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If we never do it, we will never know

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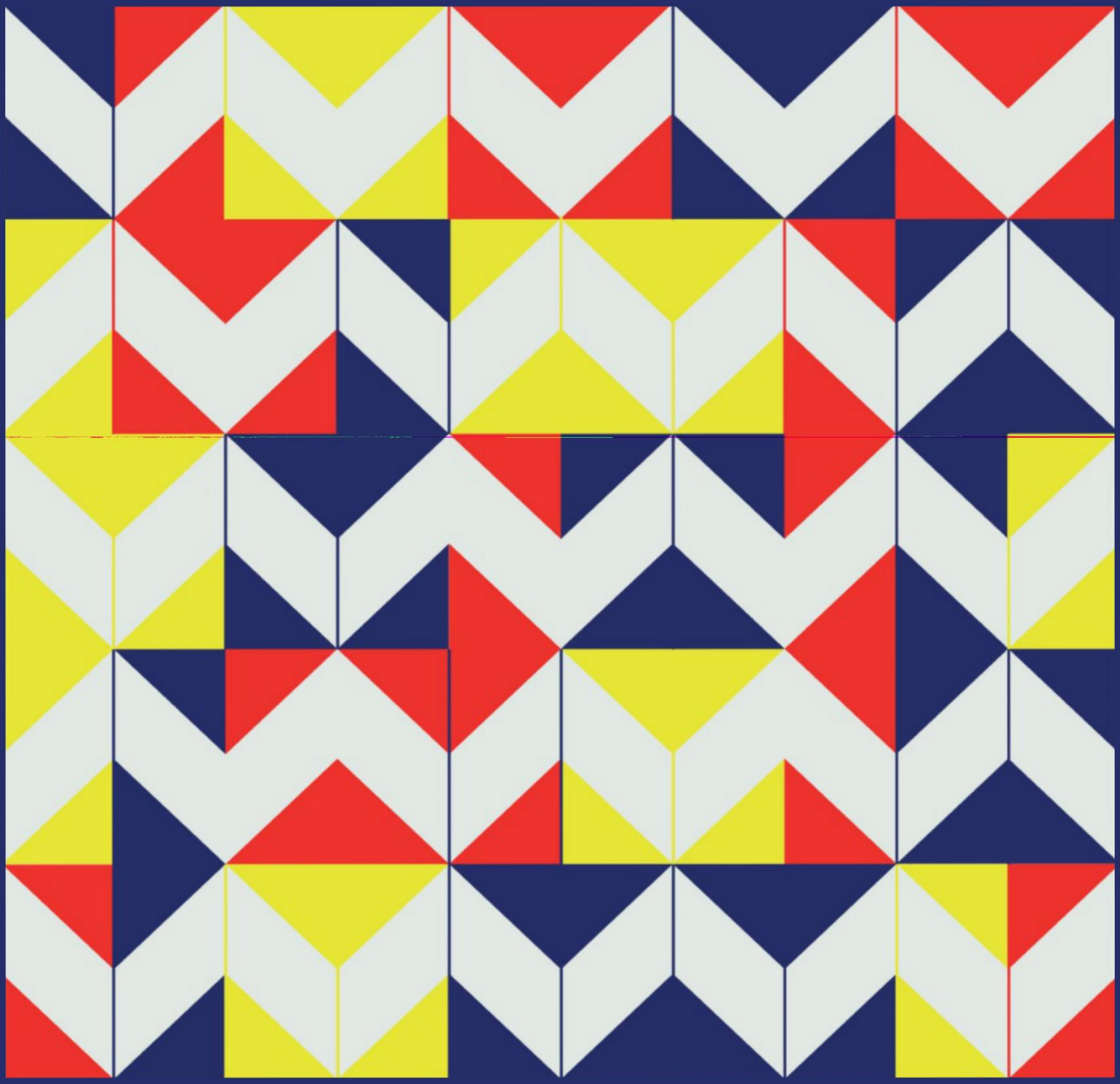

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- **Management (unpaid):** Eduardo Leite, Ph.D.
- **Location:** Startup Madeira—Campus da Penteada, 9020-105, Funchal, Madeira, Portugal
- **Principal contact:**
  - Eduardo Leite
  - University of Madeira
  - +351 291 705 180
  - eduardo.leite@staff.uma.pt
- **Support contact:**
  - Ponteditora
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  - geral@ponteditora.org

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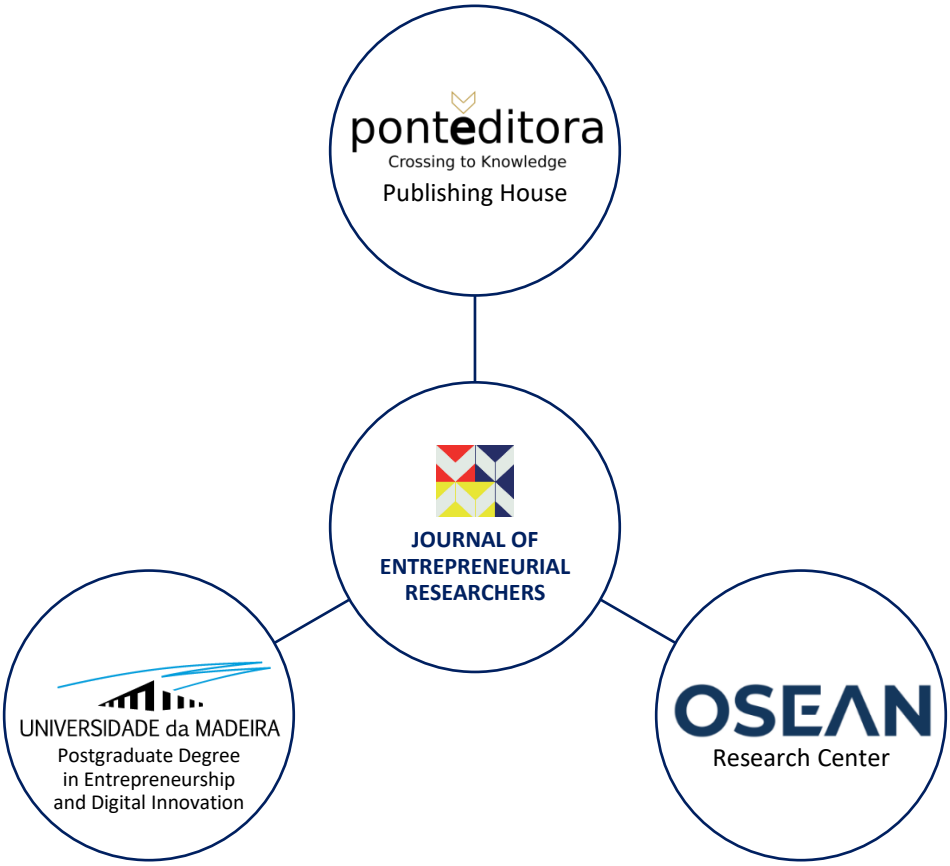

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Table of Contents

Editorial—Quest for knowledge: The tenacity behind innovation

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Eduardo Leite, Universidade da Madeira, OSEAN—Outermost Regions Sustainable Ecosystem for Entrepreneurship and Innovation, Portugal, eduardo.leite@staff.uma.pt.

The dynamic between originality and derivation has historically driven human knowledge forward. Some disrupt norms with fresh ideas, while others preserve and disseminate this knowledge, ensuring its accessibility and longevity. This interplay requires a careful balance, especially within academia, where journals play a pivotal role in either stalling or advancing the broader social impact of innovation.

As Lord Chesterfield once observed, many achieve distinction and fortune through outward accomplishments rather than intrinsic merit. Throughout history, the interplay between originality and derivation has been essential for advancing human knowledge. Some disrupt norms with fresh ideas, while others preserve and disseminate knowledge, ensuring it remains accessible. This dynamic requires a nuanced balance to maximize social and scientific impact, especially in today's academic ecosystem, where journals play a pivotal role. This insight applies not only to courts but also to academia, where the pursuit of prestige can overshadow genuine intellectual contributions. Therefore, the balance between originality and derivation transcends mere knowledge advancement, touching upon authenticity and substance.

Schopenhauer warned against the excessive consumption of others' ideas, cautioning that it can weaken independent thinking: "When we read, another person thinks for us: we merely repeat his mental process. [...] When these, at last, withdraw, what remains?" (Schopenhauer, 1970). His message underscores the importance of self-reflection in fostering original thought, as uncritical absorption of external ideas risks eroding our innovative capacities.

In today's rapidly evolving landscape, journals must go beyond traditional knowledge dissemination by fostering originality and embracing publications that disrupt norms. Originality demands more than creativity; it requires resilience—or, as Shepherd (2003) and Lichtenstein & Plowman (2009) suggest, tenacity. Unlike resilience, which implies returning to a previous state, tenacity reflects ongoing adaptation and transformation in response to challenges (Callister, 2002).

Furthermore, studies on schadenfreude—pleasure derived from others' misfortune—suggest that fear of failure and aversion to risk can stagnate innovation (Smith et al., 2009). Feather, Wenzel, and McKee (2014) noted that in competitive settings, others' setbacks are often perceived as indirect victories, even when the observer is uninvolved. This phenomenon can create a cycle in academia where satisfaction with others' failures discourages collaboration and curbs innovation. For those who have never faced true failure, conformity may seem safe but restricts their creative potential, leaving them stagnant rather than inspired to transform. Ultimately, they too may experience failure—without ever having tried.

To allow original thinkers to thrive, academic journals must revise their editorial policies to foster intellectual freedom and support autonomous development, foundations that should begin within academia. True innovation calls not only for replicating ideas and disseminating knowledge but for challenging paradigms and nurturing intellectual freedom. Bernardo Soares, one of Fernando Pessoa's heteronyms, aptly reflected on this: "To understand, I destroyed myself." This thought encapsulates the need to go beyond mere absorption, moving toward creative transformation.

As Peter Drucker emphasized, innovation is the "specific instrument of entrepreneurship" that generates new, value-creating capacities (Drucker, 1985). Higher education institutions and journals, which often aspire to publish groundbreaking work but hesitate with disruptive content, should instead cultivate original thinking over the mere reproduction of established theories. Academia must normalize failure as integral to the scientific process and cherish the creative journey.

The transition between scientific paradigms is naturally complex, often marked by crises that call for new approaches to fuel innovation. The precarious conditions faced by researchers, coupled with the low salaries for university faculty, reveal a paradox within academia, which demands excellence without providing adequate resources. Just as in the arts, science must honour intellectual contributions by compensating researchers beyond institutional salaries. Such financial recognition would encourage original knowledge production, reduce the fear of risk, and foster an environment where experimentation and creativity are genuinely valued.

After two years of publications by the *Journal of Entrepreneurial Researchers*, we reaffirm the importance of fostering the courage to take risks and creating an academic environment that views failure as an essential part of growth. Authentic innovation demands a willingness to explore disruptive solutions, even when this challenge established norms. As Einstein observed, "The true sign of intelligence is not knowledge but imagination." By embracing risks, we open pathways for true knowledge creation and advancement.

This paradigm shift in science and technology reveals the tension between derivative, exploitative approaches—sometimes bordering on predatory practices—and a new paradigm dedicated to sustainability and scientific integrity.

This journey toward a new scientific and technological paradigm is not about reaching a destination but about an unending quest. Here, the concept of utopia becomes essential. As Eduardo Galeano eloquently put it, "Utopia is on the horizon. I move two steps closer; it moves two steps away… It keeps us walking." Utopia, like scientific innovation, is not a destination but an ideal that drives us to question, transcend, and expand our understanding.

Inspired by cinema, where narratives like Coppola's Megalopolis capture paradigm transitions, we face a future that demands a balance between disruptive innovation and sustainable practices, respecting both human and ecological complexity. In considering whether our scientific endeavours serve as acts of "salvation" or perpetuate exploitative paradigms, we redefine what it means to innovate ethically and inclusively. With startup failure rates around 90%, studying success alone limits our understanding. This phenomenon, known as survivorship bias, results in skewed conclusions by focusing only on surviving entities, ignoring the vast majority that did not. In entrepreneurship, such bias fosters a misleading belief that certain practices guarantee success, neglecting those ventures that followed similar strategies yet failed. By acknowledging failures and challenges in academic literature, we cultivate a realistic view crucial for preparing individuals for the real-world demands of the market.

We invite readers to reflect on the need for fresh institutional and personal perspectives that accommodate both original and derivative thinkers while nurturing true innovators and rewarding effort and merit. Academia must create environments that champion success yet accept failure as a fundamental element of innovation, forming an ecosystem where risk-taking is encouraged. The future calls for identifying, supporting, and uplifting those who dare to innovate and face the uncertainties of failure, paving the way for generations grounded in sustainable, resilient socioeconomic models.

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Responsible innovation in social enterprises: A catalyst for sustainable change

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Author 1: Balashankar Mulloth, University of Virginia Frank Batten School of Leadership and Public Policy, United States, bmulloth@gmail.com.

Author 2: Tatiana Iakovleva, University of Stavanger, Norway, tatiana.a.iakovleva@uis.no.

Abstract

This article delves into the critical role of responsible innovation within social enterprises, framing it as a cornerstone for sustainable and equitable progress. It scrutinizes how blending business acumen with a commitment to social good can drive transformative changes, despite the inherent challenges posed by aligning ethical imperatives with traditional business goals.

Responsible innovation, characterized by its focus on ethical, inclusive, and sustainable development emerges as a guiding principle for social enterprises. These organizations, defined by their mission to benefit society and the environment, face the intricate task of balancing innovation with responsibility. The article uses the case studies of iThrive Games and Rebecca's Natural Food to illustrate how social enterprises can successfully navigate this balancing act, showcasing the power of responsible innovation in fostering teen mental health and promoting sustainable eating. Ultimately, it posits that social enterprises are at the forefront of a broader movement towards a business ethos that prioritizes long-term societal and environmental well-being over immediate profit, paving the way for a more responsible global economy.

Keywords: Responsible Innovation; Social Enterprises; Social Entrepreneurship; Sustainability.

1. Introduction

In the quest for a more equitable and sustainable future, social enterprises have emerged as vital players, blending the drive of business with a commitment to social good (Kickul and Lyons, 2020). Central to their impact is the concept of responsible innovation—an approach that prioritizes ethical, inclusive, and sustainable development (Von Schomberg, 2013; Iakovleva et al., 2021a; 2024). This article explores the role of responsible innovation in social enterprises, examining its implications, challenges, and potential as a catalyst for sustainable change.

Responsible innovation (RI) refers to the process of developing new products, services, or processes with a conscious focus on their long-term impact on society and the environment. It involves anticipating and addressing potential ethical, social, and ecological issues at the outset (Owen et al., 2013; Stilgoe et al., 2013; 2020). The principles of RI include inclusivity, sustainability, reflexivity, and responsiveness. These principles ensure that innovation is not only about technological advancement but also about considering its broader impact on society and the environment. However, In the landscape of modern business practices, the implementation of RI principles often collides with traditional business requirements. This tension is emblematic of a deeper chasm between ethical imperatives and profit-driven goals, as discussed by Blok & Lemmens (2015). Transparency is a cornerstone of Responsible Research and Innovation (RRI), advocating for the equal distribution of information among all stakeholders. However, in the real-world business environment, this principle frequently encounters the hurdle of information asymmetry, where some parties hold more information than others, often leading to competitive advantages and a reluctance to share knowledge openly.

