

STEAMHouse Innovation Services: Strategies and Challenges for Regional Development in the UK

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This article highlights the role that STEAMhouse plays in embedding design thinking within small and medium enterprise (SME) business operations in Birmingham, UK, and the barriers it faces doing this.

STEAMhouse UK is a business support provider based in Birmingham, powered by Birmingham City University. A more comprehensive range of businesses, from sole traders to major corporations, can take advantage of the organization's consultation and support services. The multidisciplinary team of professionals at STEAMhouse is experienced in supporting corporate growth through collaborative innovation. They encourage integrating the five STEAM disciplines—Science, Technology, Engineering, Arts, and Mathematics—to develop unique perspectives and design innovative ideas.¹ This innovative agency was established in a Digbeth warehouse in 2018. STEAMhouse is renowned for fostering the expansion of regional businesses in Birmingham. In the last three years (2019–2021), the organization has helped to establish 63 new enterprises and develop 75 new product concepts in the West Midlands and beyond.²

STEAMhouse offers an unmatched array of exceptional business support services, with the primary objective of accelerating business growth through innovation. The journey for STEAMhouse has not been without its challenges and setbacks. The most recent challenge was Covid-19, where STEAMhouse had to grapple with providing all support remotely, leading to some transformative ways of

¹ BCU, S., 2022. STEAMmates are making a difference. [online] STEAMhouse. Available at: <https://steamhouse.org.uk/news/steammates-making-a-difference/> [Accessed 30 August 2022].

² Birch, J., (2022) Making innovation in business accessible. [online] STEAMhouse. Available at: <https://steamhouse.org.uk/news/making-innovation-in-business-accessible/> [Accessed 30 August 2022].

coaching, mentoring, and service delivery using technology. Additionally, they had to redefine their innovative thinking processes and learning strategies to assist their clients better.

SMEs and innovation: a growing landscape

The SME landscape in the UK accounts for 99% of all businesses, with 6% of enterprises involved in the creative sector, contributing £115.9 billion to the economy.³ Therefore, their growth in innovation significantly impacts the UK's economic competitiveness. However, studies have shown that SMEs have specific barriers to growth and innovation, and more often, they constrain their innovation activities as a result.⁴ Furthermore, they struggle to implement design strategically and effectively in response to their unique business challenges. Gulari and Fremantle's report of 2015 clearly outlined the internal and external barriers that hinder the scope for innovation for SMEs in the UK. The predominant internal barriers are inadequate or limited resources and expertise. External barriers include market competitiveness and bureaucratic hurdles (Brexit or taxation issues) that further limit SMEs growth and innovation.⁵ McKinsey suggests that governments and non-governmental organizations (NGOs) seeking to serve SMEs' unmet demands need to focus on promoting the three main characteristics to create SME thriving ecosystems:

- Confidence: by enhancing their business acumen and creating a culture of entrepreneurship
- Growth: offering technical assistance that drives innovation and support for business expansion

³ Higginbotham, D. (2022) Overview of the UK's creative arts sector | Prospects.ac.UK. [online] Prospects.ac.UK. Available at: <https://www.prospects.ac.uk/jobs-and-work-experience/job-sectors/creative-arts-and-design/overview-of-the-uks-creative-arts-sector> [Accessed 16 August 2022].

⁴ McKinsey. (2020) Unlocking growth in small and medium-sized enterprises. [online] McKinsey. Available at: <https://www.mckinsey.com/industries/public-and-social-sector/our-insights/unlocking-growth-in-small-and-medium-size-enterprises>.

⁵ Gulari, M. and Fremantle, C. (2015) Are Design-led innovation approaches applicable to SMEs? Gray's School of Art, The Robert Gordon University, Aberdeen, UK.

- Competitiveness: training them to enhance their competitive edge with better value propositions that can cater to their market⁶

Design thinking and incubation

The SMEs business operational improvement and acceleration of their business success can be supported by implementing design thinking in their day-to-day practices. Brown reveals that design thinking follows a human-centered approach to innovation.⁷ His model encourages experimenting and risk taking.

However, designing from the ground up is time intensive and challenging for businesses to keep up with rapidly changing market demands; this is especially true for SMEs.

