Innovation Support Gaps in University-Based Ecosystems: A Cross-Country Analysis of Jamaica, Uruguay and Poland

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Abstract: This research-in-progress study examines service quality gaps in Innovation Support Institutions (ISIs) within three university-based ecosystems: Jamaica, Uruguay and Poland. Grounded in the Expectancy-Disconfirmation Model, the paper focuses on the gap between innovators' expectations and their perceived receipt of support in resilience, digitalisation and circularity. It also considers how these gaps relate to innovators' satisfaction and loyalty, and whether ISI staff assess service delivery in similar or different ways. The study follows a comparative survey design using parallel instruments for innovators and ISI staff. Current project materials indicate a pilot phase, while the preregistered main study sets out the analytical framework, sample logic and decision rules for the full comparative analysis. The final aim is to develop a compact diagnostic framework that can support both research and practice in the evaluation of university-based innovation support systems.

Keywords: Innovation Support Institutions; Expectancy-Disconfirmation Model; service quality gaps; resilience; digitalisation; circularity; university-based ecosystems; Poland; Uruguay; Jamaica.

1 Introduction

Contemporary innovation ecosystems face at least three pressing challenges: building resilience to shocks, moving ahead with digital transformation, and developing more circular and sustainable business models. Most innovators, especially those operating in emerging and transition settings, cannot really address these tasks on their own and therefore depend on Innovation Support Institutions (ISIs), such as university incubators, technology parks, and public innovation agencies. Yet there is still relatively little empirical evidence showing whether the support claimed by these organisations actually matches what innovators expect and need in practice.

This paper approaches that issue through the perspective of expectation-delivery gaps. The central idea is straightforward: support may formally exist, but still fall short when assessed from the point of view of its beneficiaries.Scholars have indicated that entrepreneurs should be wary of the relevance of a particular ISI typology to them (Kazhenov, 2023) given differentiations in service offerings, geographical area, target group and industry sector (Theodoraki, 2020). While innovation policy research often pays more attention to structures such as funding schemes, infrastructure and networks, it less often captures how innovators themselves evaluate the relevance and quality of the help they receive. Conversely, there is insufficient integration of metrics within ISIs, for example, although sustainability is positioned as a strategic priority within universities, assessment of the sustainability impact of ISI initiatives is limited (Gonzalez-Urango & Mu, 2025). That can matter, because support that is available but poorly aligned with actual needs may still produce weak satisfaction and low long-term engagement.

The study examines three university-based innovation ecosystems: Jamaica, Uruguay and Poland. The main objective is to assess the magnitude and pattern of gaps between innovators' expectations and perceived support in resilience, digitalisation and circularity, and to explore how those gaps are associated with satisfaction and loyalty towards ISI. The second research objective is to compare innovators' views with ISI staff assessments of institutional support function, contrasting expected and actual service delivery.

2 Conceptual framing

The project is anchored in the Expectancy-Disconfirmation Model (EDM), a framework commonly used to explain satisfaction as the outcome of the relation between prior expectations and perceived performance. Based on the analysis of 172 publications retrieved from the Web of Science database, While EDM has been extensively used in examining citizen satisfaction with public services such as policing (Reisig & Chandek, 2001), e-government (Sharma et al., 2015) and public services (Chen et al., 2022), and municipal services (Van Ryzin, 2006), and also in private sector contexts like tourism (Weng et al., 2023) or consumer behavior, its application to innovation support institutions remains unexplored. This represents a notable research gap, particularly given that technology parks function

as service providers for innovation-oriented companies, where expectations regarding support services - such as access to networks, infrastructure, or knowledge transfer - could significantly influence tenant satisfaction and, consequently, their innovation performance. The closest relevant work examines satisfaction measurement in technology parks using Customer Satisfaction Index methodology (Mażewska et al., 2014), however this approach does not incorporate the expectancy-disconfirmation mechanism which could provide deeper insights into how the gap between expected and perceived support quality affects outcomes.

