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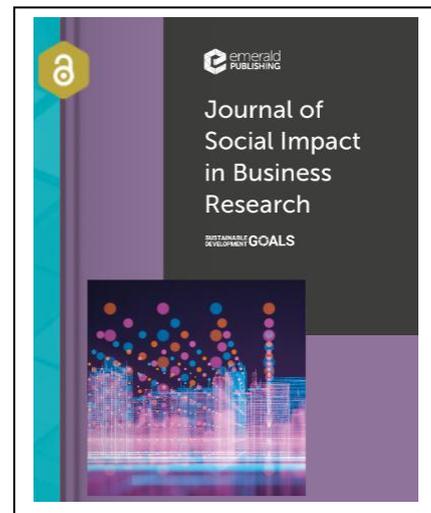
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# **Driving small business social impact and innovation via design thinking and GenAI integration**

## **Purpose**

This study explores the opportunity to integrate generative artificial intelligence (GenAI) with design thinking in driving social impact and innovation for small businesses. Given the resource constraints often faced by small businesses, design thinking promises an accessible approach to effectively accelerating problem-solving, product development, and process improvement. The emergence of GenAI presents a potential to further enhance these processes.

## **Conceptual approach**

The study develops a conceptual framework by synthesising the bodies of literature on small business social impact and innovation, design thinking, and GenAI, to identify key constructs and relationships. These insights are integrated into a framework that maps concrete GenAI applications onto design thinking, specifically via its LUMA system approach of 'looking', 'understanding', and 'making' phases.

## **Findings**

The proposed framework theorises how GenAI can augment design thinking while maintaining a human-centred orientation. It shows how small businesses can accelerate social impact by adopting design thinking and GenAI integration to deepen customer insights, prioritise socially valuable opportunities, and experiment with prototypes prior to scaling. An implementation checklist is also proposed, which translates the framework into actionable guidance for small businesses, alongside a future research agenda outlined around key design thinking phases.

## **Originality**

The paper advances small business social impact research by shifting attention from firm-level outcomes to design processes through which social value is created. It offers a novel integration of design thinking and GenAI for socially- and innovation-focused small business research. GenAI is positioned as a socially oriented design element rather than purely technology for productivity or efficiency.

**Keywords:** design thinking, small business, generative AI, innovation, social impact, LUMA system, social innovation, social entrepreneurship, small medium enterprises, small business social responsibility, sustainable development goals, conceptual framework

# Driving small business social impact and innovation via design thinking and GenAI integration

## Introduction

Small businesses play a vital role in supporting local economies, generating employment, and enabling innovation at the community level (Akpan *et al.*, 2021; Pickett *et al.*, 2025; Thomas, 2023). However, they frequently operate under the constraints of limited resources such as time, funding, and human capital (Bakhtiari *et al.*, 2020; Gherhes *et al.*, 2016). These barriers can hinder their ability to engage in strategic innovation and develop sustainable value for both internal and external stakeholders (e.g., employees, customers, authorities). While these challenges remain as long-standing concerns for small businesses, there exist toolkits and initiatives that can help to overcome them. Yet, there is limited guidance on how small businesses can practically organise innovation activities in ways that effectively deliver social impact.

Design thinking has emerged as a powerful approach for small businesses to generate customer-centric solutions through iterative problem-solving and product development (Sarooghi *et al.*, 2019; Ward *et al.*, 2009). Design thinking puts the user or customer as the central focus of firm activities, and three established frameworks for the approach include Stanford d.school, IDEO, and LUMA. These models offer a versatile set of methods to gather customer insights, develop potential solutions, and scale products or services effectively (Ericson, 2022; Lauff, 2022). As an inherently practical and accessible version of design thinking, the LUMA system is chosen for this study. That said, full adoption by small businesses would still require overcoming a steep learning curve given the practical experience required to fully master and operationalise design thinking methods in general.

In this regard, generative artificial intelligence (GenAI) presents a timely opportunity to address these challenges. Through capabilities such as research synthesis and solution simulation, GenAI can augment each phase of the LUMA approach to design thinking, consequently accelerating design processes and enabling innovation (Sreenivasan and Suresh, 2024; Weller, 2019). For small businesses, this opportunity represents a cost-effective means to enhance customer understanding and implement solutions with greater agility. One key requirement, however, is the openness of small business founders or entrepreneurs to adapt and experiment with design thinking methods. This may not be similar to other conventional business tools that they might be more familiar with (e.g., SWOT analysis, business model canvas, or Porter's five forces). Given these opportunities, the study addresses the practical problem of limited guidance for small businesses in sustaining social impact and innovation under resource constraints. This is done via the integration of GenAI into design thinking phases as a conceptual framework (via the LUMA system).