The competitive advantage that design brings to small- and medium-sized enterprises scrambling to adopt digital tools is very clear.⁸ However, there seems to be a missing link between engaging with design within a supportive environment provided by STEAMhouse and adopting design as a strategic tool, especially by SMEs. In 2002, Bruce and Bessant pointed out that SMEs are reluctant to integrate design expertise due to their lack of design literacy. An article by the Design Council stated that SMEs views on design rarely go beyond aesthetics and graphics. This still holds in 2022; it is not a secret that despite design leading to many exemplary business successes, it is still undervalued and underused in businesses. The Design Council portrays how little UK businesses, mainly SMEs, exploit the country's

⁶ McKinsey. (2020) Unlocking growth in small and medium-sized enterprises. [online] McKinsey. Available at: <https://www.mckinsey.com/industries/public-and-social-sector/our-insights/unlocking-growth-in-small-and-medium-size-enterprises>.

⁷ Brown, T. (2008) Design Thinking. [online] Harvard business review. Available at: <https://readings.design/PDF/Tim%20Brown,%20Design%20Thinking.pdf>.

⁸ Black, A. (2019) Design in Britain: powering a new industrial age - DCMS blog. [online] DCMS blog. Available at: <https://dcmsblog.uk/2019/01/design-in-britain-powering-a-new-industrial-age/>.

world-leading design strategies. It is worth noting that the SME landscape accounts for 99% of all firms in the UK, offering free support to help SMEs innovate during this crisis.⁹

According to Design Council research, in the UK, businesses gain over £4 net operating profit, over £20 net turnover, and over £5 net exports for every £1 they invest in design. Their findings further argued that the value produced by design is driven by how it is used and how much it is ingrained in the company culture.¹⁰ Even though companies collaborate with design experts or consultants at STEAMhouse, the scope of design integration is mainly limited to the project at hand. So, *how does STEAMhouse improve design integration and adoption in small and medium-sized businesses? How can STEAMhouse, a business incubator, support and educate small businesses to use design to their strategic advantage?*

STEAMhouse and regional development opportunities and challenges

The researchers used a survey to understand if SMEs in the region are subservient to any change. The survey was sent out to all the regional SMEs in Birmingham supported by STEAMhouse—31 SMEs participated. The survey revealed that none considered company culture a priority, with 90% following a customer-first approach where they shared that their primary purpose is to fulfil the customers' needs. When asked how they use design in their company, 53% of companies responded using design only to market and promote their business; the remaining 40% of SMEs reported to be using design concepts only in their product development phase; 3% of respondents were unaware of the use of design. Further,

⁹ Hutton, H. (2020) Free support offered to SMEs to help innovate and redress supply chain shocks [Cambridge Institute for Sustainability Leadership. [online] Cisl.cam.ac.uk. Available at: <https://www.cisl.cam.ac.uk/work-with-us/accelerator-and-sustainability-hub/news/free-support-to-help-smes-innovate-business-and-redress-supply-chain-shocks>.

¹⁰ Crawley, A. (2015) Tackling business issues through design: finding new routes to old problems. [online] Design Council. Available at: <https://www.designcouncil.org.uk/news-opinion/tackling-business-issues-through-design-finding-new-routes-old-problems> [Accessed 5 March 2022].

when SME owners were asked about the attributes that their respective company culture promoted, 60% of the respondents replied that they focused on a “self-management culture encouraging a shared purpose” that can evolve with the changing need of the market and the users. This may be due to the impact of Covid-19 and the recent changes in work culture encouraging remote working situations. These changes gave rise to self-management initiatives and the need for SMEs to have a shared vision that can evolve with the rapidly changing business environment. On the other hand, the remaining 40% of respondents claimed to value stability and a predictable work environment with a long-term perspective. The survey confirmed that SMEs in the region are not prioritizing cultural change. Therefore, any new approach, such as design, is not seen as operationally viable.

The interviews revealed that SMEs in the UK face four challenges:

1. **Competition:** SMEs face challenging market competition and struggle to retain their existing client base as most consumers prefer branded goods. This increased competition wherein SMEs compete not only within their local market but also with large corporations.
2. **Sustained growth:** Despite having brilliant ideas, innovative business owners struggle to sustain their growth due to their "unstructured" leadership style. They are unaware of the company culture's need for a shared vision and value system. SME leaders also struggle with task delegations and lack a collaborative approach.
3. **Capital:** Due to the small-scale nature of their business, SMEs have limited capital and resources in addition to a lack of knowledge exploitation that further limits their growth.
4. **Relevant and practice-led training:** Most SME leaders are not trained in business studies and want support in practical, implementable actions. Training and support from experienced business owners, with implementable strategy and bespoke business support, is most valuable.