The idea of co-creation, another pillar of RRI, emphasizes shared responsibility in investment and innovation processes. Nonetheless, this collaborative approach to innovation is at odds with the conventional view where

businesses bear the investment burden alone and thus claim the resulting rewards exclusively. Stakeholder involvement, imperative to RRI, risks the peril of knowledge leakage. In the pursuit of inclusive innovation, involving various stakeholders could inadvertently lead to the dissemination of sensitive information, undercutting the competitive edge of the innovating entity. Moreover, the pursuit of RRI for the public good can precipitate what Blok (2019) describes as 'innovation as creative destruction.' This paradox lies in the drive for social good that could disrupt existing markets, displace current products, and render established industries obsolete, thus creating a conflict with the ingrained business ethos of market dominance and stability.

Integrating RI into the fabric of business practices poses a complex challenge, yet it is one that social enterprises may be uniquely equipped to address. These mission-driven organizations, with their inherent focus on social value, could inherently synchronize with the ethos of RI, suggesting a promising avenue for exploration. Social enterprises are businesses that exist primarily to benefit society and the environment, rather than to maximize profits for shareholders (Dees, 1998; Kerlin, 2009). They operate across various sectors, addressing issues like poverty, education, health, and environmental sustainability. For social enterprises, responsible innovation is not just a strategy; it's integral to their ethos (Santos, 2012). They often lead the way in developing solutions that are not only effective but also ethical and sustainable. By doing so, they set an example for the broader business community. One of the main challenges faced by social enterprises is balancing the drive for innovation with the need to remain responsible and ethical (Austin et al., 2006). This balancing act requires a deep understanding of the social and environmental context in which they operate. Despite these challenges, social enterprises have significant opportunities to create impact through responsible innovation. They can drive systemic change, influence public policy, and inspire conventional businesses to adopt more responsible practices. By critically examining how social enterprises apply RI principles, we can gain valuable insights into their implications.

For the two ventures we examine in this paper, we describe and demonstrate the power of responsible innovation in creating positive social and environmental impact. The first venture, iThrive Games, is focused on promoting teen mental health and well-being through meaningful gaming experiences. The venture employs a multidisciplinary approach, combining positive psychology and youth development principles to design games that support teen thriving. The second venture, Rebecca's Natural Food, is a socially minded grocer that provides locally sourced, sustainable, and healthy products for the public. These case studies provide valuable lessons on the importance of aligning innovation with ethical and sustainable practices, and the potential of social enterprises to lead the way in responsible innovation.

In conclusion, responsible innovation in social enterprises represents a hopeful pathway towards a more equitable and sustainable future. By prioritizing ethical, inclusive, and sustainable practices, social enterprises not only address immediate social and environmental challenges but also pave the way for a broader shift in how we approach business and innovation. As they continue to grow and evolve, their role in shaping a more responsible and responsive global economy will undoubtedly expand, offering lessons and inspiration for all sectors of society.

2. Social Enterprises and the Quest for Responsible Innovation

Social enterprises (SEs) are unique organizations that operate to pursue social or environmental goals while generating revenue through their business activities. The concept of social entrepreneurship emerged in the late 1990s, representing a relatively recent phenomenon compared to the long-standing practice of corporate social responsibility, which dates to the 1960s (Mulloth, Kickul, and Gundry 2016; Peterson and Schenker 2018; Short, Moss, and Lumpkin 2009). Since its inception, social entrepreneurship, characterized by SEs addressing societal challenges through revenue-generating activities, has gained significant attention from policymakers, practitioners, and researchers (Haugh 2012; Mair and Martí 2006; Short et al. 2009).

These various stakeholders have recognized the potential of SEs to effectively deliver goods and services to underserved individuals and groups (Haugh, 2012). Notable examples include the Grameen Bank in Bangladesh (Bornstein, 1997), renowned for its provision of microfinance to empower impoverished individuals, and the

Aravind Eye Hospital in India, known for offering high-quality, affordable eye care services, particularly cataract surgeries, to marginalized populations.

Defining SEs and figuring out the boundaries of the SEs has remained a complex task as the boundaries of SEs are expanding with every new idea of a social venture, and SEs have complex structures influenced highly by local political, social, and economic contexts (Dees 1998). Notwithstanding the concerns about the definition of SE, in recent decades, the social entrepreneurship phenomenon has attracted much attention of entrepreneurs, including those involved in nonprofit work. There are multiple reasons for nonprofit organizations to turn to social enterprises, such as to gain freedom from restrictions posted by the governments, make up for the lost government support money and grants, diversify funding sources, deliver long-term sustainability, develop an entrepreneurial spirit within the organization, and take benefits of new market opportunities (Bornstein 2007; Dees 1998).

Social enterprises (SEs) distinguish themselves in the business world by merging financial sustainability with their unwavering commitment to social and environmental missions. This distinctive positioning enables SEs to not just aim for profit, but to innovatively tackle pressing societal issues, enhancing the welfare of marginalized communities (Seelos and Mair, 2005; Austin, Stevenson, and Wei–Skillern, 2006; Dees and Anderson, 2003; Defourny and Nyssens, 2010; Bacq and Janssen, 2011). They operate on a multi-bottom-line approach that demands a balance among social impact, environmental stewardship, and financial health, re-investing earnings back into their missions rather than distributing them as shareholder dividends (Thompson and Doherty, 2006; Thompson, 2008; Battilana and Lee, 2014).

This intricate balance naturally aligns SEs with the principles of RI, where the focus is not only on 'what' is being innovated but also on the 'how' and 'for whom'. RI, a concept with the promise to address global challenges, calls for practices that are inclusive, anticipative of future impacts, and reflective of underlying values (Bacq and Aguilera, 2022; Ribeiro et al., 2018; Thapa and Iakovleva, 2019; 2023). Innovation and entrepreneurial activities must start with inclusive engagement of diverse stakeholders—public sector, NGOs, citizens, and customers—to gather broad perspectives on societal needs, promoting open innovation and consensus for legitimacy (Owen, Macnaghten, and Stilgoe 2012; Chesbrough 2006; Long and Blok 2018; Huang et al. 2024; Bessant et al., 2024). Anticipating potential impacts of ventures allows for critical reflection on both positive and negative externalities, beyond financial outcomes (Guston 2014; te Kulve and Rip 2011; Oftedal et al., 2019; Zahra and Wright 2016). Reflexivity involves considering the value offered to stakeholders and society, balancing expectations with reality to build a strong societal image and maintain sustainable relationships (Stilgoe, Owen, and Macnaghten 2013; Naughton et al., 2023, Ødegård et al., 2021). Responsiveness requires innovators to respect societal actors, integrating societal and environmental well-being with profit, as today's social expectations of business have evolved (Meijboom, Visak, and Brom 2006; Zahra and Wright 2016). Without these principles, ventures risk failure and detriment to both entrepreneurs and society.

These RI principles are particularly pertinent to SEs, where inclusivity in decision-making and operations ensures that diverse stakeholder perspectives are considered, especially those who are typically marginalized or unheard (Bacq and Aguilera, 2022; Blok and Lemmens, 2015; Bessant et al., 2019). The principle of anticipation guides SEs to consider the long-term consequences of their innovations, making choices that are sustainable and beneficial over time. Similarly, reflection in SEs entails ongoing critical self-assessment, ensuring that their actions align with broader social values and ethical considerations.

However, despite their intrinsic alignment with RI, many SEs, like traditional firms, grapple with effectively embedding these principles into their practices. While the private sector shows an interest in RI (Garst et al., 2017; Scholten & Blok, 2015; Martinuzzi et al., 2018), it lacks a comprehensive framework that includes all stakeholders and accounts for the full innovation lifecycle (Blok et al., 2015; Thapa and Iakovleva, 2023; Iakovleva et al., 2021a; 2024). Questions about the appropriate timing and methods of stakeholder involvement persist

(Silva et al., 2019), and yet, SEs are often better equipped to weave these stakeholders into the fabric of their innovation processes.

Traditional firms can learn from the RI approaches of SEs, which showcase how to infuse RI with business strategies authentically and meaningfully. The interplay between RI ideals and the realities of competitive markets requires rigorous inquiry (Brand and Blok, 2019). By delving into how SEs integrate RI principles—particularly inclusion, anticipation, and reflection—we can forge a path for conventional firms to follow. SEs prove that RI can transcend theoretical bounds to become an actionable business practice, characterized by a conscientious and forward-thinking mindset.

3. Methodology

This study employed a qualitative research method, particularly case studies, which are ideal for exploring areas with limited existing theories or where understanding a specific context's dynamics is crucial (Eisenhard, 1989). Scholars have highlighted the effectiveness of case studies in SME environments for both testing and developing theories, as well as crafting conceptual frameworks for measuring outcomes (Chetty, 1996). This method enabled the incorporation of diverse data types and crucial background contexts into the analysis of social enterprises' potential to pioneer responsible innovation (Yin, 2009; Emmel, 2013).

To move away from traditional "hero"-centric case studies, we intentionally chose smaller, relatively new social enterprises as our subjects (Nicholls, 2008; Perren, 2018). This choice reflects our aim to examine organizations that better represents the common characteristics of early-stage social enterprises, despite the challenging notion of defining a "typical" social entrepreneur. The authors gathered insights through extensive interviews and observations at iThrive Games and Rebecca's Natural Foods, involving management, staff, and customers, over a year from February 2021 to March 2022. This included 12 interviews at iThrive Games, with durations ranging from 25 to 75 minutes, and 17 at Rebecca's Natural Foods, lasting between 25 and 100 minutes. Additionally, they reviewed archival materials like company reports and articles, with most interviews being recorded and transcribed. This comprehensive approach provided a deep understanding of the organizations' growth and innovations.

The interviews were semi-structured discussions focused on reviewing and understanding the data these organizations collected on their social innovation efforts. This aimed to explore the roles social enterprises have in leading responsible innovation. Additionally, conversations with founders and key stakeholders were held to delve into the organization's theory of change and their perspectives on social innovations, enriching the data collection process with diverse insights into their approaches and impacts.

The authors deliberately chose to structure their inquiry around these two organizations for several reasons. Current scholarship had offered criticisms of early qualitative social entrepreneurship scholarship, highlighting the bias of pioneering case studies toward successful, leading social enterprises that were not necessarily representative of the field (Sharir and Lerner, 2006; Van Slyke and Newman, 2006). Both iThrive Games and Rebecca's Natural Foods were more representative of small-scale, early growth SMEs targeting responsible innovation through community development and entrepreneurship (Bornstein, 2007; Esty, 1995). They also chose these organizations to contribute original social enterprise research perspectives on ventures operating in smaller regional economies within developed countries. As a smaller city, Charlottesville Virginia, served as the ideal "neutral ground" for observing how small-to medium social enterprises operate in physical and socioeconomic environments without the prominent presence of not-for-profit anchoring institutions, social entrepreneurship booster foundations or billions of dollars in impact financing. We will now turn to the two case studies to explore these issues more substantively.

4. iThrive Games: Advancing Social Change and Innovation in Gaming

iThrive Games, launched in 2014 with support from the DN Batten Foundation and led by President Batten, focused on developing "meaningful games" aimed at enhancing teens' health and well-being (Mulloth and Rivers, 2018). The organization's mission involved collaborating with game developers and engaging teenagers

throughout the development process, from idea generation to testing, to promote positive growth through gaming. By employing a social entrepreneurial strategy and leveraging a positive psychology framework, iThrive aimed to build a supportive community involving developers, researchers, funders, young people, educators, and parents to significantly impact the field of meaningful games and enrich the lives of teenagers.

The iThrive team recognized a gap in opportunities for teens to develop key life skills through technology and noted that digital games offered a unique avenue for meaningful engagement. Games challenged teens to learn and grow, providing "hard fun" that rewarded effort and persistence. Through gaming, teens exercised choice, faced emotional and complex themes like empathy and social justice, and developed problem-solving skills, all within a social context. This approach aimed to harness the ubiquitous nature of gaming among teens for positive development.

Innovating for Growth: Strategies in Research and Development

iThrive Games harnessed gaming to foster teens' social and emotional growth, employing positive psychology and youth development principles. By integrating strengths-based approaches and positive gameplay, iThrive aimed to empower teens with resilience and well-being skills. The organization collaborated closely with teens in the game design process, ensuring games not only entertained but also supported developmental needs. Through multidisciplinary expertise, iThrive's initiatives strived to make a meaningful impact on teen thriving, emphasizing the importance of recognizing and utilizing individual strengths for personal and community benefit.

Initiatives and Pilot Programs

A. Designing Games for Adolescent Empowerment and Growth

iThrive collaborated with its expanding professional network to support game developers eager to create socially impactful games, particularly for enhancing teen development.

Recognizing the lack of resources available to these developers, iThrive assisted them in their mission to produce games that are not only engaging but also foster positive growth among teens. This partnership focused on three main activities to bolster their efforts.

i. Design Kits

iThrive developed "design kits" to aid game developers in creating games focused on teen learning and mental well-being. These kits, available for free on iThrive's website, offer science-based resources to enhance social and emotional skills like empathy and cooperation. They feature design tips, frameworks for impactful games, and resources for a strengths-based approach. iThrive aimed to produce 20 kits within two years, collaborating with experts in teen development and positive psychology, and testing these resources in various professional settings to ensure their effectiveness.

ii. Design Hives

iThrive's design hives were collaborative think tanks featuring leading game developers and scholars, aimed at refining development tools and expanding its mission's reach. These sessions served as a platform for exchanging expertise, fostering industry connections, and soliciting feedback to enhance iThrive's strategies. Additionally, they facilitated relationships with professionals and encouraged the design of games focused on teens' welfare.

Occasional collaborations with educators and mental health experts also enriched the relevance of these projects across related fields.

iii. Game Jams

iThrive's game jams are 48-hour events where teams create games around themes like kindness, engaging a mix of novice and experienced developers. These jams serve dual purposes: fostering the creation of meaningful game prototypes aligned with iThrive's mission and testing the effectiveness of iThrive's design kits. With industry

mentorship and partnerships, these jams not only yield innovative game prototypes but also refine iThrive's tools and extend its impact. Highlights include significant contributions to global game jams and recognition for promoting positive themes in game development.

B. Crafting Games: A Teen-Centric Approach

iThrive's Game Design Studio empowered teens with essential social, emotional, and STEM skills through interactive game design. It offered teens a platform to express themselves and explore their identities through game creation, focusing on life-relevant themes. This approach deepened the understanding of teen issues, fostering meaningful game development with direct input from the teens themselves. It transformed teens from passive consumers into informed media critics and creators, enhancing their decision-making skills and motivating them to take charge of their learning and development.

C. Leveraging Video Games for Psychological Well-being

iThrive's initiative combines mental health education with gaming to support teen wellness. Recognizing games as vital for teen connections and positive behavior changes, it challenges the misconception that games are harmful. Partnering with Centerstone of America, iThrive uses games designed with mental health professionals and commercial titles to improve teens' understanding and management of mental health. This approach aims to increase access to mental health care, addressing the significant number of teens with untreated mental health conditions by leveraging games' popularity for better engagement and treatment outcomes.

D. Enhancing Learning Through Gaming

iThrive aimed to revolutionize education by integrating game-based learning to bolster teens' social and emotional skills, crucial for their well-being and success. Collaborating with educators, iThrive developed curricula using commercial games for immersive and engaging learning experiences. These initiatives, designed to foster collaboration, reflection, and deep learning, were part of a broader effort to equip teachers with tools for enhancing students' resilience and engagement. The effort included creating supportive networks, curricular guides, and professional development resources to expand game-based learning's reach and impact in schools.