In the context of this study, social impact refers to the positive outcomes that small firms create for their immediate communities (e.g., decent work, fair employment, inclusive access) (Kudlak *et al.*, 2022; Liguori

*et al.*, 2024). In small business settings, social impact is treated as localised and closer to stakeholders. Outcomes are visible to employees, customers, and communities. This framing differentiates social impact for small businesses from general corporate social responsibility discourse, which is often discussed in terms of organisational responsibilities and activities (Fatima and Elbanna, 2023; Velte, 2022). In this study, social impact is more narrowly scoped as local stakeholder level outcomes in small business settings.

This study also responds to pertinent challenges faced by small businesses and contributes to the ongoing discourse on the role of GenAI in enhancing innovation (Akpan *et al.*, 2021; Albats *et al.*, 2023). These efforts primarily advance upon two United Nations Sustainable Development Goals (SDGs) namely SDG 8 (decent work and economic growth) by strengthening the capacity of small businesses to create and sustain local employment, and SDG 9 (industry, innovation and infrastructure) by enabling more accessible innovation design processes through design thinking and GenAI integration.

Existing studies on the impact of small businesses indicate that the evidence on social benefits could be further expanded (Lindeque and Samuel, 2022). In this regard, studies seem to focus more on benefits for the small businesses themselves rather than society at large. This includes the aggregation of social responsibility activities while neglecting local impacts and clear links to SDGs. Concurrently, there are strong calls within the literature for small business research to more explicitly measure and theorise societal impact beyond firm performance (Liguori *et al.*, 2024). This suggestion is especially pertinent in underexplored contexts such as the intersection of regulation and digitalisation, and cross-domain combinations. In view of these observations, the integration of design thinking and GenAI proposed in this study specifies process-level pathways that small businesses can translate innovation efforts into localised social impact outcomes.

## **Conceptual approach**

This study adopts a ‘model’ approach to conceptual design (Jaakkola, 2020) by developing a framework that specifies the key constructs and relationships linking design thinking and GenAI integration to small business social impact. The study is conceptual rather than empirical, and does not use primary or secondary data. Therefore, this section outlines how the framework was conceptually constructed and how it builds on a structured synthesis of existing literature.

The domain of interest for this study is small business social impact, which is understood as the positive outcomes that small firms create for their stakeholders and local communities, and their contribution to the identified SDGs 8 and 9 (Akpan *et al.*, 2021; Kudłak *et al.*, 2022; Liguori *et al.*, 2024). In this context, design thinking (via the LUMA system) provides the core processual lens for understanding how small firms organise innovation activities (Liedtka, 2015; Pacione, 2021). Meanwhile, the literature on small business (including

small-medium enterprise) and GenAI informs the enabling technology lens that explains how digital tools can augment these processes (Borah *et al.*, 2022; Sreenivasan and Suresh, 2024).

These lenses of small business social impact (outcome domain), design thinking (mechanism), and GenAI as enabling technology (capability) form the framework for this study. Conceptually, GenAI is theorised to augment design thinking activities by reducing the time and cognitive burden of discovery, synthesis, and prototyping in resource constrained settings. These strengthened design thinking routines are then theorised to increase the feasibility of identifying underserved stakeholders, prioritising socially valuable opportunities, and iterating low-cost solutions.

The literature for the framework development was informed by a synthesis of peer-reviewed journal articles and similar academic publications on small business social impact, innovation, design thinking, and GenAI. Foundational design thinking sources (via the LUMA system) were combined with recent work on AI for innovation synergies, small business technology adoption, and social impact to capture both established concepts and emerging developments (Lindeque and Samuel, 2022; Shaik *et al.*, 2024; Staub *et al.*, 2023).

The analysis proceeded in three steps. First, it distilled from the reviewed literature the main constructs relevant to the focal problems. Second, it examined how prior work has (or has not) linked these constructs to the identified gaps. Third, these insights were integrated into the proposed framework which maps concrete GenAI applications onto design thinking phases for small businesses, and links them to social impact or innovation outcomes.