The interviews further revealed the implicit challenges support providers face in their training process. UK Design Council Associate and design expert from STEAMhouse shared their experiences of how SME owners have much scepticism around the idea of innovation. Most SMEs do not perceive innovation as a mindset; they believe it is a process that needs to be conducted only during the product or service development phase. They also hesitate to adopt design in their business practices as they are unaware of the practical use of design concepts in complex business practices. Therefore, STEAMhouse knows small and medium enterprise owners' anxiety even after successful training. As a result, new approaches to design thinking are not adopted in business operations. They claimed SMEs conservative culture and strict hierarchy to be the main issue that hinders the adoption process. Despite SME leaders' scepticism, support providers try to empathize with and counsel them on the advantages of using design in business.

STEAMhouse approach and strategy

As ascertained before, SMEs need tailored training and support, as most struggle with limited funding and resources. Most SME owners lack the business acumen to sustain and scale up their businesses. Therefore, they make decisions based on their assumptions or intuitions rather than research. They are sceptical of the term “innovation.” To understand these challenges in-depth, the study conducted semi-structured interviews with design and business experts from the UK Design Council, Innovate UK, STEAMhouse, and The Engine Room. The findings further revealed that most SMEs still have not embedded shared values and future vision in their company culture. But because of their small scale, SME employees share a friendly relationship. Business support providers in the UK offer customized programs wherein SMEs are trained to incorporate design thinking methodologies into their business operations through collaborative engagement.

The series of events and workshops offered by STEAMhouse encourages the use of design thinking. These programs aim to implement design thinking as a mindset into SME business operations. STEAMhouse initiatives focus on adopting the training programs as a constant conversation in SMEs company culture.

Therefore, STEAMhouse follows five guiding principles that influence its approaches and strategies for integrating design into business processes: collaboration, conversation, exploration, openness, and newness.¹¹

Adhering to these principles, the support services offered by STEAMhouse to facilitate the use of design in business are:

- 1. STEAM sprint:** Through these collaborative, fast-paced design-thinking sprints, STEAMhouse assists its clients in designing new products or services by empathizing with user needs. Due to the recent changes, STEAMhouse is hosting these sprint workshops online in addition to their usual in-person sessions. The online sessions are brief but last for a more extended period. Small teams with a maximum of 16 people are intended for STEAM sprint workshops. Participants don't need to be familiar with design methods. STEAMhouse welcomes participants from a diverse range of expertise in this program.

As per the experts, STEAM sprints have the potential to help SMEs learn creative problem-solving skills and innovate with confidence.

- 2. Service and strategy development workshop:** The STEAMhouse experts created these tailored programs to support service design and innovation strategies for businesses, government

¹¹ STEAMhouse, B., 2022. Support to Innovate. [online] STEAMhouse. Available at: <https://steamhouse.org.uk/innovate/> [Accessed 6 September 2022].

agencies, and non-profit organizations by offering tools and techniques for initiating and implementing change, designing innovative services, and strategies that produce newer opportunities and value. These workshops use a facilitative approach to increase the capacity for creativity and collaboration in teams. The sessions are designed to assist clients in diversifying and modifying their portfolios per their business needs. STEAMhouse collaborates with businesses to examine their problem from multiple perspectives. This allows for co-designing a process that fosters co-creation, provides the larger context, and assists stakeholders in identifying opportunities for change.

- 3. Upcoming paper to prototype:** SMEs main challenge is to innovate using their limited knowledge and resources. This program aims to help them develop new products or services using rapid prototyping techniques following the design thinking methodology. The workshop sessions are designed to help SMEs meet the diverse needs of their users and the competitive UK business landscape. STEAMhouse will provide the support, resources and tools needed to design, prototype, test, and launch market-validated and production-ready solutions. The four-phase process of the workshops also aims to build participants' confidence in designing new ideas:
 - a. Feasibility assessment - This phase will assist SMEs in making sure their ideas are market fit.
 - b. Concept design - This session aims to foster the creative vision of SMEs. This will help them enhance their ideas' usability, functionality, and efficiency.
 - c. Prototyping - This session encourages using rapid-prototyping techniques with limited tools, using design thinking methodology.
 - d. Production design - In this session, STEAMhouse will help SMEs prepare their design for full-scale manufacturing by assisting them with the necessary adjustments.STEAMhouse will also help SMEs connect with qualified development teams or specialist manufacturers.

Conclusion

To thrive in the ever-evolving competitive market, SMEs need to offer unique customer value propositions. Therefore, embracing design thinking and design research enables them to grow as innovative and adaptive businesses. Although support programs are available, the main challenge lies in effective training adoption. STEAMHouse's initiatives aim to support the adoption of the training programs and to create a thriving ecosystem for SMEs where they can employ design in their business practices and grow through innovation in the competitive UK business environment.

Author bios:

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