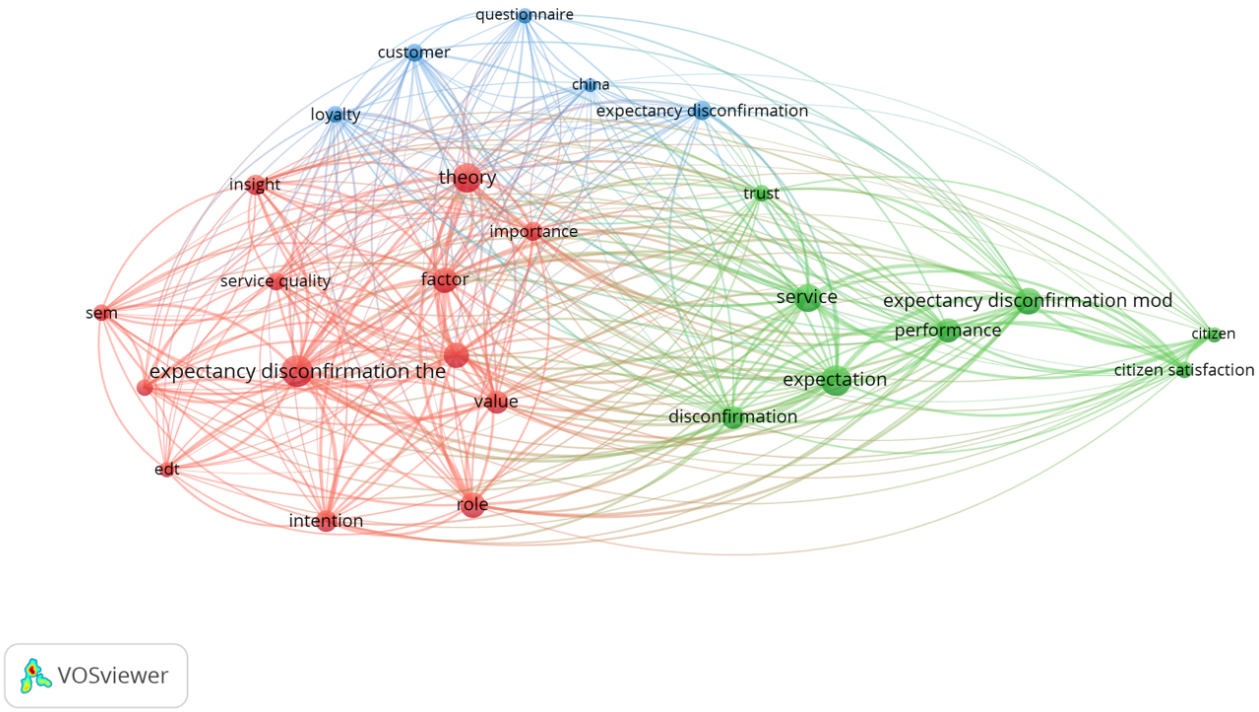

Fig. 1 Cluster analysis of EDM publications (data source: Web of Science)

The integration of EDM with Structural Equation Modeling (SEM) has become increasingly prominent in recent empirical research, as evidenced by the analysed dataset containing 23 publications. Recent applications demonstrate the methodological versatility of combining EDM with SEM across diverse contexts, from e-commerce satisfaction (Tedjakusuma et al., 2025) and higher education quality assessment (Teeroovengadum et al., 2024) to service failures in AI-oriented platforms (Peng et al., 2024) and tourism e-marketplaces (Pinem et al., 2018). The dominance of SEM in this domain appears particularly suitable given its capability to handle complex models with multiple mediating

variables and its less restrictive assumptions regarding data distribution - characteristics that align well with EDM's multi-stage process involving expectations, performance perceptions, disconfirmation judgments, and satisfaction outcomes.

SEM has been applied to studying business support institutions, though the focus on client satisfaction remains notably limited. Relevant studies such as Dong et al. (2023) utilised SEM to investigate network capacity and service innovation performance of technology incubators, while Binsawad et al. (2019) applied SEM to assess incubator performance based on knowledge sharing practices. Zhang et al. (2024) employed SEM examining science park firms' innovation speed, and de Souza and Beuren (2025) used SEM exploring cooperative networks in technology parks. However, these studies centered on operational mechanisms and innovation outcomes rather than tenant satisfaction with support services, representing a methodological gap where SEM's capability to handle complex multi-dimensional constructs could offer valuable insights into how service quality perceptions translate into satisfaction outcomes in innovation ecosystems.