## **Conceptual framework**

### *Underpinning framework 1: Design thinking as a tool for small businesses*

Grounded in human-centred principles that emphasise user-centricity and iterative prototyping, design thinking has emerged as a prominent method for problem-solving and innovation (Kimbell, 2011; Liedtka, 2015; Razzouk and Shute, 2012). Popularised through institutions such as Stanford University's d.school and consulting firm IDEO, design thinking offers a structured approach to understanding user needs and create solutions that are both relevant and practical (Inglesis Barcellos and Botura, 2018; Kwon *et al.*, 2021). While initially adopted in product design for larger corporations in the technology and service sectors, design thinking has increasingly gained traction as a useful tool for small businesses due to its adaptability and potential for high-impact results (Saroghi *et al.*, 2019; Suci *et al.*, 2022). The appeal of design thinking is in its accessibility as a method of facilitation and problem-solving for different contexts of varying scales. In this study, design thinking is operationalised through the LUMA system because it provides a clearly defined structure that is easier to apply even when resources are limited.

The LUMA system represents a codified variant of design thinking that is anchored on human-centred design philosophies encompassing 36 methods structured under three key design categories: looking, understanding, and making (Pacione, 2021a). These categories guide practitioners through a full cycle of innovation which includes gathering insights about customers, interpreting insights into patterns and needs, and ideating and testing solutions. Unlike more abstract design thinking frameworks, LUMA is particularly conducive to users without a design background or those working within resource-constrained environments, as it offers step-by-step guidance to support immediate practical application (Pacione, 2021b). In this context, design thinking is made accessible in the way that the LUMA Institute trains both practitioners and facilitators of the method across the world, while also presenting its toolkits to be available freely on their website to facilitate self-learning.

In practice, LUMA functions as a toolkit of methods that can be selected and combined depending on the problem context. The three categories map onto common design thinking activity types, namely insight generation (looking), synthesis and framing (understanding), and ideation and experimentation (making). Through this perspective, broad design thinking principles are translated into a sequence of facilitation methods that can be run with basic guidance. For small businesses operating under limited resources, design thinking presents a means to strategically develop customer-centric products and improve operational excellence, using structured methods to move from insight gathering to solution testing (Ingle, 2013; You, 2022).

The emphasis on empathy and iterative development aligns well with the dynamic nature of small enterprise operations, where direct customer feedback and rapid adaptation are critical (Chikweche and Bressan, 2022). The LUMA system, in particular, enables structured creativity in areas such as the gathering of customer insights and collaborative efforts for product development, problem-solving, and process improvement (Pacione, 2021a). For small businesses, these are the types of activities that can easily become overwhelming and chaotic, and design thinking enables clear framing for founders to take charge and manage effectively.

Current success stories of the LUMA system are mostly from its adoption by large organisations. That said, its principles hold significant relevance for small businesses as a low-cost and replicable framework. For example, software firm Autodesk adopted LUMA to support its shift from traditional licensing to cloud-based subscriptions (Pacione, 2021b). Meanwhile, technology consultant Genpact integrated LUMA to improve workflows and accelerate service innovation, resulting in a tenfold increase in client-facing projects (Lauff, 2022). These examples demonstrate how LUMA can align strategy and enhance value delivery that are equally desirable and attainable for small businesses.

These organisational examples also explain why LUMA can be effective beyond a single project. As a standardised yet flexible set of methods, LUMA supports repeatable routines for discovery, synthesis, and

experimentation. This is useful for teams to align around problem framing and evidence from iteration. For small businesses in particular, this repeatability matters because it reduces dependence on specialist expertise and supports cumulative learning over time. With the help of GenAI, the time spent on facilitation and documentation across these processes can be reduced.

### *Underpinning framework 2: GenAI for small business innovation*

GenAI technologies such as OpenAI's ChatGPT, Google's Gemini, and Microsoft's Copilot have rapidly become more accessible and affordable to both individual and organisational users, which offers significant potential to enhance productivity and innovation (Cho *et al.*, 2025; Patel and Indurkha, 2025). Small businesses across sectors are exploring GenAI to automate administrative tasks, generate marketing content, and analyse sales data as part of customer relationship management (Abrokwah-Larbi and Awuku-Larbi, 2024; Borah *et al.*, 2022; Drydak, 2022). These applications signal the role of GenAI in augmenting human effort and freeing up resources for higher-value strategic work (e.g., strategic planning, business development, stakeholder management). That said, the risk of overreliance and loss of human essence is real, and can already be seen in certain applications such as image generation which can be prone to unwanted errors.