Driving Social Innovation

Through nine game jams and 448 game prototypes, iThrive aimed to enrich research in meaningful games and enhance community practices. This initiative encouraged broad participation and public involvement in innovation, making scientific insights more accessible and applicable. Through its initiatives and pilot studies, iThrive developed new ways to foster empathy, helping individuals connect with and understand others' emotions and viewpoints. This has led to more compassionate and responsible actions in society.

Stakeholder interviews highlighted iThrive as a leader in fostering responsible innovation and achieving a significant, united effect. iThrive's game design principles emphasized "reflexivity" and "inclusivity", employing a collaborative codesign method to foster empathy and connection among players. iThrive excelled in "anticipating" potential outcomes and adapting its strategies to positively influence societal factors. This was achieved by engaging various stakeholders and establishing success measures in line with Responsible Research and Innovation (RRI) principles. The organization was committed to setting and periodically reviewing clear objectives, assembling multidisciplinary design teams tailored to each project to ensure a rich blend of expertise.

iThrive championed social innovation through user-centered design, actively involving game developers, educators, mental health professionals, and especially teens in the creation process to ensure their projects delivered maximum value. By engaging teens as co-creators, iThrive not only fostered their sense of ownership but also ensured the development of games that are socially responsible and meet developmental needs. This approach underlined the shift from singular innovation sources towards collaborative networks, emphasizing the importance of "inclusivity" and "reflexivity" in fostering broader innovation ecosystems. iThrive updated stakeholders on the latest field advancements, spearheaded tech development efforts, and acted as a bridge connecting teens, game developers, educators, and mental health professionals with initiatives like design hives and game jams. This positioned iThrive at the forefront of a new paradigm in public tech engagement, enhancing

societal stakeholder roles by empowering teens, mental health professionals, and educators with active participation opportunities.

iThrive was crucial in foreseeing scenarios and actively involving various stakeholders to meet Responsible Research and Innovation (RRI) standards. This was particularly vital as numerous games and technologies, despite having competitive edges and clear needs, either failed or didn't achieve the anticipated market impact. As technology and games advanced, iThrive strategically chose to focus on mental health and education through gaming, targeting areas ripe for innovation. This approach aimed at establishing success in critical domains before expanding into others, emphasizing games as tools for teen development across diverse communities. iThrive's dedication to at-risk youth and its efforts to achieve quick wins, such as organizing design hives and game jams, highlighted its social mission and commitment to impactful gaming solutions. iThrive believed that proving the potential of new gaming technologies would attract corporate and venture capital investment towards commercialization. Emphasizing the critical role of translational research, iThrive aligned with the Responsible Research and Innovation (RRI) framework to drive societal change. This phase, often underfunded and challenging, was where iThrive made a significant impact by funding innovative games and fostering partnerships across the industry, demonstrating a commitment to bridging the gap between research and practical application for societal benefit.

5. Rebecca's Natural Food: Fostering Health and Community

Founded in 1987, Rebecca's Natural Food (Rebecca's) has been at the forefront of promoting healthy, sustainable, and locally sourced food free from hormones. Adopting a unique social entrepreneurship model, the store has deeply engaged with the Charlottesville community and formed collaborations with small businesses. This strategy has distinguished Rebecca's as a retailer committed to high standards, significantly influencing local food culture and consumer habits (Mulloth, 2023).

Rebecca's prioritized exceptional customer service, offering the Charlottesville community access to local, eco-friendly, and healthful foods and supplements. Their mission was to promote a healthy lifestyle through a selection of premium quality foods and supplements, supporting the well-being of local residents.

Strategies for Expansion and Innovation

The Rebecca's team was committed to delivering top-notch customer service and fostering close ties with community stakeholders to uniquely shape their products and collaborations. This approach aimed to distinguish them from larger, impersonal competitors in the health food market, such as Amazon/Whole Foods, by emphasizing local and personal connections. As Rebecca's experienced growth, the team pinpointed four crucial strategic pillars essential for their advancement, detailed in the Table 1 below.

Table 1: Strategy and Implementation Techniques.

Strategy	Implementation
Aggregate and share knowledge	To keep up with the latest developments in health and wellness. Provide up-to-date information to various stakeholders through the website, newsletter, and social media.
Increase awareness	Expand our customer base through improved social media and public awareness. Host awareness events and cultivate media opportunities to educate and highlight important milestones.
Cultivate the next generation	To ensure the continuity of Rebecca's as long-term employees retire. Provide educational opportunities for clinicians and scientists by supporting fellowships and internships.
Continuous service improvement	Serving our customers better by strengthening operational procedures, such as: rapid reordering, reducing losses from theft or supplier shortages, taking advantage of pricing opportunities to increase margins,

	having staff work efficiently on the floor with customers to give us better service and a sense of activity.

Source: Developed by the author.

At its heart, Rebecca's valued its employees, offering comprehensive benefits including health insurance, paid holidays, and support during hardships, a commitment that became particularly significant during the COVID-19 pandemic. To adapt, Rebecca's introduced an online ordering system for safer customer service options like curbside pickup and home delivery. Additionally, the founders collaborated with healthcare professionals to ensure that patients could easily access necessary supplements from Rebecca's, showcasing their dedication to both employee welfare and community health needs.

Driving Social Innovation

Rebecca's leveraged its initiatives to cultivate empathy and meaningful connections, steering towards a compassionate local and regional community. By embracing "collective impact," Rebecca's aimed for widespread systematic change, a strategy distinct from usual cross-sector collaborations. This method is built on five pillars: unified goals, shared outcomes, coordinated efforts, ongoing dialogue, and robust central leadership, ensuring alignment and transparency among stakeholders, underpinned by a dedicated organization at the helm to guide the collective efforts. By focusing on community food security, Rebecca's not only enhanced its social capital but also strengthened community ties and civic engagement. The longevity of Rebecca's impact is attributed to consumer commitment to health and sustainability. However, Rebecca's choices in location, pricing, and product offerings, reflecting specific cultural and socioeconomic preferences, may inadvertently exclude some groups. Instead of viewing this as a shortfall in community building, it's insightful to consider how alternative food movements affect diverse members of the community.

Stakeholder interviews had showcased Rebecca's as a trailblazer in responsible innovation and meaningful community engagement. Its dedication to reflexivity and inclusivity was evident through its customer-centric philosophy, building strong connections. The initiative had proactively met societal needs, embracing diversity and pivoting to offer unique, local products to improve community health. Rebecca's commitment to clear goals, ongoing refinement, and hiring specialists to guide customers underscored its contribution to promoting healthier living choices.

Having expanded its product range and enhanced its service, Rebecca's was dedicated to promoting sustainable, healthy eating and strengthening community practices. By fostering broad engagement and easing access to its products, Rebecca's served as a pivotal community figure, cultivating a culture of trust through user-centric innovations. The organization engaged customers from varied backgrounds as co-creators, boosting their involvement and accountability to the community.

Rebecca's actively developed and supported ethical food initiatives, creating a network abundant in incentives, expertise, and resources. This approach, highlighting ecosystem collaboration and a dedication to reflexivity and inclusivity, successfully navigated the complexities of innovation. Rebecca's moved beyond conventional methods, utilizing shared knowledge to drive forward sustainable eating practices and connect diverse stakeholders with the community. This method marked a transition to cooperative innovation, emphasizing the critical role of flexibility and community involvement in influencing the future of food and health.

As the complexity of community needs grew, Rebecca's strategically chose to concentrate on food products and body care supplements, aiming for significant impact in these essential areas before expanding further. The focus was also on promoting locally sourced, organic items across various communities. Additionally, Rebecca's leveraged social media and events to boost public awareness and education, targeting "easy wins" to effectively communicate their milestones and benefits.

Rebecca's strategy anticipated that validating community-focused initiatives would inspire larger companies to support the local food sector, fostering a culture of healthy eating. This approach aligns with the Responsible

Research and Innovation (RRI) framework, emphasizing that research should meet societal needs and values. Rebecca's significantly influenced the challenging phase of translating basic concepts into practical solutions, particularly in emerging markets like the CBD industry, by fostering collaborations across public and private sectors to overcome funding challenges and drive transformative change.

6. Discussion

It is apparent from our two case studies that the broad aim of RI is to connect the practice of research and innovation in the present to the futures that it promises and helps to bring about (Stilgoe et al., 2020). RI was not intended to be another ethical review or bureaucratic hurdle, but rather a positive realignment of innovation to socially desirable ends that was values-based rather than just rules-based. (Owen et al., 2013) It was therefore important to consider the concept of responsibility in the context of innovation as a collective, uncertain, and future-oriented activity.

Our article begins by acknowledging the optimistic vision of RI principles, which promise substantial societal benefits. However, we initially posited that these principles might be at odds with traditional for-profit business models. Upon further examination, we argue that social enterprises—while also profit-seeking—can be more closely aligned with RI principles, thereby experiencing less conflict when integrating RI into their business strategies. Social enterprises operate with the dual mission of generating profit and addressing social imperatives, naturally embodying the ethos of RI. Far from a mere coincidence, this alignment is woven into the fabric of their identity. As entities championing societal and environmental welfare (Dees, 1998; Kerlin, 2009), social enterprises intrinsically advocate for RI principles such as transparency, stakeholder involvement, co-creation, and a commitment to the public good.

In practice, as evident from our cases, RI within social enterprises is evidenced by a profound accountability towards stakeholders, sharply contrasting with the information asymmetry prevalent in conventional business environments. By democratizing information access, social enterprises address risks associated with unequal knowledge distribution, thus enacting a fundamental RI principle (Blok & Lemmens, 2015). Initially funded philanthropically, iThrive aimed to develop a sustainable model by connecting impact investors with gaming start-ups, leveraging its curated knowledge. Questions arose about selecting impactful projects and introducing iThrive-influenced games into the market. In April 2018, iThrive rebranded as iThrive Games Foundation, Inc., becoming a private foundation separate from the Centerstone Research Institute. This shift aimed to reduce costs, promote financial sustainability, and increase autonomy, facilitating the broader adoption of meaningful game technologies and potentially shifting towards influencing public policy on technological innovations for youth well-being.

In the case of Rebecca's, after the advent of giant conglomerates such as Whole Foods to a nearby shopping center, the management were contemplating ways to differentiate their store. It was clear that the expertise and passion of Rebecca's staff was a key competitive advantage.

Yet, the management was confronted with the challenge of continuing to distinguish the store and keep customers coming back. In this context, the team explored the idea of establishing an off-site facility dedicated to CBD processing, alongside the production of their own granola and gluten-free offerings. Additionally, they contemplated forming joint ventures with local farms to enhance their product range. The possibility of expanding their operations to include a network of medical professionals was also considered, aiming to seamlessly integrate these experts with their health and wellness platform. This effort sought to replicate the successful collaboration they had established with the University of Virginia School of Medicine. The advent of the COVID-19 era further presented an opportunity to launch a platform for virtual health consultations and community support groups, utilizing Zoom and other similar technologies. The management envisioned these initiatives to catalyze further adoption of their approach in a financially viable manner because it could help the store stay ahead of the curve and create a unique market niche. As with many organizational leaders of collective impact, Rebecca's will surely shift its role over time, perhaps pivoting from delivering strategic products and

services to advancing public policy focused on the best practices for promoting community health and well-being.

6. Conclusion

6.1. Theoretical Contribution

This article consolidates and advances the understanding of Responsible Innovation (RI) by exploring how social enterprises (SEs) effectively navigate challenges traditionally associated with stakeholder inclusion. Examinations of organizations through the RI framework have shown that meaningful change cannot occur in isolation. Instead, it requires collaborative networks and a deep understanding of stakeholder needs and perspectives. As Inslee and Hendricks (2008) observed, innovative networks have the power to reframe urgent societal challenges into transformative, system-wide opportunities. SEs exemplify this dynamic by embedding co-creation and stakeholder engagement into their core operational frameworks. This inclusive approach not only upholds RI principles but also mitigates risks such as knowledge leakage (Blok, 2019; Iakovleva et al., 2021a; 2024), which are common in conventional business models.

Moreover, the RI tenet of 'innovation as creative destruction' is particularly resonant within the context of social entrepreneurship. SEs advance societal welfare by challenging and transforming inefficient or inequitable systems, demonstrating RI's dedication to the common good (Santos, 2012). For instance, Rebecca's Natural Food's pivot to digital innovation and virtual health consultations during the COVID-19 pandemic not only sustained their operations but also deepened their community impact. Similarly, iThrive Games' emphasis on teen mental health through collaborative game development underscores how SEs embed inclusivity and reflexivity into their innovation processes.

By critically examining the application of RI principles within SEs, this study highlights their capacity to harmonize profit motives with social and environmental objectives. Unlike traditional firms that often struggle with information asymmetry or misaligned goals, SEs leverage stakeholder engagement as an integral and sustainable strategy. This approach facilitates the co-creation of innovative solutions tailored to community needs, aligning with RI's anticipatory and reflective dimensions.

For example, iThrive Games actively involves teens as co-creators in game development, fostering an inclusive process that directly addresses the needs of its primary beneficiaries. Rebecca's Natural Food, on the other hand, strengthens local partnerships to enhance community well-being, illustrating how SEs achieve systemic impact by aligning their operations with stakeholder-driven goals. These practices not only exemplify RI principles but also demonstrate how SEs can serve as a paradigm for responsible and sustainable innovation in the broader business world.

This theoretical contribution lies in elucidating the mechanisms through which SEs operationalize RI principles. By addressing and reframing the challenges of stakeholder inclusion, SEs provide a model for embedding ethical and sustainable practices into business strategies. This extends the work of Bacq and Janssen (2011) on the multi-bottom-line approach of SEs, illustrating how financial sustainability can coexist with social and environmental value creation. Additionally, the findings reinforce the importance of reflexivity and responsiveness in sustaining SEs' long-term impact.

In conclusion, SEs represent a distinctive model of innovation that not only addresses but also redefines the challenges associated with stakeholder inclusion. By linking these insights back to theoretical debates on RI, this study enriches the discourse and paves the way for future research on the applicability of SE practices across diverse organizational contexts. SEs emerge as trailblazers in responsible business practices, demonstrating how RI's noble aspirations and practical applications can converge to create sustainable and transformative change.

6.2. Implications for practitioners

This study highlights practical ways practitioners can embed Responsible Innovation (RI) into their operations, drawing lessons directly from social enterprises (SEs). Four key strategies emerge:

Engaging stakeholders early and effectively is essential. Practitioners can utilize tools like participatory design workshops or stakeholder mapping to ensure diverse perspectives shape the innovation process from the outset. This approach, as seen in iThrive Games' involvement of teenagers, can transform stakeholders into active collaborators.

Embedding reflexivity into workflows ensures continuous alignment with evolving stakeholder needs. Regular review cycles, as demonstrated by Rebecca's Natural Food during the COVID-19 pandemic, allowed for timely pivots while reinforcing community trust. Collaborating with local networks and communities enhances both relevance and scalability. Rebecca's partnerships with local producers show how leveraging local resources strengthens operations and deepens societal impact.

Finally, adopting adaptive business models enables organizations to iterate effectively in response to changing societal conditions. SEs' agility illustrates how strategic pivots can turn challenges into opportunities, fostering long-term resilience and innovation.

