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APPLYING THE BEHAVIOR CHANGE WHEEL AND COM-B MODEL TO OPTIMIZE ECONOMIC BEHAVIOR FOR SDG 12

Sustainable Development Goal 12 (SDG 12), Responsible Consumption and Production, aims to decouple economic growth from environmental degradation through more efficient use of resources and changes in consumer and producer behavior. Despite global commitments, traditional economic instruments used to influence household consumption behavior in high-income economies have shown limited long-term effectiveness in shifting everyday practices toward sustainability.

In a number of studies, the effectiveness of tax measures in reducing consumption is limited in conditions of weak control and low elasticity of demand; therefore, we consider behavioral instruments as a complement. We treat behavioral interventions as complementary to economic instruments, effective especially where institutional capacity exists to monitor and sustain behavioral gains.

Behavioral approaches, particularly the Behavior Change Wheel (BCW) and its core COM-B model, offer a complementary framework for understanding and influencing economic behavior. Economic behavior, as noted by Bîlbiie et al., reflects the interplay of rational and psychological drivers that shape individual decisions, making behavioral models crucial for designing sustainability-oriented policies [1].

Behavioral economics provides a strong theoretical foundation for these approaches. Notably, Thaler & Sunstein demonstrated how subtle modifications in choice architecture, so-called nudges, can systematically influence decisions without restricting individual freedom [2]. This concept underlines the possibility of designing policies that enhance socially and environmentally responsible behavior while preserving autonomy of choice.

Despite its potential, the systematic application of BCW and COM-B frameworks to both consumer and producer economic behavior under SDG 12 remains relatively underexplored. Exploring the COM-B model across the supply chain may provide useful insights for supporting SDG 12. While the BCW and COM-B frameworks are established in public health, their systematic application to the dual domains of consumer and producer economic behavior under SDG 12 is underdeveloped. Existing studies often focus on either consumption or production, or apply general behavioral insights without a structured diagnostic framework like COM-B. In light of the above, exploring the application of the COM-B model to

analyze economic behaviors across the supply chain appears particularly relevant for understanding pathways to support SDG 12.

The Behavior Change Wheel (Michie et al., 2011) conceptualizes behavior as the outcome of interactions between individual capability, social and physical opportunity, and motivation, summarized in the COM-B system (Capability, Opportunity, Motivation → Behavior) [3]. While initially designed for public health, the BCW has often been used by researchers for this purpose, and its flexibility allows it to be adapted to sustainable production and consumption contexts, enabling policymakers to design more targeted and effective interventions.

In production contexts, the COM-B model can be used to identify motivational barriers among firms to adopt cleaner technologies or circular business models. By addressing both consumer and producer behavior, this approach ensures that interventions under SDG 12 cover the full supply chain.

In economic contexts, behavior often deviates from rational-choice assumptions due to cognitive biases, habit formation, and social norms. The COM-B framework helps identify where interventions can shift such biases toward sustainable patterns, for example, promoting reusability, reducing overconsumption, or supporting local circular initiatives.

Preliminary evidence suggests that behavioral change models can be effective in modifying consumption patterns. Ran et al. found that informational and emotional cues significantly increased the purchase of eco-labeled products [4], while Nguyễn-Trung et al. integrated COM-B with system-dynamics models to explain cross-sector behavioral shifts in sustainable economies [5].

When viewed through the lens of Thaler and Sunstein's nudge theory, economic behavior optimization can be understood as a process of refining choice architecture to support sustainable decisions. Integrating this behavioral perspective with the COM-B and BCW frameworks allows for a more systemic understanding of how internal and external factors shape responsible consumption and production.

Applying the Behavior Change Wheel and COM-B model in the domain of economic behavior allows policymakers to identify precise intervention points and optimize resource allocation for sustainability outcomes. The primary advantage of the COM-B framework over traditional economic models is its diagnostic precision. Instead of assuming rational utility maximization, it allows policymakers to identify specific, actionable barriers.

For instance, low recycling rates may not necessarily result from insufficient financial incentives (motivation) but could instead reflect lack of knowledge or clear instructions (psychological capability) or limited access to appropriate infrastructure (physical opportunity). This level of detail allows for the

development of more targeted and efficient interventions compared with broad, generalized measures such as subsidies or taxes.

Integrating behavioral frameworks into SDG 12 initiatives may help translate awareness into concrete actions, fostering more widespread responsible consumption and production. Building on this perspective, our future research will develop measurable indicators to assess the effectiveness of behavioral interventions and examine cross-cultural variations in motivational drivers within sustainable economic contexts.

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