When integrated with design thinking processes, the value proposition of GenAI becomes more compelling (Sreenivasan and Suresh, 2024; Verganti *et al.*, 2021). By combining the human-centred approach of design thinking with the speed and scale of GenAI, small businesses can gain deeper customer insights, prototype ideas rapidly, and iterate solutions with increased efficiency (Staub *et al.*, 2023). The ability to simulate user behaviours or visualise complex patterns aligns with the iterative cycles of design thinking, which also presents the potential to enhance the decision-making capacity of small firms (Verganti *et al.*, 2020). Furthermore, the processes within customer relationship management and intelligence gathering, for example, can be better analysed with the support of GenAI. It needs to be noted, however, that these insights may be indicative or directional in nature, and several assumptions need to be made before decisions are made. GenAI outputs are not meant to be taken without human intervention and validation.

As indicated by both academic and practice literature, GenAI adoption is not without risks. While it offers gains in speed and cost-efficiency, concerns remain around data privacy, output accuracy, and algorithmic bias (Benzie and Montasari, 2023). Small businesses may face challenges in discerning appropriate use cases and managing the ethical implications of AI-generated content. They could also face the challenge of maintaining authenticity of human-centred processes when they are taken over by large language models (Illia *et al.*, 2023). Moreover, the dependence on GenAI could undermine the empathy-driven orientation of design thinking if not implemented thoughtfully (Klingbeil *et al.*, 2024). These concerns highlight the need for frameworks that integrate GenAI into design processes to balance technological adoption with human values.

### *Proposed framework: Design thinking and GenAI integration*

To leverage the opportunity to bridge GenAI capabilities and design thinking application, this paper proposes a framework for integrating GenAI into design thinking activities which builds upon processes across the LUMA system. As presented in Figure 1, the proposed conceptual framework identifies key elements of LUMA’s three design categories (i.e., looking, understanding, making) where GenAI can accelerate innovation. These activities are non-exhaustive, as there are more methods across the LUMA system, but the three selected samples for each design category are deemed to be most pertinent for small business application. Collectively, the framework specifies how integration of GenAI into design thinking activities can help small businesses translate resource-constrained innovation efforts into concrete social impact outcomes for their communities.