These practices provide a roadmap for integrating RI principles into real-world contexts, showing how innovation can be both responsible and impactful.

6.3. Avenues for Future Research

Future research must chart the course for the private sector to leverage the insights of SEs in applying RI principles effectively and meaningfully, thus contributing to a more accountable and equitable innovation ecosystem.

Studies should explore how the responsibility frameworks and approaches of social entrepreneurs can be adapted and applied across various business sectors. Recent endeavors have initiated this exploration, but there's a need to delve deeper into the practices and lessons learned. Firm practices, reflecting the interplay between actors' skills, organizational dynamics, and both tangible and intangible factors, are pivotal in RI (Buse et al., 2018; Teece et al., 1997; Chen et al., 2022). These practices, steeped in tacit knowledge and routines, are shaped by organizational structures and leadership values, thus influencing the uptake of RI and deserving further investigation.

Social ventures showcase how RI principles can be integrated into firm practices. Yet, considering the broad spectrum of for-profit organizations, the influence of social entrepreneurs can be expanded. Establishing a social enterprise that adheres to RI principles is complex but essential for addressing societal challenges and contributing to sustainable development goals. Research should assess the capabilities, such as Value Absorptive Capacity, that enable firms to embed RI (Garst et al. 2021, 2022), and examine broader networks and ecosystems that facilitate RI's practical application (Jakobsen et al., 2019; Long and Blok, 2017).

Furthermore, regional initiatives like organizational networks and conglomerates may alleviate the challenges of incorporating user inclusiveness in individual firms' R&D processes (Coffay et. al, 2022). Environments akin to Open Innovation labs that encourage co-creation and ease integration into established systems are also promising avenues (Iakovleva et al., 2024). These areas provide fertile ground for research that could illuminate the path for widespread adoption of RI practices, ultimately fostering a business landscape where innovation is both socially conscious and commercially viable.

There are also implications for advancing social enterprise research as a domain. For example, Future research should not only inform how traditional firms might adopt social entrepreneurship (SE) principles but also push the boundaries of SE research itself. While current efforts often aim to translate SE methods to conventional business settings, there is a wealth of untapped potential in studying the unique mechanisms and impacts of SEs.

Scholars should investigate the distinctive practices of SEs in applying RI principles and how these can be refined and enhanced. This includes examining the inner workings of SEs, understanding how they balance social missions with financial sustainability, and the unique challenges they face in scaling their impact.

One area of focus could be the development of specialized frameworks that assess the effectiveness of RI practices within SEs. This would involve identifying metrics that measure social impact in tandem with financial performance, expanding the current understanding of 'value' in the business context.

Furthermore, research could probe into how SEs navigate the complexities of stakeholder engagement and co-creation, particularly in addressing power dynamics and ensuring equitable participation. The study of governance structures within SEs that facilitate RI, and how these may differ from or inspire those in traditional firms, could also yield insightful findings. There is also an opportunity to study the role of SEs in driving systemic change, including how they interact with policy and larger economic systems. This encompasses evaluating the influence of SEs on public policy, market dynamics, and societal norms.

Exploring the potential for regional and sector-specific SE models that foster RI practices would provide granular insights into how SEs can be catalysts for sustainable development within different contexts. Additionally, examining the role of technology and digital platforms in amplifying the reach and efficiency of SEs could highlight new pathways for innovation. By expanding research to these areas, scholars can contribute to a deeper understanding of social ventures, moving beyond comparisons with traditional firms to uncover the intrinsic value and transformative potential of SEs in the RI landscape. This approach will enrich the discourse on SEs, positioning them not just as alternatives to conventional business models but as pioneers in a responsible, inclusive, and sustainable economic future.

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Evaluating normative entrepreneurial identity: The Barcelona case

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Author: Lizbeth Arroyo, Universidad de Barcelona, Spain, larroyo@ub.edu.

Abstract

This study examines the extent to which digital ventures in the Metropolitan Area of Barcelona (MAB) have adopted the normative entrepreneurial identity promoted through the Strategic Metropolitan Plan of Barcelona (SMPB). Since 2010, governmental institutions have sought to align entrepreneurship with sustainability, technology, and global engagement. However, the degree to which ventures have internalized these values remains unclear. This study addresses this gap by conducting a mixed-method analysis of 200 digital enterprises, combining content analysis of institutional documents with statistical evaluation of espoused values. The findings indicate a low-to-moderate adoption level of the normative entrepreneurial identity, with sustainability and efficiency emerging as the most widely accepted dimensions, while cosmopolitanism remains the least embraced. This research contributes to the theoretical understanding of entrepreneurial identity formation by demonstrating how institutional frameworks shape but do not fully determine entrepreneurial values. The study provides insights for policymakers to bridge the gap between institutional goals and entrepreneurial practices meanwhile foster a more inclusive entrepreneurship ecosystems.

Keywords: Entrepreneurial Identity; Normative Institutions; Sustainability; Values.

1. Introduction

Entrepreneurship plays a crucial role in economic growth and sustainability transitions, attracting significant scholarly and policy attention (Köhler et al., 2019; Satalkina & Steiner, 2020). Institutional frameworks shape entrepreneurial identity by embedding values that align with long-term societal goals, including sustainability, innovation, and global engagement (Stryker & Burke, 2000; Loorbach, 2007). A clear example of this is the Strategic Metropolitan Plan of Barcelona (SMPB), which positions entrepreneurship as a key driver of sustainability and technological innovation, identifying digital ventures as critical actors in this transformation. Digital ventures operate at the intersection of technological innovation and institutional change, making them particularly responsive to institutional legitimacy demands (Scott, 2014) as they navigate evolving regulatory, technological, and societal landscapes (Stryker & Burke, 2000). Unlike traditional firms, digital ventures must continuously balance institutional pressures with market-driven priorities, strategically shaping their entrepreneurial identity (Watson, 2008).

The institutionalization of discourses related to sustainability, innovation, and global engagement, alongside the re-evaluation of values and essential qualities for the future (Loorbach, 2007; Satalkina & Steiner, 2020; Morais Mourato & Bussler, 2019), has established a normative framework under the SMPB (March & Olsen, 1984) for the Barcelona context. However, while the SMPB envisions a digital entrepreneurial ecosystem aligned with these values, empirical research on how digital ventures adopt, reject, or reinterpret these institutional prescriptions remains scarce (De Clercq & Voronov, 2009).

Entrepreneurial identity is increasingly conceptualized as a socially embedded construct, shaped by institutional expectations and legitimacy concerns (Anderson, Warren, & Bensemann, 2019; van Dijk, 2006). Existing literature explores institutional influences on entrepreneurial ecosystems (Scott, 2014; Stryker & Burke, 2000) but tends to focus on macro-level institutional narratives, rather than how firms themselves internalize and negotiate these norms (March & Olsen, 1984; Scott & Davis, 2003). This study addresses this gap by examining how digital

ventures construct their normative entrepreneurial identity within institutional constraints and market imperatives, shedding light on their role in materializing—or contesting—the broader strategic vision set forth by the SMPB.

Integrating insights from institutional theory (Scott, 2014), entrepreneurial identity formation (Watson, 2008), and legitimacy theory, this study develops a framework for understanding normative entrepreneurial identity adoption. Normative entrepreneurial identity is conceptualized as the intersection of institutional goals and entrepreneurial identity, serving as a lens to assess how ventures align their priorities with the institutional vision. Understanding the values underpinning entrepreneurial identity and their adoption within the business community provides crucial insights into the legitimacy of sustainability goals. After a preliminary analysis of the SMPB, the normative entrepreneurial identity emerges, structured around three interconnected dimensions: (1) Innovation and Technology, (2) Sustainability and Efficiency, and (3) Cosmopolitanism.

By empirically examining how digital ventures engage with these dimensions, this study elucidates the degree of alignment—or resistance—between institutional imperatives and entrepreneurial praxis. Methodologically, this study employs a descriptive analytical approach, examining 200 digital enterprises operating within the Metropolitan Area of Barcelona (MAB). The data collection process involved extracting espoused values from publicly accessible corporate documents, including mission statements, websites, and reports. These values were analysed using Bourne et al.'s (2017) framework, ensuring methodological rigor and comparability across firms. Espoused values serve as a symbolic representation of social and operational priorities (Bourne et al., 2017a; Bourne & Jenkins, 2013). These values are particularly sensitive to institutional change, offering a diagnostic tool for assessing how entrepreneurial communities internalize institutional goals.

The findings reveal that while sustainability and efficiency have been widely embraced among digital ventures, cosmopolitanism remains underintegrated. Larger firms, particularly those with later-stage funding and international reach, tend to align more closely with institutional values, whereas micro and early-stage enterprises prioritize market survival, often showing lower adherence to prescribed norms. Entrepreneurs exhibit selective adoption of institutional norms, favouring values that provide economic and operational advantages while resisting those perceived as less immediately beneficial. A notable disconnect emerges between institutional narratives and entrepreneurial priorities, particularly regarding global engagement values, illustrating that while policy-driven identity formation exerts influence, it does not determine entrepreneurial behaviour outright. These insights reinforce existing research that highlights how firms internalize institutional values in varying ways, contingent on resource availability, industry dynamics, and stakeholder expectations.

The article is structured as follows: Section 2 presents the theoretical framework, linking entrepreneurial identity, institutional influences, and sustainability transitions. Section 3 outlines the research design, detailing data collection methodologies and analytical procedures. Section 4 presents the empirical findings, highlighting patterns of normative entrepreneurial identity adoption. Section 5 discusses the theoretical and policy implications, while Section 6 concludes with recommendations for future research and institutional policy refinements.

2. Literature Framework

2.1. Conceptualizing Normative Entrepeneurial Identity

Entrepreneurial identity can be understood as the role expectations associated with being appropriately entrepreneurial within a specific institutional context (Stryker & Burke, 2000). This conceptualization recognizes the cognitive aspects of identity construction while emphasizing the social and institutional structures that shape entrepreneurship (Fletcher, 2006; Anderson et al., 2019). Entrepreneurial identity is not formed in isolation; rather, it is embedded within broader historical, cultural, and political frameworks (Watson, 2008). As a result, entrepreneurs are subject to institutional pressures that shape their decision-making processes, market strategies, and public narratives (Anderson & Gaddefors, 2016).

Institutional theory provides a valuable lens for examining how normative frameworks influence entrepreneurship (DiMaggio & Powell, 1983; Scott, 2014; Selznick, 1996). Institutions, particularly normative institutions, establish rules, values, and expectations that define the boundaries of legitimate entrepreneurial behaviour (March & Olsen, 1984; Scott, 2014). These frameworks are not neutral but are strategically shaped by political and economic actors to align entrepreneurship with broader societal goals (Meyer et al., 2011; Peng, 2003). In this sense, institutions actively construct entrepreneurial identity by embedding specific values and behaviours into policy narratives, funding priorities, and regulatory frameworks (De Clercq & Voronov, 2009; Anderson, Warren, & Bensemann, 2019).

Within this institutionalized landscape, entrepreneurs are both subjects and agents of institutional logics (Scott, 2014; Suddaby, 2010). While institutional discourses define the characteristics of an "ideal entrepreneur" by embedding specific values into policy narratives and regulatory frameworks (De Clercq & Voronov, 2009; Meyer et al., 2011), entrepreneurs interpret, negotiate, and sometimes resist these frameworks based on strategic interests and market conditions (Watson, 2008; Anderson, Warren, & Bensemann, 2019). This dynamic interplay highlights the complexity of normative entrepreneurial identity, in which individuals balance external expectations with their own strategic goals while navigating evolving institutional pressures (Stryker & Burke, 2000; DiMaggio & Powell, 1983).

A key way in which entrepreneurs communicate their alignment with institutional expectations is through espoused values—the publicly articulated principles that organizations prioritize (Bourne et al., 2017; Jonsen et al., 2015). Espoused values serve as legitimacy signals, reflecting the intersection between institutional pressures and entrepreneurial self-conception (Scott, 2014; Kabanoff et al., 1995). These values act as both internal identity statements and external adaptation mechanisms, helping businesses craft their reputations while navigating institutional constraints (Elsbach & Sutton, 1992; Suchman, 1995).

Building on institutional theory, we define normative entrepreneurial identity as the expectations associated with being appropriately entrepreneurial under a given set of institutional values (Stryker & Burke, 2000; Meyer et al., 2011). Normative identity emerges when institutional frameworks actively promote specific values and behaviours, embedding them into entrepreneurial discourses and business practices (March & Olsen, 1984; Scott, 2014). These values act as guidelines for business strategy and organizational positioning (Kabanoff & Holt, 1996), influencing how entrepreneurs define their roles and market orientations.

Given their public nature, espoused values are highly responsive to external pressures, making them a useful analytical tool for assessing how entrepreneurial ventures internalize institutionalized identity expectations (Brummette & Zoch, 2016; Olkkonen & Luoma-Aho, 2015). In this study, espoused values serve as an indicator of normative entrepreneurial identity adoption thus they offer a means of tracing the embeddedness of institutional discourses within entrepreneurial ecosystems and evaluating whether ventures conform to, selectively adopt, or resist prevailing institutional norms. A critical aspect of normative entrepreneurial identity is the espoused values—the symbolic manifestations of the qualities organizations publicly prioritize (Bourne et al., 2017; Jonsen et al., 2015; Kabanoff et al., 1995). Espoused values serve as building blocks of legitimacy, reflecting the intersection between institutional expectations and entrepreneurial practices (Bourne, Jenkins, & Parry, 2017). They provide a lens through which to trace the adoption of normative entrepreneurial identity, symbolizing perceptions of what entrepreneurship "should be" in alignment with institutional goals. The contrast between institutional values and those espoused by entrepreneurial organizations offers insights into the sustainability transition's progress and legitimacy within the entrepreneurial community. This research assesses the normative entrepreneurial identity of one of Europe's most dynamic entrepreneurial ecosystems: the Strategic Metropolitan Area of Barcelona.

2.2. The Strategic Metropolitan Area of Barcelona and The Normative Entrepreneurial Identity

Barcelona stands as one of the world's most admired cities, renowned for its creativity, innovation, culture, and quality of life. It ranks among Europe's leading cities—alongside Berlin, Paris, and London—for its reputation as

a hub of global talent and innovation (Belloso, 2011). The city's transformation into a world-class metropolis can be traced back to the 1980s and culminated in the 1992 Olympic Games, marking a pivotal moment in its redefinition as a centre for economic, social, and cultural innovation (Belloso, 2011; Compte-Pujol et al., 2018). This transformation reflects decades of collaboration between public and private stakeholders, aligned with evolving global challenges.

The Strategic Metropolitan Plan of Barcelona (SMPB) positioned entrepreneurship at the heart of the city's economic and social development strategy. By 2020, the SMPB envisioned Barcelona as a hub for three interconnected types of entrepreneurship: technological, digital, and sustainable (Table 1). These forms of entrepreneurship were seen as essential to addressing the city's economic, environmental, and social challenges, requiring the incorporation of new values into the entrepreneurial ecosystem. The SMPB emphasized a redefinition of the existing entrepreneurial model, aiming to integrate values such as innovation, talent, creativity, and sustainability into business practices. These values were framed as tools to foster social cohesion, reduce exclusion, and promote global competitiveness (Associació Pla Estratègic Metropolità de Barcelona, 2010). The overarching goal was to position Barcelona as one of Europe's most attractive regions for global talent and a leader in sustainability and innovation (Associació Pla Estratègic Metropolità de Barcelona, 2010).