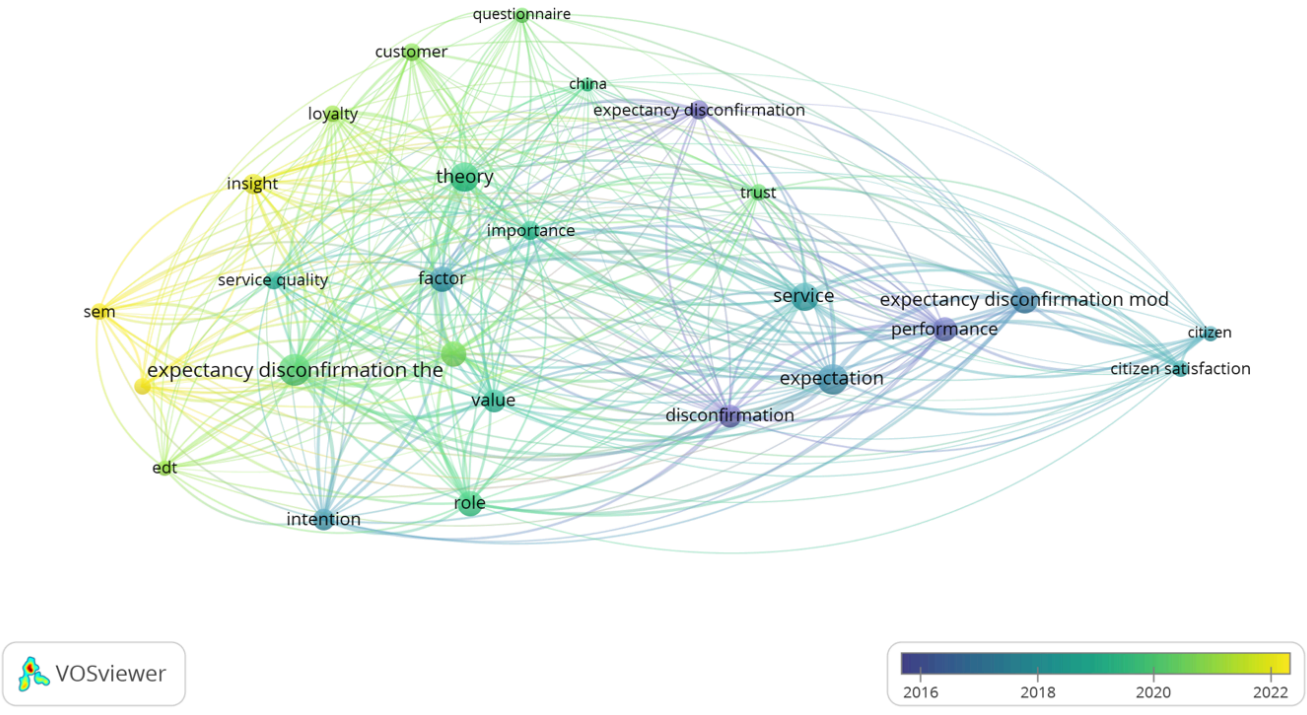

Fig. 2 Overlay visualisation of EDM and SEM publications (data source: Web of Science)

The study is organised around a three-gap structure. Gap 1 is the Service Gap, understood as the difference between innovators' expectations and the support they actually receive. Gap 2 is the Delivery Gap, defined as the discrepancy between what ISI managers believe should be provided and what is actually delivered. Gap 3 is the Alignment Gap, that is, the cross-perception misalignment between innovators and managers. This structure is useful because it moves the discussion beyond a simple inventory of support instruments. It asks whether support is adequate relative to expectations, whether institutions themselves are aware of shortcomings in delivery, and whether different actors within the ecosystem interpret the same support reality in different ways. In that sense, the study treats innovation support not merely as a formal offer but as a service relationship with measurable quality gaps. The three substantive dimensions of the study are resilience, digitalisation and circularity. They are not treated as isolated domains but as connected areas in which innovators increasingly need external support. This is one of the more important assumptions of the paper, because it reflects the reality that many early-stage firms are under pressure to become more adaptive, more digital and more sustainability-oriented at roughly the same time.