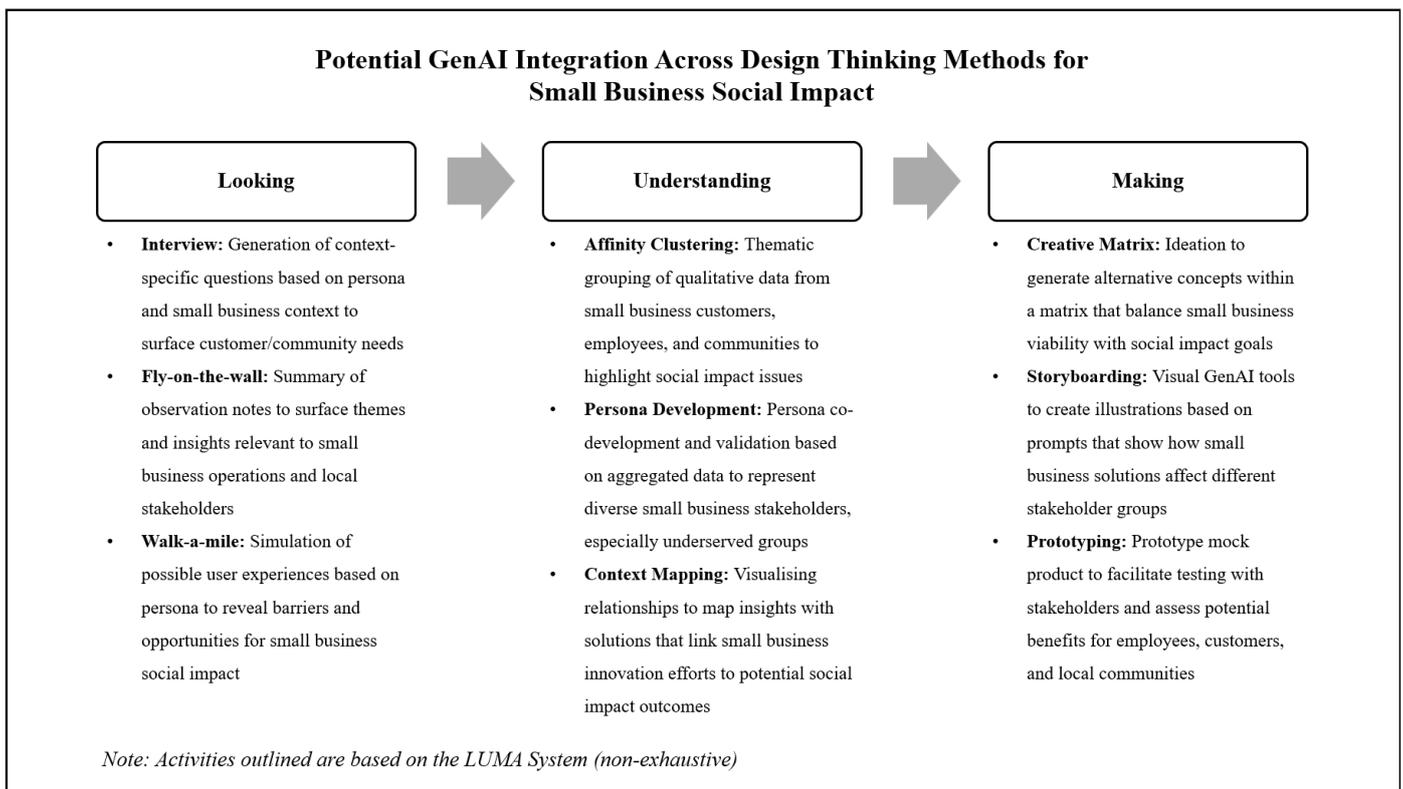


Figure 1: Potential GenAI integration across design thinking methods for small business social impact (Source: Author)

*Phase 1: Looking*

The ‘looking’ phase in the LUMA system involves techniques to gather contextual insights about customer behaviours and experiences. This emphasis on direct observation and empathy aligns with design thinking work that positions early-stage user research as the foundation for problem framing and innovation (Kimbell, 2011; Liedtka, 2015; Razzouk and Shute, 2012). Methods such as interviewing (i.e., in-person conversation with current or prospective customers), fly-on-the-wall (i.e., observation of day-to-day activities), and walk-a-mile (i.e., simulation of user experience) are used to uncover pain points and tacit knowledge. Emerging

studies also show that GenAI tools can assist small businesses in collecting and synthesising market and customer insights, albeit with limited attention so far to human-centred design processes (Abrokwah-Larbi and Awuku-Larbi, 2024; Borah *et al.*, 2022). Across these activities, GenAI applications can take shape in various ways.

First, the generation of customer interview scripts. Language models can co-develop context-specific interview questions that are tailored to different user personas or business contexts. This can help in navigating conversations to effectively gather specific information required for development of solutions. Second, summarising observation notes. GenAI tools can help distil qualitative field notes into thematic summaries by highlighting recurring patterns or outliers. Granted, these are duly checked for accuracy and specificity. Third, simulation of customer journeys. With meticulous prompting of different scenarios, GenAI can potentially simulate plausible user experiences and enable preliminary hypothesis testing before live market research.

These applications streamline early-stage discovery activities, particularly for small teams with limited time to conduct full-fledged research. One key requirement of this approach is a mindset of experimentation and testing, as well as openness to adapt to changes along the way. GenAI can only predict based on information that it has, and richer insights can only be obtained with effective notation and documentation across the data-gathering process. For small businesses seeking to improve job quality and service access in their communities, more efficient discovery work can therefore become a critical enabler of socially oriented innovation.

### *Phase 2: Understanding*

The ‘understanding’ phase translates raw insights into patterns, themes, and user needs. This stage is closely linked to sensemaking and opportunity framing in design thinking, where teams move from disparate data points to shared interpretations that guide strategic choices (Staub *et al.*, 2023; Verganti *et al.*, 2020). Primary LUMA methods within this process include affinity clustering (i.e., grouping similar observations), persona development (i.e., crafting of representative customer traits), and concept mapping (i.e., rough drafting of solution prototype via collaboration). Across these procedures, GenAI can be integrated in many ways. Given GenAI’s strength in pattern recognition and text analysis, these activities offer natural touchpoints for human-AI collaboration in synthesising customer insights (Cho *et al.*, 2025; Grashof and Kopka, 2023).

