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EDITORIAL

New Research Methodologies in Innovation: A Shift Toward Experimentation

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As familiar with our informed readership, CIJ supports unconventional, early-stage, thought-provoking experimental research. We aim to foster innovation methodologies, tools, educational approaches, and experiments to push the boundaries of creativity to drive societal innovation. This is the first statement of our novel Manifesto, which embodies a spirit of open, multidisciplinary exploration, embracing unconventional ideas and research that challenges norms to drive innovation and societal progress.

To provide new opportunities for research and creating new and applicable knowledge, the field of innovation is rapidly embracing new research methodologies, with a particular emphasis on experimentation. This shift is evident in the growing popularity of design science, design-based research, participatory, interventionist, action research, and quasi-experimental research. At CIJ, we adopt a “soft” and inclusive definition of experimental methodologies for innovation research, comprising different quantitative and qualitative experimental methods carried out inside or outside laboratories (Sørensen et al., 2010). The use of experimental research methods in the innovation literature is still in its early stages. However, it represents an essential first step toward bringing this field to the forefront of innovation research (Boudreau and Lakhani, 2016). Experimental methodologies have become increasingly crucial in innovation studies, with several different possibilities.

Laboratory experiments have been proposed as a fruitful methodological addition to the existing methods in innovation research (Brüggemann and Bizer, 2016). These studies show that laboratory experiments can fruitfully complement the established methods in innovation research and provide novel empirical evidence by creating and testing new theories (Brüggemann and Bizer, 2016).

Design science is a prescriptive methodology that seeks to create artifacts as solutions to how things should be used in various fields (Romme, 2023). It has recently been used to study open innovation processes and the role of technology in them and propose frameworks for collaborative networking of innovation laboratories (Jalowski et al., 2023; Memon et al., 2022).

Design-based research shares similar approaches to design science in introducing interventions as solutions. For example, recent studies have examined the use of augmented reality to promote collaboration and integration in innovation and the integration of E-sports into education as an innovation that can introduce a balance between teacher and student focus (Han et al., 2022; Wells et al., 2023).

Participatory, interventionist, and action research have all nearly doubled in publications referring to innovation since 2012. These methodologies involve taking action and reflecting on the outcomes to generate knowledge and create change. They have made notable contributions to, for instance, systemic and collaborative problem-solving strategies for social issues (Sadabadi and Rahimi Rad, 2021; Olabisi et al., 2022).

Quasi-experimental research has also seen a significant publication surge, from 10 in 2012 to 134 last year on Scopus. These studies introduce interventions and contrast a group where the intervention is present with one where it is not, without relying on random selection. They have been used to explore various topics, such as the impact of vertical integration and digital piracy on firm innovation (Zhang and Tong, 2021; Bradley and Kolev, 2023).

Despite their distinct characteristics, all of these methodologies revolve around introducing either an "intervention" (action research) or an "artifact" (design science) into a research setting to discover a causal relationship between the intervention and its outcomes (Sørensen et al., 2010). This shift towards hands-on experimentation reflects a desire for deeper engagement with the research contexts and subjects, and it is likely to continue to shape the field of innovation research in the years to come.

With this issue, we are inaugurating a special section dedicated to methodological papers aimed at inspiring innovation researchers to explore and embrace diverse applied methodologies in their research. Every issue will have a short note from a relevant expert in the field, starting with Design Science. The article from Georges Romme (Romme, 2023): "Design science as experimental methodology in innovation and entrepreneurship research: A primer" highlights the importance of design science in creating solutions to complex problems and introduces the concept of "artifacts" as a way to create solutions. The article also discusses the role of design science in innovation and entrepreneurship research and provides examples of how design science has been used in these fields.

The article from Jain and colleagues (Jain et al., 2023): "Comparing differences of trust, collaboration and communication between human-human vs human-bot teams: an experimental study" presents an

experimental study that compares the differences in trust, collaboration, and communication between human-human and human-bot teams. The study highlights the increasing use of bots in various fields and the need to understand their impact on team dynamics. The study found that humans accepted bots as teammates; however, human-bot teams had lower communication and collaboration levels than human-human teams, while trust was not significantly different.

The article from Colombo and colleagues (Colombo et al., 2023): "Work-related stress in agricultural industry: a preliminary investigation" presents the results of an Innovation for Change (I4C) project that considers work-related stress in the agricultural industry, which is often overlooked. The study considers factors such as long working hours, low pay, and lack of job security contributing to stress levels. The study also suggests that interventions such as training programs and support services could help to reduce work-related stress in the agricultural industry.

The article from Puliti and colleagues (Puliti et al., 2023): "Investigation on the future of work: the impact of innovative strategies in a post-pandemic scenario" highlights the importance of innovation in adapting to the changing work environment. Building on an I4C experimental project, it identifies key areas where innovation can significantly impact, such as remote work, digitalization, and automation. The study also proposes a platform that can help to address the identified challenges by improving the work-life balance and flexibility of employees while reducing costs for companies.

The article from Cocchi (Cocchi et al., 2023): “Motivational Structures for Attending Open Innovation Initiatives in Normal Times and Emergencies” explores the motivation of individuals to attend open innovation (OI) initiatives in different contexts. What remain stable is that students want to prove themselves and build a network of relationships, respectively, to grow personally and professionally. The motivational structure of individuals who attend OI initiatives in emergencies is more complex and nuanced than those who attend OI initiatives in normal times. Organizations that want to carry out OI initiatives relying on students must understand their different motivational orientations. Organizations can better design OI initiatives that motivate students to participate by taking a structural perspective on motivations. Moreover, the study presents a comprehensive and replicable methodology for assessing motivations that could be used in other experiments.

This issue ends with a treat, as our coffee discussion paper "Is Small Beautiful?", explores the concept of size and its relevance in various fields, including politics, biology, and physics. the IdeaSquare innovation team fearlessly dives headfirst into a question most people dare not ask: Is smaller, perhaps, better? Armed with their curiosity, they take us on a journey through the uncharted territories of size, from politics to biology and, of course, physics. They draw on the wisdom of thinkers like Leopold Kohr and Ernst Friedrich Schumacher, who advocated for the value of small-scale approaches. In the realm of biology, the paper discusses how size affects living organisms, emphasizing the importance of quality over quantity. The team also delves into physics, exploring how special relativity theory relates size to speed. As we navigate this captivating journey, when it comes to innovation, we should ask ourselves: is it time to rethink our obsession with size? Does small indeed have the potential to be more beautiful and efficient? What do you think?

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