Table 1: Overview of the source document: Strategic Metropolitan Plan of Barcelona Vision 2020.

Institutional framework	Strategic Metropolitan Plan of Metropolitan area of Barcelona
Regulative framework	Law 31/2010, of 3 August, created the Metropolitan Area of Metropolitan area of Barcelona (AMB)
Competences	The economic and social development of the AMB. In particular 'promoting a metropolitan strategic plan which, with the participation of the economic, social and institutional agents, will favour modernisation, research and innovation'.
Vision of AMB 2020	The strategic proposal or Vision 2020 entails consolidating the AMB as a world-class metropolis: one of the most attractive and influential European regions for global innovative talent, with a model of integration and social cohesion of quality.
Challenges	1. Sustainability and climate change.
	2. Position the AMB as a benchmark in the new global framework: greater presence in countries which lead the world and capitality of the Mediterranean.
	3. Global leader in some growth-driving sectors of knowledge.
	4. Getting beyond the 'bio' companies. Updating and strengthening traditional industry and sectors.
	5. Being among the most attractive European regions for innovative talent.
	6. Being an interesting and socially balanced city: a social response to the crisis.
Levers of change	2.1. A powerful university and education system that strengthens its position of excellence and transversal awareness, which is a factor in attracting talent and which favours a closer relationship with the productive and business sectors.
	2.2. An administration which acts with criteria of efficiency, which facilitates economic activity, company creation and project development.
	2.3. A governance that brings innovative criteria to the management of strategic projects and strengthens public-private co-responsibility in leadership.
	2.4. Future values which complement and reinforce the basis of present and traditional values, which contribute a new character to the city and its citizens.
	2.5. An extensive knowledge of languages which facilitates internationalisation, the attraction of talent and full incorporation into world markets. An international airport and the Metropolitan area of Barcelona brand.

This institutional emphasis on entrepreneurship aligns with broader discussions on normative entrepreneurial identity, particularly regarding how institutional actors embed values into the entrepreneurial ecosystem. The conceptualization of normative entrepreneurial identity in this study provides a framework for understanding how the values embedded in the SMPB—such as innovation, sustainability, and global engagement—shape entrepreneurial expectations and identity formation within Barcelona's ecosystem.

In Barcelona, these expectations are particularly pronounced due to the SMPB's deliberate effort to establish the city as a leader in sustainable and technological entrepreneurship. The interplay between institutional legitimacy and entrepreneurial agency in this context is crucial, as entrepreneurs must navigate the tension between institutional prescriptions and market-driven realities. In line with the goals, the Metropolitan area of Barcelona vision of entrepreneurship by 2020 is oriented "to develop an entrepreneurial culture […] [based on] the new technologies" (Associació Pla Estratègic Metropolità de Barcelona, 2010), transforming into "the most attractive and influential metropolis for global and innovative talent" ((Associació Pla Estratègic Metropolità de Barcelona, 2010, p. 11) and putting "the philosophy of sustainability […] [as a] great opportunity for business and growth".

To systematically examine normative entrepreneurial identity in the Barcelona entrepreneurial ecosystem, we propose a conceptual model structured around three core dimensions each representing distinct yet interconnected values that organizations espouse to align with institutional goals and societal expectations (Table 2):

1. Innovation and Technology—Captures values related to technological progress, agility, creativity, and market expansion. It reflects how businesses position themselves as pioneers of innovation within Barcelona's economic development strategy (Bourne et al., 2017).
2. Sustainability and Efficiency—Encompasses values associated with environmental and social responsibility, reflecting institutional expectations that businesses should contribute to sustainability transitions (Muñoz & Cohen, 2018).
3. Cosmopolitanism—Represents values related to global engagement, inclusivity, and diversity, emphasizing the role of entrepreneurship in fostering internationalization and multicultural collaboration (Woodward et al., 2008).

Table 2: The normative entrepreneurial identity.

	Dimensions	Espoused Values
Normative Entrepreneurial Identity	*Innovation and Technology*	Innovation, agility, growth, entrepreneurship, creativity, pragmatism, technology, learning, individuality, leadership.
	Cosmopolitanism	Being global, humility, respect, diversity, inclusion, openness, integrity, life quality, trust, resilience, tenacity, can do, attitude, democracy, fairness, transparency, communication.
	Sustainability and Efficiency	Care for the environment, social responsibility, health, efficiency responsiveness, continuous improvement, excellence, expertise, diligence, professionalism, ownership

2.2.1. Innovation and Technology

This dimension encompasses values associated with organizational competence and the ability to achieve growth through innovative outputs and actions (Bourne et al., 2017). These values emphasize an organization's agility,

adaptability, and forward-thinking approach in navigating competitive markets. Core values within this dimension include:

- *Innovation*: The pursuit of novel ideas and methods to improve processes or products.
- *Agility:* The ability to respond rapidly to market demands and changes.
- *Growth:* A focus on scaling operations and achieving economic expansion.
- *Entrepreneurship:* Demonstrating initiative and resourcefulness in value creation.
- *Creativity and Pragmatism*: Balancing visionary ideas with practical applications.
- *Technology*: Leveraging digital and technical advancements as drivers of business solutions.
- *Learning and Leadership*: Encouraging continuous knowledge development and strong leadership that inspires organizational and sector-wide progress.

These values collectively represent a performance-oriented ethos, highlighting how organizations position themselves as innovative leaders capable of addressing complex challenges.

2.2.2. Cosmopolitanism

Reflects a global mindset and interpersonal openness, emphasizing values that shape the character and social responsibility of entrepreneurs. It is rooted in the idea that entrepreneurial practice must align with broader societal and cultural inclusivity. As Kendall et al. (2009) note, cosmopolitanism embodies attitudes, behaviours, and practices that promote openness to entrepreneurship and global interconnectedness. Significant aspects of cosmopolitanism include:

- *Diversity and Inclusion*: Embracing varied perspectives and fostering equitable participation.
- *Respect and Humility*: Valuing others' contributions and maintaining ethical engagement.
- *Social Tolerance and Democracy*: Supporting freedom, fairness, and equality within organizations and communities.
- *Openness and Integrity*: Encouraging transparency and trust in entrepreneurial practices.
- *Resilience and Tenacity*: Cultivating perseverance in the face of global challenges.
- *Being Global*: Aspiring to operate internationally while respecting local cultural nuances.
- *Communication and Life Quality*: Prioritizing clear engagement and enhancing societal well-being.

This dimension is critical for entrepreneurs navigating cross-cultural environments and addressing the interconnected nature of global challenges, including human rights, environmental protection, and social equity (Woodward et al., 2008; Jack et al., 2004).

2.2.3. Sustainability and Efficiency

This dimension focuses on values that promote resource efficiency and corporate social responsibility, aligning organizational goals with societal and environmental well-being. Sustainability and efficiency emphasize the interconnectedness of organizational success and broader ecological and social systems (Muñoz & Cohen, 2018). Key values include:

- *Care for the Environment*: Committing to practices that minimize ecological footprints and promote environmental health.
- *Social Responsibility*: Recognizing the organization's role in addressing societal challenges.
- Efficiency and Responsiveness: Optimizing resource use while remaining adaptable to societal and market needs.
- *Continuous Improvement*: Striving for ongoing enhancement in processes, products, and services.
- *Excellence and Expertise*: Ensuring high-quality outputs through skilled execution.
- *Professionalism and Ownership*: Maintaining ethical and accountable practices in all operations.
- *Health and Safety*: Prioritizing the well-being of employees, customers, and communities.

This dimension also introduces the concept of a sense of 'the other', which transcends self-interest to consider the needs and impacts on broader communities (Bourne et al., 2017). It captures the dual responsibility of

entrepreneurs to foster business growth while contributing positively to global sustainability goals. Together, these three dimensions provide a comprehensive framework for understanding the normative entrepreneurial identity. They illustrate how organizations align with institutional visions by espousing values that balance innovation and technical proficiency, global openness and inclusivity, and sustainable practices. This framework not only reflects the expectations placed on entrepreneurial organizations but also reveals the pathways through which entrepreneurship can contribute to sustainable transitions and global societal progress.

3. Methodology

The objective of this research is to explore the espoused values associated with the normative entrepreneurial identity in the context of the Metropolitan Area of Barcelona. To address this objective, we designed a study that integrates both qualitative and quantitative methodologies, as this mixed-method approach allows for a comprehensive understanding of how institutional narratives shape entrepreneurial identity formation (Creswell & Plano Clark, 2018). The qualitative content analysis provides depth in identifying and interpreting institutional discourses embedded in policy frameworks, allowing for the examination of how entrepreneurial identity is framed by institutional actors (Bowen, 2009). Meanwhile, the quantitative descriptive analysis offers empirical validation by assessing the extent to which these normative values are reflected among entrepreneurial ventures, ensuring that findings are not solely based on subjective interpretation (Bansal & Corley, 2012). This combination enhances the robustness of the findings by capturing both institutional intent and entrepreneurial response, ensuring methodological triangulation (Denzin, 2012) and increasing the reliability of the study's conclusions by reducing potential biases associated with single-method approaches (Jick, 1979).

The sample of 200 ventures was sourced from the Crunchbase Database and the Start-up Hub Barcelona directory, ensuring that only active digital ventures founded between 2010 and 2019 were included. The selection criteria required that firms maintain an official website, as corporate websites have been recognized as a reliable source for analysing organizational identity due to their role in external communication and stakeholder engagement (Chun, 2019; Bansal & Kistruck, 2006; Jonsen et al., 2015). The majority were micro-enterprises (57%) in the pre-seed funding stage (41.5%), operating in industries such as fashion, biotech, and fintech. Approximately 42% of the ventures engaged in international operations, while 58% operated exclusively within the domestic market.

For data collection, we conducted a second content analysis, this time analyzing the mission statements and value declarations published on corporate websites. Previous research has demonstrated that organizations use these sections strategically to project their identities and align with external expectations (Bourne et al., 2017; Jonsen et al., 2015; Kabanoff & Daly, 2000). We extracted values from sections titled "About Us," "Who We Are," "Our Values," or "Company Information" to ensure consistency across firms. To systematically assess the adoption of normative entrepreneurial identity, this study employs a structured analytical approach using espoused values as the primary metric. Espoused values serve as explicit indicators of organizational priorities, allowing for the identification of alignment between institutional expectations and entrepreneurial practices (Bourne et al., 2017; Jonsen et al., 2015). The selection of espoused values as the central variable is supported by previous research demonstrating their reliability in capturing organizational identity and legitimacy within institutional contexts (Kabanoff et al., 1995; Suchman, 1995). These values provide insight into how ventures symbolically communicate their commitment to institutional norms, making them an appropriate measure for assessing normative identity adoption.

3.1.1. Qualitative Study

The first phase of this research focused on identifying the normative entrepreneurial identity within the institutional framework of the Metropolitan Area of Barcelona. A qualitative content analysis of the SMPB was conducted to systematically extract the values associated with entrepreneurial identity as promoted by institutional actors. The official document (available at https://pemb.cat/en/publications/metropolitan-area-of-Barcelona_vision_2020/25/) served as the primary data source for this analysis.

The SMPB provides a structured vision for entrepreneurship in Barcelona, emphasizing innovation, sustainability, and global engagement as foundational pillars of its economic strategy. As one of Europe's most internationally recognized entrepreneurial hubs, Barcelona has undergone significant transformation, particularly following the 1992 Olympic Games, which served as a catalyst for economic modernization and institutional alignment between public and private stakeholders (Belloso, 2011; Compte-Pujol et al., 2018). The SMPB continues this trajectory by embedding strategic values into its policy framework to shape the future of entrepreneurship in the region.

To conduct the content analysis, we employed the Bourne et al. (2017) espoused values inventory, a widely recognized framework for analysing organizational values. This methodology was chosen because it integrates existing theoretical frameworks on organizational values while accounting for emerging trends in corporate identity. The framework classifies 73 values into 12 categories and four overarching value families, providing a comprehensive lens for assessing the institutionalized values shaping entrepreneurial identity in Barcelona.

A manual coding process was employed to enhance context sensitivity, as certain values were not explicitly stated but rather implied within broader institutional narratives. Sentences were used as the unit of analysis to ensure that values were properly contextualized. The coding process was iterative, involving multiple rounds of validation to ensure accuracy and consistency. To further enhance reliability, a content dictionary was developed using the Oxford Business Dictionary, ensuring consistency in the interpretation of key terms across different linguistic contexts.

After refining the coding structure, the analysis focused on sections of the SMPB most relevant to the entrepreneurial ecosystem, including policies on business development, innovation promotion, and sustainability. Although the SMPB explicitly outlines future values for Barcelona's entrepreneurial vision, we conducted a deeper analysis of the entire document to capture implicit value constructions. This approach aligns with the perspective that narratives are subjective and serve as mechanisms for constructing and communicating identity (Markowska & Welter, 2018). The findings of this qualitative analysis provide the foundation for understanding the normative entrepreneurial identity in Barcelona. The next section presents the identified values and their classification under the Innovation and Technology, Sustainability and Efficiency, and Cosmopolitanism dimensions, which define the expectations surrounding entrepreneurship in this institutional context. (Table 2).

Table 3: Example of coding and transformation.

