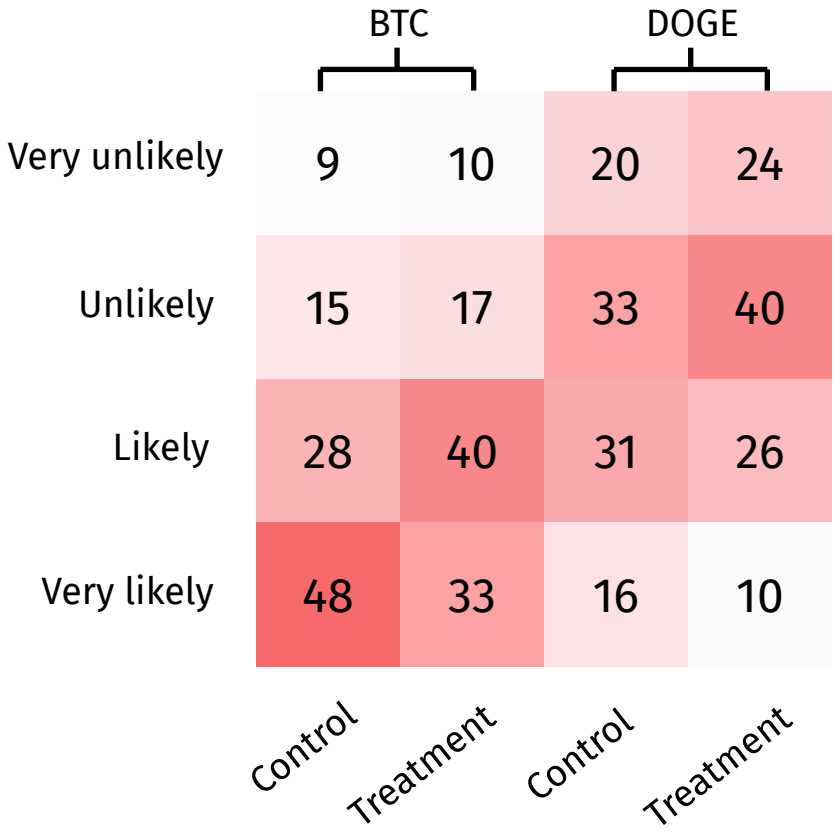
“Imagine that you have received a **500.00 lei** gift card from a good friend to reward you for a job well done. The gift card is not redeemable for cash and cannot be used with merchants. It can only be redeemed for a single cryptocurrency of your choice through an exchange website called *Cointrade*. The *Cointrade* website is pictured below.

Consider the choices given carefully. You will be asked to decide how to use the gift card next. There is no right or wrong answer to this question. We want to find out what you personally would choose to do if you were in this situation.”

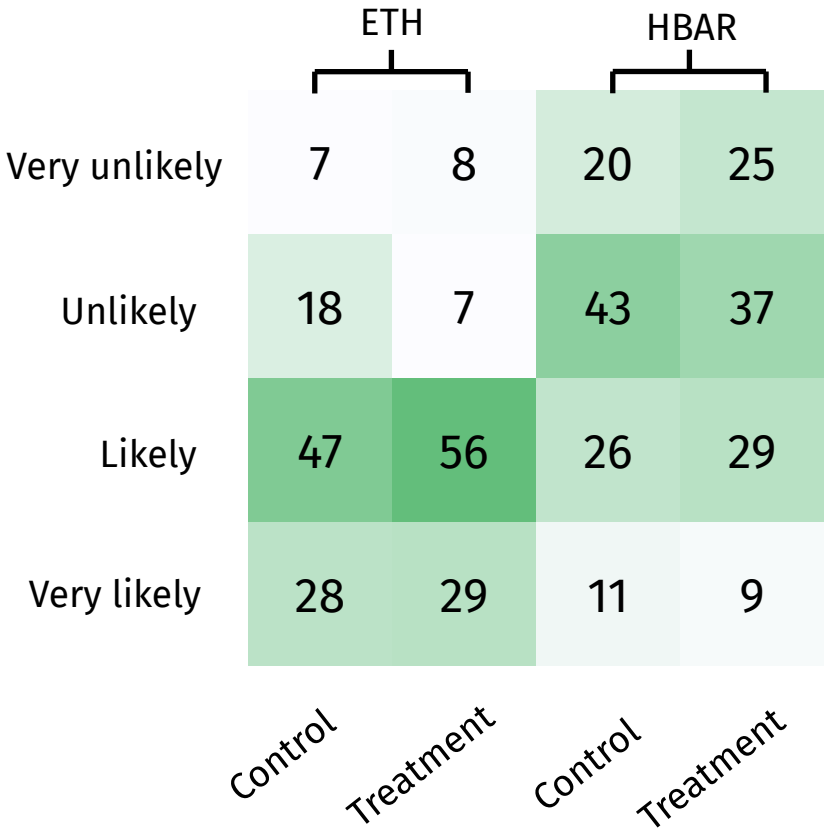
Results

- *200* valid responses were collected in *November 2022*
- Avg. time to completion = *2 min 15 s*
- Avg. age = 32.7 years (σ = 12.97)
- Most participants (76 %) are novices





A. Preferences on Energy-*Inefficient* Cryptocurrencies



B. Preferences on Energy-*Efficient* Cryptocurrencies

Conclusion

- Previous regulation has focused on miners (rarely successful)
- Displaying energy labels influences consumer choice.
- Regulators may contemplate the introduction of energy labelling standards for cryptocurrencies to improve more sustainable consumer behaviour