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innsbruck

Svetlana Abramova, PhD
Department of Computer Science
Technikerstraße 21A · 6020 Innsbruck

svetlana.abramova@uibk.ac.at
+43 (512) 507-53357

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Bits Under the Mattress: Understanding Different Risk Perceptions and Security Behaviors of Crypto-Asset Users

Over the last years, crypto-assets have gained significant interest from private investors, industry, and academia. The paper "Bits Under the Mattress: Understanding Different Risk Perceptions and Security Behaviors of Crypto-Asset Users", published at the prestigious ACM Conference on Human Factors in Computing Systems (CHI'21), advances behavioral information security research in this still-developing field. It presents an empirical study of the global population of crypto-asset users, their attitudes, security behaviors, and practices in managing crypto-assets. This is a joint work of security researchers from the **University of Innsbruck** and the **University of British Columbia** in Vancouver, Canada.

In this work, the authors overcome shortcomings of prior qualitative works (e. g., small samples and exploratory nature of research), which make generalisations of empirical results problematic. Against this backdrop, the paper presents an in-depth quantitative study of 395 crypto-asset users, documenting their different motives, risk concerns, and security behaviors. The authors apply a theory-guided approach to the instrument design and propose a new typology for characterizing the diverse and ever-growing population of crypto-asset users. The user typology is derived from cluster analysis using a number of context-specific psychometric constructs relevant to security, protection, and risk. The analysis reveals that crypto-asset users can be broadly categorized into three distinct user groups: *cypherpunks*, *hodlers*, and *rookies*. Cypherpunks are experienced crypto-asset advocates and early adopters who had entered the crypto space out of technological or ideological interests. Holders are security-concerned and profit-oriented traders and investors, whereas rookies are inexperienced or casual users with a high fraction of elderly and female people having the fear of missing out on investment opportunities.

This work makes a number of important contributions. Specific to this research area, this study is the first of its kind to complement the customary method of purposeful, targeted sampling with online crowdsourcing recruitment of crypto-asset users. As a result of the successful collaboration between the two universities, the recruited convenience sample of crypto-asset users consists of both European and North American residents. This diversity in the population groups provides for both generalisation and robustness of the cluster analysis results. The second innovation is that the survey design is built on established behavioral theories and constructs. Therefore, the paper provides a set of adapted and newly developed scale items pertinent to

security risks of crypto-assets. Third, the study considers the needs of each user group and suggests practical design implications for crypto-asset security solutions. These results have already inspired the open community of blockchain developers to systematize best practices in the design of modern crypto solutions with improved user experience.

The authors have also produced a creative short teaser promoting their study to the general public and a 5-minute-long video presentation highlighting the essential results. The videos are available for viewing at:

- `https://www.youtube.com/watch?v=p5oPui04_2o` (teaser),
- `https://www.youtube.com/watch?v=2ssfaaLxl_A` (conference talk).

Reference to the paper: Svetlana Abramova, Artemij Voskobojnikov, Konstantin Beznosov, and Rainer Böhme. 2021. Bits Under the Mattress: Understanding Diferent Risk Perceptions and Security Behaviors of Crypto-Asset Users. In *CHI Conference on Human Factors in Computing Systems (CHI '21), May 8–13, 2021, Yokohama, Japan*. ACM, New York, NY, USA, 19 pages. `https://doi.org/10.1145/3411764.3445679`.