3 Research question and hypotheses

The central research question asks what is the magnitude and pattern of the gap between innovators' expectations and their perceived receipt of ISI support in resilience, digitalisation and circularity, and how these gaps vary across Jamaica, Uruguay and Poland.

More specifically, the study asks three related questions. First, how are expectation-delivery gaps in each of the three dimensions associated with innovators' satisfaction and loyalty towards ISI? Second, to what extent do ISI staff perceive similar, smaller or larger gaps compared to innovators? Third, which of the three national innovation ecosystems appears to have the best and which the worst alignment between expected and perceived ISI support?

The preregistered version of the study formulates two main hypotheses in explicit terms. Hypothesis 1, estimated on the innovator sample within a SEM framework, states that larger negative gaps in key support domains predict lower satisfaction and weaker loyalty intentions. In structural terms, the model assumes paths running from latent gap constructs in resilience, digitalisation and circularity to satisfaction, and then from satisfaction to loyalty, while also allowing for direct effects of the gap constructs on loyalty so that both direct and indirect effects can be estimated within one integrated model. Hypothesis 2, examined on the ISI staff side through gap analysis, states that staff report systematic negative gaps between the standard of support they believe should be provided and what is actually delivered across domains and countries.

4 Research design and instrument

The study uses a cross-sectional, comparative survey design conducted across three university-based ecosystems: Jamaica, Uruguay and Poland. The logic of the design is dual-perspective. Innovators assess what support they expect and what they actually receive from their ISI, whereas ISI staff assess what their institution should provide and what it actually provides in practice. This makes it possible to examine both within-group gaps and broader cross-perception misalignment.

The main structure of the instrument is organised around three thematic domains. In the resilience section, respondents evaluate support for risk identification, resilience-building tools and contingency planning. In digitalisation, they assess help with identifying key digital technologies, digitising processes and implementing more advanced solutions such as AI, IoT, automation and Industry 4.0. In circularity, they evaluate support for eco-design, circular business model development and tools to measure environmental and social impact.

Additional items measure overall satisfaction with the ISI and loyalty intentions such as continued cooperation and recommendation to others. In the SEM part of the project, satisfaction functions as the key endogenous evaluation construct linking perceived support gaps with downstream loyalty outcomes, while loyalty is captured through willingness to continue cooperation and willingness to recommend the ISI. A parallel questionnaire is directed at ISI managers, mentors and administrators. Here, respondents assess what support their institution should provide and what it actually provides in the same three domains. The instrument also includes broader items on institutional performance and the strategic relevance of the three focal dimensions.

5 Sample and analysis plan

The intended sample size for the main study is 300 innovators in total, corresponding to roughly 100 respondents per country, and between 90 ISI managers or staff, around 30 per country.

The analytical strategy combines gap analysis with Structural Equation Modeling. On the innovator side, the model is intended to test Hypothesis 1 by specifying paths from latent gap constructs, understood as expectation-delivery differences in key support domains, to satisfaction and loyalty, including direct and indirect relationships within an integrated framework. More concretely, the planned SEM links the three latent gap domains to overall satisfaction and then links satisfaction to loyalty intentions, while also estimating whether some gap domains retain a direct association with loyalty beyond their indirect effect through satisfaction. On the ISI staff side, Hypothesis 2 is to be examined through gap scores together with mean-difference procedures and regression or ANOVA models in order to compare support shortfalls across domains and countries.

6 Current stage and indicative findings

The project is at an advanced research-in-progress stage. It already has a clear conceptual framework, a developed survey architecture, a cross-country comparative logic and a preregistered analytical plan. This means the study is beyond the idea phase, but it still remains open enough for useful methodological and theoretical feedback.