Illustrative quotes	Transformation Bourne's (2017) framework	Espoused Values Units	Dimensions of the Normative Entrepreneurial Identity
The AMB is magnificently placed to become one of the world's icons of innovation, if things go well. We must be clear that we cannot innovate alone, and that we need large multinationals to set up research laboratories in the AMB to interact with our best talent.	Innovation	Enterprise	Innovation and Technology
This shared project looks to work with people and companies to learn how to give a quicker and more effective response to change.	Agility		
On the way to global growth, creativity is today's driving force, giving continuity to knowledge, information, industry and agriculture due to its transversely, essential for developing synergies between the different economic sectors.	Growth		
Develop an entrepreneurial culture, adapting university programmes to the knowledge variables the market demands, for example, knowledge	Creativity		

Illustrative quotes	Transformation Bourne's (2017) framework	Espoused Values Units	Dimensions of the Normative Entrepreneurial Identity
related to state-of-the-art Internet and the new technologies, with the participation of recognised experts.			
for changing the course of things and doing them different			
One of the most important changes spreading throughout the world is the perception of time and the importance of living and acting in real-time.	Pragmatism		
The places where most knowledge and innovation have always been found: the hub territories of a globalised world economy.	Innovation		
	Technology	Quality	
The AMB has a series of infrastructures, technological and scientific platforms, universities, and innovative entrepreneurs.	Technology		
we see strategic learning as the constant synchronisation between idea and action, without prejudice to the vital feedback between the two	Learning	Recognition	
taking advantage of what makes us different may be the key.	Individuality		
Leadership: Contributing ideas on 'how things should be'.	Leadership		
Becoming one of the most attractive European regions for innovative talent The AMB: hub for entrepreneurs.	Being global	Global citizens	
The cultural identity of the city and its metropolitan area must be enhanced, setting its sights on internationalisation, with greater ambition and better communication of its linguistic diversity.	Humility	Tolerance	
	Respect		
	Diversity		
The basic traditional metropolitan values are being open and welcoming, enterprising and creative, inclusive and offering solidarity	Inclusion		
	Openness		
Reinforce the basis of present and traditional values, which contribute a new character to the city and its citizens	Integrity	Equality	
	Life quality		Cosmopolitanism
For the eleventh consecutive year, Metropolitan area of Barcelona was the metropolis with the highest quality of life in Europe. This indicator is, undoubtedly, one of the main assets for its residents, but also for attracting companies and professionals from elsewhere.			
The current state of the information and communication technologies (ICT), high definition and 3D makes this the ideal moment for the AMB to invest in these sectors.	Trust	Collaboration	
The successful cities have two things: planning and management systems which bring their citizens together to agree on goals, and the capacity to adapt to change and to innovate.	Resilience		
We can do it. Very few metropolises in the world have the tools that we have to tackle globalisation and its challenges: airport, high-speed trains, scientific, technological and creativity parks, innovative companies and people, pioneering projects. We must learn to make the	Tenacity		
	Can do		
	Attitude		

Illustrative quotes	Transformation Bourne's (2017) framework	Espoused Values Units	Dimensions of the Normative Entrepreneurial Identity
most of them with greater coordination and efficiency. Stimulating, not holding back.			
The AMB has fallen behind in recent years, although currently a positive trend is being seen, encouraged by the new technologies, towards the appearance of creative companies			
Sustainability and climate change. In 2020, a territory's competitiveness will be measured by its capacity to develop sustainable models. The AMB can become a benchmark for sustainability for warm-climate cities.	Care for environment	Sustainability	Sustainability and Efficiency
A market must be created for developing new products, supported by the regulating power of the public administrations, which aids the setting up of a powerful framework of companies with impact on the GDP.	Social responsibility		
	Health		
We are entering a stage of the scarcity of raw materials which will require innovation, talent and creativity to change the present productive model and optimise the use of natural resources.	Efficiency		
The 'Metropolitan area of Barcelona optimises' line is focused on energy, introducing 'energy rehabilitation' of existing buildings, reduction of energy demand in new buildings, and promotes the functional and energy rehabilitation of the city.			
With over 30% of school drop-out in the Metropolitan Area of Barcelona, it is difficult to aspire to being a balanced society. This must be the objective to tackle	Responsiveness		
Track T: fast-track window for company creation.	Speed		
It must incorporate new material and the new constructive technologies which are sweeping a new broom through the construction and improvement processes, especially as regards end quality	Continuous improvement	Quality	
REINFORCE FE CENTRES OF EXCELLENCE with company creation programmes.	Excellence		
More than 220 entrepreneurs and experts took part (managers, academics, scientists, consultants, journalists and social agents) in each of the sectors analysed and 50 meetings were organised.	Expertise		
The AMB has a series of infrastructures, technological and scientific platforms, universities, and innovative entrepreneurs. A situation is difficult to find in any other metropolis.	Diligence		
Given the potential of the AMB, quality, high-level education must contribute to attracting global talent.	Professionalism		
Metropolitan area of Barcelona is the fifth favourite city in Europe for setting up a business and among other assets, has a wide range of centres of technology, research and innovation	Ownership		

3.1.2. Quantitative Study

The second phase of this study aimed to examine how the normative entrepreneurial identity is reflected among entrepreneurial ventures operating in the region. To achieve this, we conducted a statistical descriptive analysis of espoused values among 200 digital ventures in the Metropolitan Area of Barcelona's entrepreneurial hub. The focus on digital and technological ventures was determined based on the qualitative findings, which identified these sectors as central to the institutional vision outlined in the SMPB.

To ensure a systematic classification, ventures were grouped based on the distribution of their espoused values across the three dimensions of normative entrepreneurial identity: Innovation and Technology, Sustainability and Efficiency, and Cosmopolitanism. The categorization of normative identity adoption into low, medium, and high was derived from an empirical framework that combines qualitative insights with quantitative validation. Espoused values serve as an established metric for assessing organizational identity and legitimacy (Bourne et al., 2017; Jonsen et al., 2015). The classification process was guided by previous research demonstrating that firms use espoused values as a signalling mechanism to communicate alignment with institutional norms (Kabanoff et al., 1995; Suchman, 1995).

This method aligns with prior studies that employ value-based classifications to assess strategic positioning and legitimacy-seeking behaviour in organizational research (Bansal & Roth, 2000; Scott, 2014). The classification was further validated using chi-square (χ^2) tests of independence, which assess the relationship between categorical variables and ensure that differences in normative identity adoption levels are not random but systematically linked to organizational characteristics (Agresti, 2018). Additionally, the classification was cross-validated through descriptive statistical measures, including mean values, standard deviations, and interquartile ranges, which have been widely used in entrepreneurship and organizational research to establish empirical thresholds for grouping firms (Hair et al., 2014; Janssen et al., 2018). These methodological refinements ensure that the categorization process is theoretically and statistically robust, reducing potential arbitrariness and increasing the reliability of the study's findings.

4. Results

The results indicate three levels of adoption of the normative entrepreneurial identity: high (26%), medium (42,5%) and low (31,5%). In general, the sampled digital ventures show a low-moderate (74%) alignment with the MAB's vision of entrepreneurship. Drawing on Table 6, we observed differences in how organizations adopt each dimension. Meanwhile, sustainability and efficiency are moderate-high adopted by the 59% of the organizations, only the 6% of them highly embrace the cosmopolitanism. Surprisingly, innovative and technology is under adopted (32%) despite its emphasis in through the institutional narrative.

Table 4: The Values of the Normative Entrepreneurial Identity in the Metropolitan area of Barcelona.

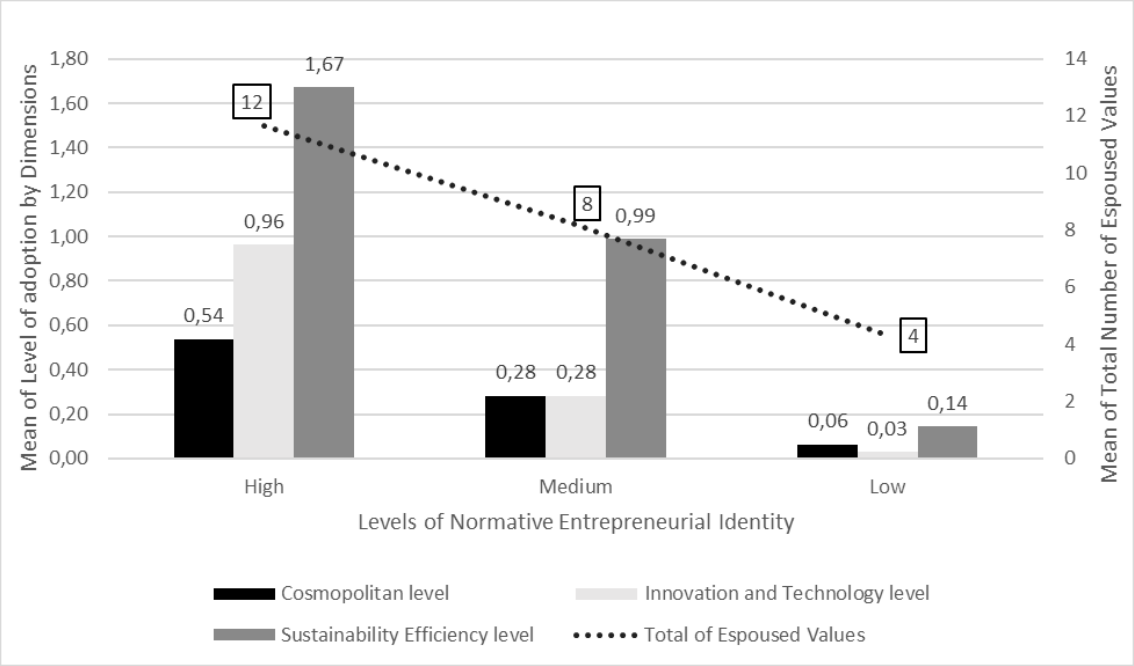
Level of adoption	Normative Entrepreneurial Identity *(m=0,94; SD=0,75)* f (%)	Sustainability and Efficiency (*m=0,90; SD=0,84)* f (%)	Cosmopolitan *(m=0,28; SD0,58)* f (%)	Innovation and Technology (*m=0,38; SD=0,59)* f (%)
Low	63 (31,5)	82 (41)	156 (78)	136 (68)
Moderate	85 (42,5)	56 (28)	32(16)	52 (26)
High	52 (26)	62 (31)	12 (6)	12 (6)
Total	200	200	200	200

Figure 1 compares how normative entrepreneurial identity is structured depending on the level of adoption reported for organisations. On average, digital ventures espouse 8 values; however, this number varies according to the level of adoption. Digital ventures with a higher level of adoption tend to espouse a higher number of values (m=12); this number falls progressively by one-third as the level of adoption does. This means that 68,5%

of the organizations espouse more than six values, which is considered a typical and reasonable range (Jonsen et al., 2015).

Also, sustainability and efficiency were found to be the dominant dimension overall, while cosmopolitanism had the fewest presences, particularly in organisations with higher levels of normative entrepreneurial identity. Surprisingly, innovation and technology were found to be the least dimension among digital ventures with lower levels of adoption of normative entrepreneurial identity.

Figure 1: Level of adoption: Normative entrepreneurial identity by dimension.



Pearson's chi square test reported statistically significant differences between the value dimension and the levels of adoption of the normative entrepreneurial identity (Table 7). The evidence shows an association regarding innovation and technology (χ2= (4) 79.240; p=0,000), cosmopolitan (χ2= (4) 21,179; p=0,000) and sustainability and efficiency size (χ2= (4) 105,892; p=0,000). The test also reported association between the level of normative entrepreneurial identity and organisational size (χ2= (6) 22.649; p <0,001), fundraising stage (χ2= (8) 19,818; p <0,05), international activity (χ2= (2) 12.497; p <0,05) and total of espoused values (χ2= (8) 19,818; p <0,05). However, age did not indicate it.

Table 5: Levels of adoption by organisational characteristics.

Organizational characteristics	Level of Normative Entrepreneurial Identity									X^2 test of independence
	Low (n=63)			Moderated (n=85)			High (n=52)			
	f (%)	M	SD	f (%)	M	SD	f (%)	M	SD	
Year of business creation		**2014**	**2,90**		**2013**	**2,80**		**2012**	**2,43**	X^2= (1) 30,627 N.S
Business Age		**4,83**	**2,90**		**5,72**	**2,80**		**6,52**	**2,43**	X^2= (1) 30,627 N.S
Business Size		**0,29**	**0,58**		**0,51**	**0,57**		**0,79**	**0,80**	X^2= (6) 22,649 P<0,001

Organizational characteristics	Level of Normative Entrepreneurial Identity Low (n=63)			Moderated (n=85)			High (n=52)			X^2 test of independence
	f (%)	M	SD	f (%)	M	SD	f (%)	M	SD	
Micro	48 (76,2)			45 (52,9)			21 (40,4)			
Small	13 (20,6)			37 (43,2)			23 (44,2)			
Medium	1 (1,6)			3 (3,5)			6 (11,5)			
Large	1 (1,6)						2 (3,8)			
Fundraising stage		**0,93**	**1,30**		**1,63**	**1,40**		**1,84**	**1,52**	X^2= (8) 19,818 p<0,05
Pre-seed	36 (57,1)			30 (35,3)			17 (32,7)			
Seed	9 (14,3)			5 (5,9)			3 (5,8)			
Serie A	9 (14,3)			27 (31,8)			13 (25)			
Serie B	4 (6,3)			13 (15,3)			9 (17,3)			
Serie C	5 (7,99)			10 (11,8)			10 (19,2)			
International operations		**0,24**	**0,43**		**0,51**	**0,50**		**0,5**	**0,51**	X^2= (2) 12,497 p<0,05
W/O international operations	48 (76,2)			42 (49,4)			26 (50)			
With international operations	15 (23,8)			43 (50,6)			26 (50)			
Total of Espoused Values		**4**	**2**		**8**	**2**		**12**	**4**	X^2= (40) 161,469 P=,000
Values dimension										
Innovation and Technology		0,03	0,18		0,28	0,45		0,96	0,71	X^2= (4) 79,240 p=,000
Cosmopolitanism		0,06	0,25		0,28	0,55		0,54	0,75	X^2= (4) 21,179 p=,000
Sustainability Efficiency		0,14	0,35		0,99	0,78		1,67	0,55	X^2= (4) 105,892 p=,000

An interesting point can be made regarding the organisational characteristics associated with the levels of adoption.

Low level of adoption: These organizations represent the 31,5% of the sample. They are micro business (M=0,29,SD=0,58), created on 2014, in a pre-seed stage of fundraising (M=0,93,SD=1,30), without international operations (M=0,24,SD=0,43). The most representative digital ventures sectors on this category are proposal values oriented to fashion beauty and lifestyle (12,7%). They espouse a mean of four values (SD=2) with the heaviest emphasis on sustainability and efficiency (M=0,14,SD=0,35), followed by cosmopolitanism (M=0,06,SD=0,25). However, the most used value is technology (M=0,46,SD=0,50), followed by care for environment (M=0,16,SD=0,37) and expertise (M=0,16,SD=0,37).

Table 7: Ranking of the most used espoused values in low adoption level.

	Espoused Values	Dimension of Normative Entrepreneurial Identity	M	SD
1	Technology	Innovation and Technology	0,46	0,50
2	Care for environment	Sustainability and Efficiency	0,16	0,37
3	Expertise	Sustainability and Efficiency	0,16	0,37
4	Leadership	Innovation and Technology	0,14	0,35
5	Innovation	Innovation and Technology	0,13	0,34
6	Individuality	Innovation and Technology	0,13	0,34
7	Being going global	Cosmopolitanism	0,13	0,34
8	Excellence	Sustainability and Efficiency	0,11	0,32
9	Agility	Innovation and Technology	0,10	0,30
10	Speed	Sustainability and Efficiency	0,08	0,27

Medium level of adoption: These organizations represent the 42,5% of the sample; the major category. They are majorly small business (M=0,51,SD=0,57), created after 2013, in Serie A,B or C stage of fundraising seed (M=1,63,SD=1,40), with international operations (M=0,51,SD=0,52). The most representative digital ventures sectors on this category are proposal values oriented to biotech, pharma and healtech (12,9%) and adthec, marketing, public relations (10,6%). They espouse a mean of eight values (SD=2) with the heaviest emphasis on sustainability and efficiency (M=0,99 ,SD=0,78), followed by cosmopolitanism and innovation and technology in the same proportion (M=0,28,SD=0,55; M=0,28,SD=0,45). The most used value is technology (M=0,51,SD=0,50), followed by excellence (M=0,45,SD=0,50) and leadership (M=0,45,SD=0,50).

Table 8: Ranking of the most used espoused values in moderate adoption level.

Values	Dimension of Normative Entrepreneurial Identity	M	SD
Technology	Innovation and Technology	0,51	0,50
Excellence	Sustainability and Efficiency	0,45	0,50
Leadership	Innovation and Technology	0,34	0,48
Expertise	Sustainability and Efficiency	0,32	0,47
Being going global	Cosmopolitanism	0,32	0,47
Innovation	Innovation and Technology	0,26	0,44
Speed	Sustainability and Efficiency	0,24	0,43
Efficiency	Sustainability and Efficiency	0,22	0,42
Agility	Innovation and Technology	0,20	0,50

High level of adoption: These organizations represent the 31,5% of the sample. They are small and medium business (M=0,79,SD=0,80), created on 2012, in series A, B or C stage of fundraising (M=1,63,SD=1,40), with international operations (M=0,24,SD=0,43). The most representative digital ventures sectors on this category are proposal values oriented to biotech, pharma and healtech (15,4%) and tourism, travel and hospitality (11,5%). They espouse a mean of twelve values (SD=4) with the heaviest emphasis on sustainability and efficiency

(M=1,67,SD=0,55), followed by innovation and technology (M=0,96,SD=0,71). However, the most used value is excellence (M=0,62,SD=0,40), followed by expertise (M=0,52,SD=0,51) and innovation (M=0,46,SD=0,50).