First, clustering of insights. Large language models can support thematic grouping of qualitative data and suggest underlying categories that can support human analysts. To ensure validity, one option is to do clustering manually prior to analysis by GenAI, which can enable more complementary initiatives both by human and large language models. Second, persona co-development and validation. AI-generated personas based on aggregated user data can act as validation references during team workshops. One key requirement is for a degree of acceptance over the breadth and depth of the persona specificity. This is in line with its

purpose to provide directional perspective of the generic user or customer. Third, visualising relationships. GenAI tools with visualisation capabilities (e.g., flowcharts, maps) can help small businesses map connections between insights and solutions. This feature varies across different GenAI platforms, however, depending on types of subscription.

These enhancements can help small businesses manage the cognitive load of synthesis while encouraging divergent and convergent thinking. The challenge is in adapting to the agile or iterative mindset required, whereby patience and persistence are required over time to get the optimal and value-added outcomes. Staff upskilling and reskilling are also required in this process, so that co-development of solutions are done in a fully participative and inclusive manner. Synthesis activities that are supported by GenAI can help small firms prioritise concepts with the greatest potential social impact.

### *Phase 3: Making*

The 'making' phase focuses on ideation, prototyping, and iterative testing. Design thinking literature highlights this phase as central to experimentation and learning, where ideas are externalised and tested to reduce uncertainty before full-scale implementation (Liedtka, 2015; Verganti *et al.*, 2020). LUMA methods such as creative matrix (i.e., plotting of solutions across stakeholders), storyboarding (i.e., first-cut drafting of customer journey), and prototyping (i.e., minimum viable product representation) can guide teams in developing tangible solutions. In these efforts, GenAI can help in multiple ways. Recent work suggests that GenAI can act as a creative partner in generating concepts and first-cut prototypes, although human judgement remains essential to ensure feasibility and ethical fit (Sreenivasan and Suresh, 2024; Weller, 2019).

First, support of the ideation process. GenAI can be used to generate alternative concepts within a matrix framework, cross-pollinating ideas from multiple domains. This can also come from existing applications of certain approaches which can act as quick case-study references for small businesses, although accuracy of data or insights needs to be validated thoroughly. Second, automating storyboarding. Visual GenAI tools can create illustrations or narratives based on textual descriptions, consequently reducing design production time. This is another form of sketched storyboarding which is commonly done manually. Third, prototyping development. AI can produce mock-ups of products which can facilitate rapid testing with stakeholders. In doing this, however, prompting of GenAI needs to be strategic and effective so that the desired output is aligned with the original intent of the user.

Prototyping is commonly a challenge faced by small businesses as it can require some form of investment or resource utilisation (e.g., 3D printing). By supporting visual articulation of ideas, GenAI enables an alternative option to physical mock-up construction and leaner iteration cycles that align with the agility and pace expected. For resource-constrained small businesses, these leaner prototyping cycles can lower the barrier to

experimenting with offerings that target community needs, inclusive employment practices, or accessible service models.

## **Discussion**

### *Theoretical contribution*

This study primarily contributes to the small business social impact literature by shifting the focus from viewing social impact as a static outcome, towards understanding how it can be intentionally designed through design thinking and GenAI integration. Prior work typically highlights the role of small businesses in sustaining local employment and community wellbeing (Liguori *et al.*, 2024; Lindeque and Samuel, 2022). This presents an opportunity to specify underlying innovation mechanisms to improve these intents. As such, this study foregrounds the pathways whereby socially oriented innovation can be organised and scaled. In line with MacInnis' (2011) call for conceptual work that delineates and integrates constructs and domains, the proposed framework specifies the mechanisms for design thinking and GenAI integration to organise small business innovation activities towards social impact outcomes. In doing so, the framework supports a more critical conversation by making impact a design criterion with explicit decision points, rather than a retrospective claim or byproduct.