Across all three strategic dimensions - circularity, digitalisation, and resilience - perceived delivery tends to fall below innovators' expectations, pointing to potential negative disconfirmation consistent with the Service Gap logic. However, priority areas differ across innovation ecosystems: Uruguayan innovators show higher expectations around digitalisation support, Jamaican enterprises emphasise resilience-building capacities, while Polish innovators prioritise circularity-related services such as eco-design, circular business models, and impact measurement frameworks. Within each context, innovators indicate that ISIs do not yet provide sufficiently structured support in these priority areas despite rising expectations. Tentative observations suggest that larger negative gaps may be associated with lower satisfaction and weaker loyalty intentions, though this requires verification with the full dataset. There are also indications that ISI staff may rate their service delivery more positively than innovators do, pointing to a potential alignment problem deserving closer examination.

For example, observations in Jamaica demonstrate a need for risk mitigation, acceleration of the digitalisation of financial services, as well as technology adoption in business transactions. Support mechanisms formulated by ISI are required to help innovators mitigate institutional risks with downstream effects, for example, those which manifest in the form of micro-level cyber incidents. While the capabilities gap is being addressed through ISI structured capacity building initiatives for small businesses to enhance their digitalisation capacity, this needs to be scaled across the island. These interventions are required since although many Jamaican entrepreneurs developed basic digital capabilities out of necessity to exploit e-commerce opportunities or to engage in digital marketing, a significant number operate with minimal or no technology integration. In addition, Jamaica is characterised by a mature but risk-averse regulatory and institutional environment (Minto-Coy & McNaughton, 2016). Experts also recommend that Jamaican entrepreneurs engage in sustainable practices by adopting green technology and developing sustainable business models in their enterprises.The constraints confronting Jamaican innovators are intensified by the island's structural vulnerability to climate-related disruptions.Conversely, these conditions offer distinctive opportunities for innovators, highlighting the necessity of targeted innovation system mechanisms.

7 Contribution and practical value

The expected contribution of the study is threefold. Firstly, at the conceptual level, it extends the EDM from classic service and IT settings into the domain of innovation support institutions and offers a

clearer way to discuss service quality in innovation policy implementation. Secondly, at the empirical level, it provides a multi-country and multi-actor comparison of expectation-delivery gaps across Jamaica, Uruguay and Poland, and does so for three strategic domains that are often examined separately rather than together. Thirdly, the project has a methodological ambition to produce a compact and replicable instrument that can be reused by researchers and practitioners to benchmark ISI performance across regions and over time. ISI leaders can also identify where their service portfolio underperforms against innovators' expectations, they can direct scarce resources more carefully towards staff training, partnerships or programme redesign.

The practical value can be illustrated quite directly. If circularity emerges as the largest and most persistent gap, one likely implication is the need either to strengthen internal competences in sustainable business model design or to build partnerships with specialised organisations that can fill that gap. If digitalisation appears as a weaker area, the response may involve more hands-on support in process digitisation and advanced technology adoption rather than only general advisory services.

For policymakers, cross-country gap profiles may offer a more useful basis for targeted capacity-building than generic output indicators alone. For innovators, the study may also improve understanding of what can realistically be expected from ISI in different ecosystem settings.

8 Areas for feedback and development

The first issue concerns the choice of strategic dimensions. Resilience, digitalisation and circularity are strongly justified in the project logic, but it remains worth discussing whether these three domains adequately capture the support needs most relevant to university-based ecosystems in 2026.

The second issue concerns operationalisation and comparability. The gap logic itself can be convincing, but the project still needs a fully stable final reporting language for the instrument and for the transition from pilot work to the preregistered main study. Cross-country comparison also remains challenging because Poland, Jamaica and Uruguay differ considerably in institutional maturity, policy framing and ecosystem context.

The third issue concerns usability beyond academia. One of the strengths of the project is that it could potentially produce a practical diagnostic tool for ISI managers and policymakers. The remaining challenge is how to translate gap scores into decisions that institutions can actually deploy, whether that means staff development, service redesign, new partnerships, or some combination of these responses.

A further development path worth considering is replication in additional countries beyond the initial three cases. If the instrument proves stable and comparable across different contexts, repeated

applications could eventually support the construction of a broader benchmarking framework, or even a synthetic index of alignment between innovators' expectations and ISI support delivery. At this stage, that idea should be treated as a longer-term ambition rather than an immediate claim, but it may help position the project as something with relevance beyond a single comparative study.

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