Table 9: Ranking of the most used espoused values in high adoption level.

	Espoused Values	Dimension of Normative Entrepreneurial Identity	M	SD
1	Excellence	Sustainability and Efficiency	0,62	0,49
2	Expertise	Sustainability and Efficiency	0,52	0,51
3	Innovation	Innovation and Technology	0,46	0,50
4	Leadership	Innovation and Technology	0,46	0,50
5	Technology	Innovation and Technology	0,42	0,50
6	Professionalism	Sustainability and Efficiency	0,35	0,48
7	Being going global	Cosmopolitanism	0,35	0,48
8	Efficiency	Sustainability and Efficiency	0,33	0,47
9	Growth	Innovation and Technology	0,33	0,47
10	Individuality	Innovation and Technology	0,31	0,466

5. Discussion

The findings of this study reveal that the adoption of normative entrepreneurial identity among digital ventures in the Metropolitan Area of Barcelona is not a passive process of institutional conformance but rather an active and selective adaptation of institutional narratives. While institutional frameworks establish expectations about entrepreneurial behavior, organizations engage in a process of filtering, integrating, or rejecting these norms based on their strategic priorities, resource availability, and market positioning. This challenges the assumption that institutional logics exert a top-down imposition on firms, instead highlighting entrepreneurial agency in shaping identity through an iterative process (Stryker & Burke, 2000; Scott, 2014; Suchman, 1995).

The institutional vision embedded in the Strategic Metropolitan Plan of Barcelona (SMPB) sought to position entrepreneurship within a structured framework of innovation and technology, cosmopolitanism, and sustainability and efficiency (Associació Pla Estratègic Metropolità de Barcelona, 2010). However, the extent to which these values have been embraced varies significantly across firms, revealing that identity adoption is contingent upon the perceived utility of institutional narratives in achieving business objectives. The study demonstrates that while sustainability and efficiency have been widely adopted, innovation and technology exhibit lower-than-expected alignment, and cosmopolitanism remains the least integrated dimension. These discrepancies underscore the gap between institutional aspirations and firm-level realities, suggesting that ventures selectively adopt identity elements that provide tangible competitive advantages while deprioritizing those perceived as misaligned with their operational needs (De Clercq & Voronov, 2009; Meyer et al., 2011).

The strong emphasis on sustainability and efficiency can be attributed to both regulatory pressures and the increasing market demand for environmentally responsible business practices (Brønn & Vidaver-Cohen, 2009; Bansal & Roth, 2000). However, rather than embracing sustainability as a transformative philosophy, digital ventures predominantly frame it as a technical and operational challenge. This reframing leads to a focus on efficiency-driven innovations, such as energy optimization and waste reduction, rather than a holistic commitment to ecological responsibility. This finding aligns with prior research indicating that organizations are more likely to integrate sustainability when it is linked to financial and strategic benefits rather than as a normative obligation (Murillo et al., 2015; Villena-Manzanares & Souto-Pérez, 2016).

Conversely, the under-adoption of innovation and technology raises important questions about the role of institutional discourse in shaping entrepreneurial identity. Despite being a central pillar of the regional strategy, technology is not universally perceived as a fundamental driver of competitive advantage across all ventures. Many firms appear to prioritize incremental improvements over disruptive innovation, reflecting the high costs, uncertainties, and sectoral variations in technological adoption (Edwards-Schachter et al., 2015; Zahra & Wright,

2011). This suggests that while institutional frameworks emphasize technology as a cornerstone of entrepreneurship, its practical implementation is shaped by industry-specific factors and the risk tolerance of individual firms. The lack of uniform adoption also indicates that innovation is not a monolithic construct but rather a nuanced and context-dependent strategic choice (Autio et al., 2014).

The most striking deviation from institutional expectations is observed in the cosmopolitanism dimension. While the policy vision promotes a globalized, inclusive, and collaborative entrepreneurial ethos, firms reinterpret cosmopolitanism through a market-driven lens. Rather than embedding inclusivity and diversity as core organizational values, digital ventures prioritize international scalability and global market reach as markers of success. This redefinition suggests that institutional aspirations for fostering a cosmopolitan entrepreneurial culture have not translated into firm-level practices, as organizations focus on economic expansion rather than people-centric global engagement (Anderson et al., 2019; De Clercq & Voronov, 2009). This finding reveals the limitations of policy-driven identity frameworks that assume a direct transference of values into practice, overlooking the strategic recalibrations entrepreneurs undertake in response to competitive pressures and resource constraints.

A deeper analysis of firm characteristics provides further insights into the factors driving selective identity adoption (Figure 2). The study finds that larger firms, those in later fundraising stages, and those with international operations exhibit a higher degree of alignment with institutional values, particularly in sustainability and efficiency. This suggests that as organizations grow and mature, they become more embedded within institutional structures, leading to greater integration of normative entrepreneurial identity (Scott & Davis, 2003; Peng, 2003). The relationship between international activity and identity adoption highlights the role of global markets as legitimizing forces, incentivizing firms to align with institutional narratives that enhance their credibility in international contexts. However, the absence of a significant correlation between business age and identity adoption suggests that the integration of normative values is not merely a function of longevity but is instead driven by strategic positioning and external engagement (DiMaggio & Powell, 1983; Shepherd et al., 2009).

These findings contribute to a broader understanding of entrepreneurial identity as a dynamic and negotiated process. Rather than viewing identity adoption as a linear progression dictated by institutional pressures, this study emphasizes the agency of entrepreneurs in selectively integrating, modifying, or resisting normative expectations. This aligns with theories of institutional entrepreneurship, which argue that organizations actively shape and redefine their institutional environments rather than passively conforming to them (Maguire et al., 2004; Battilana et al., 2009). It also extends discussions on entrepreneurial legitimacy by illustrating how firms strategically manage their identity to align with market imperatives while simultaneously navigating institutional demands (De Clercq & Voronov, 2009; Suchman, 1995).

From a policy perspective, these findings suggest that institutional efforts to shape entrepreneurial identity must account for the heterogeneity of firms and their evolving priorities. A one-size-fits-all approach to fostering normative identity adoption may be ineffective, as ventures integrate values at varying rates and in different ways. Policymakers should consider flexible identity frameworks that accommodate sectoral differences and firm-specific growth trajectories (Bruton et al., 2010; Zahra et al., 2014). Additionally, the weak adoption of cosmopolitan values points to the need for targeted initiatives that bridge the gap between institutional aspirations and firm-level realities, ensuring that global engagement is fostered beyond economic expansion. Supporting mechanisms that facilitate cross-cultural integration, knowledge exchange, and international collaboration may encourage a more comprehensive adoption of cosmopolitan identity elements (Jack & Anderson, 2002).

Ultimately, this study underscores the complex interplay between institutional logics and entrepreneurial agency, revealing that normative entrepreneurial identity is not a fixed or imposed construct but a fluid and evolving phenomenon. Entrepreneurs actively negotiate their identity by filtering institutional expectations through the

lens of strategic pragmatism, selecting values that enhance their competitiveness while discarding or modifying those that do not. This highlights the need for future research to further explore the conditions under which institutional narratives gain traction within entrepreneurial ecosystems and the mechanisms through which firms internalize or resist normative expectations over time.

5.1. Low Level of Adoption: The Liability of Smallness

A low level of adoption is predominantly observed in digital ventures at the early stages of growth, often referred to as the "existence stage" (Lester et al., 2003). These ventures are primarily focused on survival and viability, striving to identify sufficient customers and generate the resources necessary to sustain operations. Decision-making and ownership in these organizations are typically centralized, resting in the hands of a single individual or a small founding team. At this stage, the external environment is often perceived as chaotic or unanalyzable, limiting the ventures' capacity to engage with institutional frameworks or broader normative expectations (Lester et al., 2003).

Consequently, the value priorities of these organizations tend to diverge from the political and institutional designs set forth by policymakers. Instead, their primary focus is on enacting their own environments, often centring their efforts on securing funding and demonstrating the viability of their products or services (De Clercq & Voronov, 2009; M. Scott & Bruce, 1987; Shepherd et al., 2009).

Moreover, early-stage ventures face heightened vulnerability due to the "liability of smallness," which reflects the challenges of limited resources, nascent business connections, and immature technical or administrative structures (Ivanova et al., 2012; Brüderl & Schüssler, 1990). These organizations are largely self-centred, grappling with existential questions about their identity and purpose while simultaneously adopting opacity strategies to shield themselves from external scrutiny. This opacity is driven by the assumption that stakeholders are less likely to judge them during these formative stages (Brüderl & Schüssler, 1990). Alternatively, some ventures exhibit organizational myopia (Castellano & Ivanova, 2017), narrowly focusing on immediate customer needs and short-term survival.

In this context, sustainable values are reframed in pragmatic terms, with a strong emphasis on technological solutions aimed at addressing environmental challenges, such as waste reduction or energy efficiency. However, these efforts are typically aligned with operational benefits rather than a deeper commitment to the normative philosophy of sustainability.

5.2. Moderate and High Levels of Adoption: Organizational Growth and Credibility

In contrast, moderate and high levels of adoption are characteristic of small and medium-sized organizations that have progressed beyond the early stages of growth. These ventures benefit from increased visibility to external publics, including governance bodies and other institutional actors (R. Scott, 2014). At this stage, organizations demonstrate a higher degree of specialization in activities such as marketing, engineering, and accountability, and they often expand their operations internationally. This increased complexity necessitates a stronger alignment with institutional narratives to build organizational credibility, which becomes a critical foundation for sustained growth (M. Scott & Bruce, 1987).

Digital ventures at these levels of adoption show a clear orientation toward enhancing the quality of their technologies and positioning themselves as leaders in their respective fields. For ventures at the moderate adoption level, this translates into a prioritization of values such as excellence and leadership, which are essential for gaining legitimacy in competitive markets. However, our findings reveal a surprising trend: values associated with sustainability and efficiency are not as prominent among ventures at this stage, despite their centrality to institutional narratives. This suggests that while these ventures acknowledge the importance of sustainability in principle, their practical focus often shifts toward technological innovation and market leadership.

5.3. Reinterpreting Sustainability and Institutional Priorities

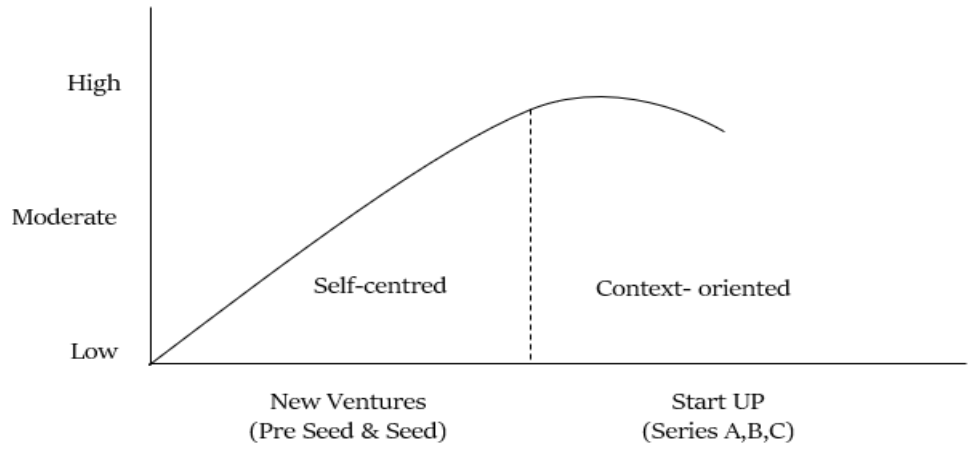
Particularly noteworthy is the underrepresentation of sustainability-related values among ventures with moderate to high levels of adoption, despite sustainability being a focal point of institutional and political interests (Murillo et al., 2015; Villena-Manzanares & Souto-Pérez, 2016). This misalignment reflects the challenges of embedding global trends on social and environmental concerns into the operational realities of digital ventures. For many organizations, the sustainability philosophy promoted by institutional frameworks is overshadowed by the immediate demands of market dynamics and competitive pressures.

5.4. Illustration of Adoption Across Growth Stages

Based on these findings, we can conceptualize the relationship between the adoption of normative entrepreneurial identity and the growth stages of digital ventures. Early-stage ventures exhibit a limited alignment with institutional values, focusing instead on survival and resource acquisition. As organizations grow and mature, their adoption of normative values becomes more prominent, albeit selectively aligned with their strategic priorities and operational capabilities. The interplay between institutional narratives and organizational growth is illustrated in Figure 2, emphasizing how ventures navigate these evolving dynamics over time.

This stage-related adoption highlights the complex and non-linear nature of integrating institutional values into entrepreneurial practices. It underscores the need for tailored support mechanisms that address the specific challenges and priorities of ventures at different stages of growth, fostering a more seamless alignment between institutional visions and organizational realities.

Figure 1: Model of Normative Entrepreneurial Adoption.



6. Conclusions

This study set out to examine how digital ventures in the Metropolitan Area of Barcelona adopt, reinterpret, or resist the normative entrepreneurial identity shaped by institutional frameworks. By integrating identity theory and institutional theory, we analysed the extent to which ventures align with the expectations established in the Strategic Metropolitan Plan of Barcelona, particularly regarding innovation and technology, cosmopolitanism, and sustainability and efficiency. The findings demonstrate that entrepreneurial identity adoption is not a passive process dictated by institutional narratives but rather an active negotiation in which ventures selectively integrate values that align with their strategic imperatives while discarding or reinterpreting others.

One of the key contributions of this study is the demonstration of the selective nature of identity adoption, challenging the assumption that institutional logics exert a top-down imposition on firms. Instead, digital ventures exhibit agency in shaping their identity, filtering institutional expectations through the lens of pragmatism and market relevance (Stryker & Burke, 2000; De Clercq & Voronov, 2009). This study expands on existing identity research by illustrating that entrepreneurial identity is dynamic and context-dependent, evolving in response to resource availability, firm growth trajectories, and external pressures.

In comparison with previous studies on institutional entrepreneurship, this research provides empirical evidence of how entrepreneurs strategically engage with institutionalized norms rather than fully conforming to them (Battilana et al., 2009; Maguire et al., 2004). While prior research has explored identity formation as an organizational-level process, this study extends the discussion by illustrating how institutional narratives gain (or fail to gain) traction within an entrepreneurial ecosystem (Scott, 2014; Meyer et al., 2011). This is particularly evident in the observed divergence between institutional aspirations for a cosmopolitan entrepreneurial culture and firms' actual emphasis on international expansion as a market-driven rather than value-driven strategy.

From a policy perspective, the findings suggest that institutional efforts to shape entrepreneurial identity should account for sectoral differences, firm size, and growth stage. A one-size-fits-all approach is unlikely to yield the intended results, as ventures integrate institutional values at varying rates and in different ways. Policymakers should consider targeted initiatives that incentivize deeper engagement with sustainability beyond technical efficiency, particularly through funding mechanisms that support long-term ecological commitments rather than immediate operational optimizations. Additionally, the limited adoption of cosmopolitan values suggests a need for more structured support for cross-cultural collaboration and international networking opportunities.