From a stakeholder perspective, social impact matters because it can strengthen advocacy and legitimacy from the local ecosystem. In this regard, social impact is not positioned as philanthropy. It is seen as an outcome that can reinforce the conditions for small business sustenance (e.g., trust, retention, acceptance), alongside commercial viability. In addition, the existing literature on design thinking and GenAI integration is growing which shifts the treatment of both tools as distinct approaches to innovation (Sreenivasan and Suresh, 2024; Staub *et al.*, 2023; Weller, 2019). Through this perspective, GenAI acts as an efficiency and productivity enhancer, as well as a cognitive collaborator in the overall design thinking processes. The study positions GenAI within the iterative and empathetic modes of innovation through design thinking (Verganti *et al.*, 2020; Weller, 2019).

In the mapping of specific GenAI applications onto the design thinking approach of LUMA's looking, understanding, and making phases, the proposed framework clarifies how discovery, synthesis, and prototyping activities can be oriented towards social outcomes. The proposed framework also creates an avenue for future scholarly inquiry on workplace creativity and product innovation in the hybrid teams of small businesses. In doing so, it extends social impact research by linking small business objectives to concrete design activities and decision points that are supported by GenAI. This view prioritises impact to a higher level, rather than treating it as a secondary effect or byproduct of commercial success.

### *Critical considerations for social impact claims*

One key concern is that social impact claims in small businesses can become vague or performative if they are not grounded in stakeholder validation. The proposed framework therefore treats impact as something to be tested through discovery and prototyping. It also highlights risks including biased GenAI outputs, overreliance on automated synthesis, and exclusion of stakeholder voices if participation is substituted with convenience. Therefore, GenAI should remain an enabling design element within human-centred processes, not a replacement; particularly when decisions affect communities and vulnerable groups.

Reconnecting to the SDGs, the framework is explicitly aligned to SDG 8 and SDG 9 by linking process-level design activities to localised social outcomes. SDG 8 is reflected through the emphasis on decent work, fair employment, and inclusive access as criteria during discovery and prototyping. SDG 9 is reflected through the focus on building accessible innovation routines with GenAI support.

### *Practical implications*

For small business owners, the framework offers a practical roadmap to integrate GenAI tools into structured design thinking practices. It reduces the learning curve often associated with mastering design thinking methods by using GenAI to support facilitation, ideation, and prototyping. In doing so, this effort democratises access to advanced innovation processes, consequently making it feasible for small firms without in-house design thinking expertise or large budgets for consultants to conduct iterative innovation. Effective use of the framework depends on a basic level of AI literacy among small business owners and staff, including the ability to craft prompts, interpret outputs, and recognise ethical risks. Thus, the framework should be introduced alongside targeted capability building interventions via ecosystem partners (e.g., local councils, universities, small-medium enterprise support agencies). As this is a conceptual study, these implications are proposed as directional guidance and require empirical testing in future research before claims about effectiveness can be made.

Aligned with the identified SDGs, the proposed framework also provides a consideration for inclusive innovation. As small businesses are equipped with scalable and low-cost design capability, the proposed framework supports the embedding of innovation competencies at the grassroots level. This holds the potential for underrepresented and underserved communities, often the base of small enterprise activities, to engage in high-value creation. Policymakers and ecosystem enablers can also leverage on this model to design training programmes or toolkits that make design thinking and GenAI integration more accessible to entrepreneurs of all backgrounds.

To translate these ideas into day-to-day decision-making, the study proposes a simple implementation checklist for small businesses as outlined in Table 1. This checklist is organised around the LUMA phases and outlines concrete actions (e.g., how to prompt GenAI tools, what questions to ask about stakeholder effects, how to document learning from experiments). It also triggers small business owners to consider potential social impact alongside commercial viability at every stage of the design process. Each row includes a ‘Yes/No’ self-check question to support use as a checklist. The checklist also provides an illustrative example for each phase and a short worksheet space for teams to document their own approach.

To interpret the checklist, each ‘Yes’ can be treated as one point, giving a simple 0 to 3 score across the three phases. A score of 3 (all ‘Yes’) indicates the team has met the minimum process conditions to proceed with the next cycle while keeping social impact in view. A score of 0 (all ‘No’) suggests the team should pause and address foundational gaps before progressing. Scores of 1 to 2 indicate partial readiness, where the ‘No’ items should be prioritised as immediate actions before proceeding. To further support implementation, a simple 4-week sequencing roadmap that teams can use to run the checklist in practice is outlined in Appendix A.

