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# The persistence of Online Black-Markets: an investigation on the generativity of digital infrastructures operating under adverse conditions

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Online Black Markets (OBMs), also referred to as **darknet marketplaces or cryptomarkets in the literature** (Aldridge & Décary-Hétu, 2016; Bhaskar, Linacre, & Machin, 2017; Chaudhry, 2017), are **anonymous e-commerce platforms that connect buyers and vendors interested in the exchange of illegal products and services**. In Feb 2011 the first OBM – i.e. Silk Road (Christin, 2012) – appeared on the Dark Net. In our work, with the term Dark Net we describe the layers of the Internet that guarantee the anonymity of online, interactions (Chaudhry 2017). The Dark Net can only be accessed with specific software, configurations, or authorization, often using non-standard communications protocols; web pages in the Dark Net are not indexed by search engines; and access to hidden services cannot be traced. Such portion of the internet provides digital capabilities to **clandestine groups that design**, implement, maintain and adopt its functionalities. OBMs in the Dark Net are a growing and global scale phenomenon: one study reported an estimated volume of \$ 220 million in 2015 on the Silk Road market (Soska & Christin, 2015), while more recent studies estimate \$ 1 billion in 2019.

OBMs represent a unique setting due to the **unobservability of its technological and human components**, the heterogeneous forces influencing the infrastructural growth and the global impact of its social outcomes. Several studies show that the OBMs persists over time despite the adverse interventions of multiple actors (Van Buskirk et al. 2017; Décary-Hétu and Giommoni 2017; Lacson and Jones 2016). In fact, **the diffusion and growth of OBMs are contrasted by severe adverse conditions**, failures, absence of formal rules and regulatory bodies. This is due to the role of police operations, to the attack of hackers and to the opportunistic behaviour of OBMs administrators or vendors (Bhaskar, Linacre, & Machin, 2017; Soska & Christin, 2015). However, such shocks do not affect the availability and the growth of OBMs (Décary-Hétu & Giommoni, 2017).

The situation calls for an **interdisciplinary and multi-level conceptualization** of the OBMs. This effort should be accompanied by critical analysis and the exploratory power of social science to stimulate more effective sense-making. Therefore, with the present work we aim to move our understanding far beyond a scattered and anecdotal view of OBMs, shedding light on the mechanisms that shape this special form of digital infrastructure over time. We frame OBMs as digital infrastructures that persist over time despite adverse external conditions. We focus on the **generative process of tightly coupled interactions between users with contrasting goals and anonymizing technologies** to explain the emerging persistence of digital infrastructures. In line with this reasoning, we answer the following research question: *what are the mechanisms that explain the persistence of Online Black Markets?*

To answer the research question, we conduct a longitudinal case study focusing on the **evolution of technologies and social practices**. We build our dataset by triangulating

archival data from secondary sources (e.g. public reports; scientific papers; websites; press documents) with primary data obtained from interviews with Law Enforcement Agency (LEA) agents. Our analysis reveals three causal mechanisms operating in the OBMs infrastructure: **cybercrime commoditization, blackmarket platformization and OBM resilience**. In this way we extend knowledge on digital infrastructures by focusing on their persistence; we do so by observing a digital infrastructure operating under adverse conditions. Moreover, we explain the relation between generativity and persistence by enriching the catalogue of mechanisms in digital infrastructures.

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