<b>Design thinking/LUMA phase</b>	<b>GenAI support</b>	<b>Social impact focus</b>	<b>Illustrative example</b>	<b>Self-check question</b>	<b>Readiness checklist</b>
<b>Looking</b>  Goal: Understand customers and contexts	Draft interview questions, summarise notes, simulate journeys	Revelation of underserved groups and where barriers exist	Example: Use GenAI to draft interview questions for a target underserved group, summarise notes, and list key barriers to access.	Have I identified any underserved groups and specific barriers in the customer context?  Yes [ ] No [ ]	<input type="checkbox"/> Target underserved group(s) defined <input type="checkbox"/> Data source(s) chosen (interviews, observation, journeys) <input type="checkbox"/> Prompt(s) drafted and stored
<b>Understanding</b>  Goal: Make sense of insights	Cluster themes, generate and refine personas, map issues and ideas	Prioritisation of problems with highest social value	Example: Use GenAI to cluster insights into themes, refine a persona, and compare opportunities based on social value alongside viability.	Have I prioritised a problem with clear social value, not only commercial value?  Yes [ ] No [ ]	<input type="checkbox"/> Themes agreed by team <input type="checkbox"/> Social value criteria agreed <input type="checkbox"/> Priority opportunity selected and documented
<b>Making</b>  Goal: Develop and test solutions	Generate ideas, produce storyboards, outline test plans	Low-cost trial of solutions for fair access, decent work, community benefit	Example: Use GenAI to generate a storyboard or mock up and a simple test plan, then capture stakeholder feedback focused on access, decent work, or community benefit.	Have I tested a low-cost prototype with stakeholder feedback on access, decent work, or community benefit?  Yes [ ] No [ ]	<input type="checkbox"/> Prototype format chosen (storyboard, mock up) <input type="checkbox"/> Test participants identified (including affected stakeholders) <input type="checkbox"/> Learning capture plan agreed

Table 1: Implementation guide and checklist for small businesses integrating design thinking and GenAI

(Source: Author)

## **Limitations and future research**

This study is conceptual in nature and is based on a synthesis of existing small business, social impact, design thinking, and GenAI literature rather than empirical testing. As such, the proposed relationships between the framework and social impact or innovation outcomes remain to be examined in specific industrial or regional contexts. Future research could employ qualitative case studies, design experiments, or longitudinal analysis to assess how small firms actually use the framework and what types of social outcomes emerge over time. In addition, ethical and governance questions related to data quality and bias in GenAI-supported decision-making warrant careful scrutiny particularly when interventions relate to real communities. The framework also assumes a minimum level of GenAI literacy that many small business owners may not yet possess, which highlights the need for future research on how best to design prompt-engineering training for small businesses.

Building upon this study, future research agenda could explore how GenAI integration into small business operations shapes inclusion in hiring, how GenAI-supported synthesis affects stakeholder groups, and how low-cost prototyping tools influence the diffusion of socially oriented business models among small enterprises. Future work could also take a more explicit scholar-activist orientation, partnering with small businesses and communities to co-design and evaluate interventions involving design thinking and GenAI integration (Fisk, 2025). Table 2 outlines a list of potential research questions across these suggestions.

Design thinking/LUMA phase	Example social impact focus	Potential research question
Looking	Identifying underserved groups and local needs	<ul style="list-style-type: none"> <li>• How do small businesses use GenAI-supported activities to identify underserved stakeholders and community needs in practice?</li> <li>• What owner capabilities and mindsets enable effective use of GenAI for socially oriented customer discovery?</li> </ul>
Understanding	Prioritising socially valuable opportunities	<ul style="list-style-type: none"> <li>• How does GenAI-assisted affinity clustering and persona development influence the prioritisation of socially oriented opportunities compared with purely commercial ones?</li> <li>• In what ways does GenAI-supported synthesis shape the inclusion or exclusion of different stakeholder voices in small business design decisions?</li> </ul>
Making	Designing and testing socially oriented solutions	<ul style="list-style-type: none"> <li>• How do GenAI prototyping and storyboarding affect the speed, cost, and scope of experiments targeting decent work and inclusive service access?</li> <li>• What social and economic outcomes emerge over time from solutions developed through design thinking and GenAI integration in small businesses?</li> </ul>

Table 2: Future research agenda based on the proposed framework (Source: Author)

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## Appendix A: Sample 4-week implementation roadmap (Source: Author)