The findings also have implications for the broader theoretical discourse on entrepreneurial legitimacy. While previous studies have highlighted the importance of legitimacy-seeking behaviours in venture success (Suchman, 1995; De Clercq & Voronov, 2009), this study reveals that legitimacy is not a uniform construct but is selectively pursued based on firm priorities. Entrepreneurs actively construct legitimacy by aligning with institutional narratives that enhance their competitiveness while downplaying or reframing elements that do not offer immediate strategic benefits.

Despite its contributions, this study has limitations that should be addressed in future research. First, the use of espoused values as a proxy for normative identity adoption provides insights into the symbolic commitments of firms but does not fully capture operational practices. Future research could incorporate qualitative interviews or longitudinal studies to examine how identity adoption evolves over time. Second, the statistical analysis used in this study is primarily descriptive, and while it provides meaningful insights into patterns of identity adoption, future studies could benefit from employing more robust inferential techniques, such as regression models or structural equation modelling, to explore causality. Third, this study is contextually bound to the Metropolitan Area of Barcelona, limiting its generalizability to other entrepreneurial ecosystems. Comparative research across multiple regions or institutional contexts would provide a deeper understanding of how different policy frameworks influence entrepreneurial identity adoption.

Overall, this study contributes to the growing body of research on entrepreneurial identity, institutional influence, and strategic agency by illustrating how ventures selectively engage with normative expectations. By shedding light on the interplay between institutional narratives and entrepreneurial pragmatism, these findings offer valuable insights for scholars, policymakers, and practitioners seeking to foster more adaptive and context-sensitive entrepreneurship ecosystems.

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Ideas vs. interests: Elites and innovation in sustainable economies

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Author: Ana Leite, NOVA Lisbon University, Portugal, analeite@fcsh.unl.pt.

Abstract

This article provides a critical analysis of the articles *When Ideas Trump Interests: Preferences, Worldviews, and Policy Innovations* and *Economic Backwardness in Political Perspective* through the lens of Applied Political Economy and parametricity criteria. Both articles explore two central lines of inquiry in political economy: interests and ideas, examining their origins and implications within the context of power dynamics and governance. The analysis concludes that elites play a decisive role in shaping societies, either through the promotion of vested interests or systematic omission of policies rooted in innovative ideas.

Keywords: Ideas; Interests; Institutional Change; Policy Formulation; Political Economy.

1. Elites, Ideas, and Interests: Foundations of Political Economy in the Context of Sustainability

The cornerstone of political economy research lies in the study of elites—comprising lobbies, property groups, and the general electorate—and the vested interests that sustain them. Political economists have illuminated the reasons why these elites perpetuate inefficient policies, often resisting institutional changes that could benefit society as a whole (Mukand & Rodrik, 2018).

In the specialized literature, three main lines of inquiry stand out: i) interests; ii) institutions; iii) ideas. This essay situates itself within this field of study, providing a critical analysis of the works by Dani Rodrik (*When Ideas Trump Interests: Preferences, Worldviews, and Policy Innovations*) and Acemoglu & Robinson (*Economic Backwardness in Political Perspective*). Rodrik focuses on the role of ideas as a driving force for political change, while Acemoglu & Robinson explore vested interests as mechanisms for preserving the status quo.

With the advancement of digital technologies and the growing awareness of sustainability, the role of economic and political elites is undergoing transformation. Elites that once prioritized the status quo now face increasing pressures to adopt circular economic models and inclusive policies. As argued by Mazzucato (2015) and Sachs (2021), the transition to a sustainable economy requires both public and private investments, with elites playing a crucial role in setting priorities and incentives.

Against this backdrop, this essay seeks to explore the central themes surrounding the role of elites in political economy, such as: What are the most controversial points regarding the influence of ideas and interests? How do the main theoretical approaches differ in analyzing elite power? And finally, what evidence supports the arguments presented, and how can they be applied to promote sustainable and inclusive change?

In light of these questions and global transformations, it becomes evident that elites face significant challenges in balancing vested interests with the urgent need to promote sustainable and inclusive policies. As emphasized by Mazzucato (2015) and Sachs (2021), the integration of progressive ideas into political strategies is an indispensable condition for advancing sustainable and equitable economies.

2. The Impact of Ideas on the Reconfiguration of Interests and Governance

In contemporary political economy, two central approaches compete to explain institutional and policy transformations: the influence of ideas and vested interests. Dani Rodrik, in *When Ideas Trump Interests: Preferences, Worldviews, and Policy Innovations*, argues that ideas, often overlooked, have a significant and

independent impact on policy formulation. According to Rodrik, "politically well-informed ideas can reduce political constraints and approach efficiency, even in the absence of changes in political power."

Conversely, Acemoglu & Robinson, in *Economic Backwardness in Political Perspective*, assert that elites often block economic development to preserve their positions of power. They contend that vested interests, prioritizing the status quo, can outweigh even institutional influence. The authors describe the "replacement effect" to explain why elites avoid efficient policies: such policies could undermine their political longevity.

This contrast highlights the importance of political and institutional contexts. Rodrik emphasizes that successful ideas consider underlying political dynamics, while Acemoglu & Robinson argue that reforms, even well-intentioned ones, often fail because they neglect the political conflicts they generate.

Historical examples illustrate these arguments. During Japan's Meiji Restoration (1868), bureaucratic elites centralized power and promoted industrialization to minimize threats to their dominance. In Britain, gradual concessions allowed aristocratic elites to maintain political power for over a century post-industrialization, while Germany's "Iron and Rye" coalition safeguarded Junker economic interests. These cases reveal how adaptive strategies enable elites to preserve their power, even amidst economic change.

A contemporary example of how innovative ideas catalyze public policy change is India's National Solar Mission. Launched in 2010, it propelled the nation to become a global leader in renewable energy, surpassing 50 GW of solar capacity in 2023. This policy aligns economic and environmental interests, particularly in emerging economies (IRENA, 2023). Similarly, Kenya's digital land reform, implemented with blockchain technology, reduced fraud and property disputes, boosting investor confidence in agriculture (UNDP, 2021). These examples demonstrate how technology, when integrated with progressive ideas, can transform institutional structures and drive sustainable development.

Emerging technologies such as artificial intelligence (AI) and blockchain are reshaping governance paradigms, offering tools to enhance transparency and efficiency in policymaking. For instance, AI has been deployed to forecast carbon emission patterns and optimize resource use in smart cities, while blockchain ensures accountability by tracking supply chains in real-time. As Tapscott et al. (2016) note, "these technologies present unprecedented opportunities to build inclusive and resilient institutions, especially in emerging economies."

However, inefficiencies in traditional practices create opportunities for what Acemoglu & Robinson (2013) term "political entrepreneurship." This concept suggests that political agents can exploit institutional flaws to introduce innovative ideas and drive reform. As the authors highlight, "transformative ideas often depend on the ability of political entrepreneurs to navigate between structural inefficiencies and vested interests." Despite its potential, the literature on political entrepreneurship remains limited, lacking empirical studies to identify the conditions that foster its effectiveness.

In this context, integrating ideas and interests emerges as a critical opportunity to break inefficient patterns and stimulate sustainable change. Political strategies that align innovation with practical feasibility can redefine the boundaries of economic transformation, fostering inclusive and resilient policies.

3. Contemporary Debates: Challenges Between Ideas, Interests, and Inclusive Governance

Contemporary debates in political economy revolve around two central concepts: interests and ideas. These dimensions, extensively discussed in the works of Rodrik (2014) and Acemoglu & Robinson (2006), reflect the strategies elites use to exercise and maintain power, often tied to the status quo.

Rodrik highlights the "almost exclusive emphasis on the primacy of interests as puzzling" (Mukand & Rodrik, 2018), arguing that prevailing political economy models overlook the transformative role of ideas, limiting their ability to explain effective political change. He notes, "when reforms occur despite entrenched interests, it is because those interests were not deeply rooted or because the reforms did not harm them" (Rodrik, 2014). This perspective exposes a significant gap in conventional models that fail to incorporate ideas as drivers of political

strategies. Without ideas, Rodrik asserts, "any political economy model is likely to remain hollow and incomplete."

Despite their importance, ideas remain largely absent from modern political economy models. As Rodrik (2014) and Mukand & Rodrik (2018) emphasize, "vested interests"—elites, lobbies, and rent-seeking groups—dominate most mainstream theories, playing a central role in explaining critical challenges such as regulation, international trade, and economic development. However, Rodrik argues that while "vested interests serve as a conceptual lens," they are insufficient to fully comprehend the complex dynamics of political and economic systems. Explicitly incorporating ideas into these models not only enhances the understanding of institutional transformations but also provides analytical tools to propose innovative solutions.

In this context, ideas play a pivotal role in shaping inclusive political strategies. Recognizing ideas as catalysts for change allows economists and political scientists to explore new pathways to address contemporary governance challenges, such as transitioning to sustainable economies, promoting technological innovation, and strengthening inclusive institutions. These efforts are vital to aligning economic interests with social and environmental progress, fostering governance that is truly transformative.

4. Elites and Development: Conflicts Between Ideas, Interests, and Governance

Contemporary political economy faces tensions between two main theoretical approaches: the emphasis on vested interests and the transformative role of ideas. Dani Rodrik criticizes the dominance of interests in traditional models, describing the neglect of ideas in these contexts as "puzzling" (Mukand & Rodrik, 2018). For Rodrik, ideas hold the potential to independently shape policies, yet they remain largely absent from predominant theories.

Globally, the interplay between ideas and interests has taken on new dimensions in addressing climate and technological governance. Sachs (2021) underscores that "progressive ideas, such as transitioning to clean energy, can act as catalysts for change but only when aligned with clear economic interests and supported by elites who recognize the value of inclusive innovation." Similarly, artificial intelligence has the potential to reduce economic inequalities by democratizing access to financial services and entrepreneurial opportunities. In nations like India and Kenya, AI-based platforms like M-Pesa have revolutionized the financial sector by providing credit and payment systems to historically marginalized populations (Maleh et al., 2024). These innovations underscore the role of entrepreneurial elites in advancing inclusive technologies.

Conversely, Acemoglu & Robinson argue that vested interests play a central role in defining policies and blocking change. While acknowledging the relevance of ideas, they contend that these typically emerge only in scenarios of inefficiency. This dynamic introduces the concept of "political entrepreneurship," where political agents leverage institutional failures to introduce innovative policies. However, as Acemoglu and Robinson (2013) note, such occurrences are infrequent, and the literature lacks empirical investigations to identify the conditions that enable their success.

Conceptual issues, such as the definition of "coalition," further complicate these debates. Zeitlin (1975) describes coalitions as "temporary alliances between elements with antagonistic interests that converge to achieve specific ends." Expanding this, Thibault and Kelley (1959) define coalitions as "joint actions by two or more individuals aiming to alter outcomes relative to others." In a political context, Gamson (1964) highlights the mixed motives of coalitions, while Schelling (1958) categorizes such interactions into games of pure coordination, pure conflict, and mixed strategies.

In the political arena, the Advocacy Coalition Framework (ACF), introduced by Paul Sabatier and Hank Jenkins-Smith, emphasizes the centrality of beliefs and ideas in policymaking processes (Rodrigues, 2020). The ACF suggests that public policies reflect dominant beliefs and ideas shaped by disputes over problems, causes, and solutions. These beliefs influence policy goals and designs, driving inclusive governance.

Thus, theoretical debates reveal that while vested interests continue to dominate political practices, strategically integrated ideas provide a unique opportunity to transform institutions and promote inclusive policies. Achieving this integration requires not only innovation but also a deeper understanding of the dynamics among coalitions, interests, and ideas.

5. Doctrinal Divergences: Ideas and Interests in Political Dynamics

Doctrinal divergences in political economy focus on the integration—or lack thereof—of ideas into the strategic management of interests by elites. Acemoglu and Robinson (2013) argue that many reforms, even those with the best intentions, often fail or produce unintended consequences because they overlook shifts in the political balance that reforms inherently create. To mitigate such pitfalls, the authors propose three key conditions in a positive dimension: i) "economic analysis must clearly identify, both theoretically and empirically, the conditions under which politics and economics conflict"; ii) policy proposals must be evaluated by considering these conflicts and the reactions they provoke; and iii) politics must be prioritized as a cornerstone in the formulation of strategies (Acemoglu & Robinson, 2006). On the negative dimension, however, they take a pessimistic view, suggesting that vested interests, taken as given, frequently constrain the scope of politics.

In contrast, Rodrik posits that successful political ideas work precisely because they consider the underlying political contexts. He argues that well-designed ideas can relax political constraints, fostering changes aligned with social and economic realities. Conversely, poorly conceived ideas risk disastrous political outcomes. Rodrik's approach highlights the potential of ideas to shape reform trajectories in ways that transcend the static limitations imposed by entrenched interests.

In the realm of ideational politics, new opportunities arise for what Fukuyama (2022) describes as "political entrepreneurship." These agents possess the potential to overcome institutional inertia, particularly during times of crisis, by redefining narratives to align interests with shared societal values. This perspective underscores the importance of integrating ideas and interests to drive transformative change.

Empirical evidence, although limited, supports the integration of ideas in political contexts. For example, "the threat of expropriation by the masses has historically incentivized elites to democratize, though this has been limited to specific regions in the Western world" (Acemoglu & Robinson, 2006). This example illustrates how ideas can play a pivotal role in redefining entrenched interests, creating openings for political and institutional change.

The integration of well-informed ideas, strategically aligned with interests, offers a promising pathway to addressing inherent conflicts between politics and economics. Such an approach has the potential to contribute to the development of a more inclusive and resilient governance framework, where transformative reforms are both feasible and sustainable.

6. Ideas and Interests: Classical and Contemporary Contributions

Throughout the history of political economy, thinkers such as Ricardo, Marx, Keynes (1936), and Hayek (1949) have highlighted the pivotal role of ideas in societal transformation. Keynes, in particular, emphasized that "it is ideas, not vested interests, that are dangerous for good or evil." This perspective underscores the profound impact of ideas on policy formulation and the structuring of economic institutions.

In more recent times, Mukand & Rodrik (2018) proposed a balanced approach, recognizing both ideas and interests as essential components of political and economic dynamics. They distinguish ideas as distinct vehicles from interests, identifying two primary channels of ideational influence: **worldview politics**, which shapes public perceptions of the world—a perspective aligned with economists such as Keynes and Hayek—and **identity politics**, which delves into issues of ethnicity, religion, and nationality, often emphasized in political science and sociology.

This contemporary perspective reveals that research priorities are frequently shaped by the ideological lenses of individual scholars, as argued by Aymoré & Ferreira da Cunha (2021). Despite this, there is a cross-cutting consensus between ideas and interests, particularly in Marx & Engels' (2007) assertion that "the ruling class is, in every epoch, the ruling material force of society as well as its ruling intellectual force." This view reflects the interdependence between ideas and interests, whether to uphold the status quo or to drive societal change.

In summary, the integration of ideas and interests emerges as a powerful tool for addressing contemporary governance and economic transformation challenges. While ideas provide innovative perspectives, interests offer the structural context needed for evaluating their implementation. Striking this balance between innovation and pragmatism has the potential to shape new frontiers for inclusive and sustainable policies, aligning theoretical legacies with the pressing demands of the 21st century.

7. Evidence and Transformations: The Influence of Ideas in the Political Marketplace

According to Mukand & Rodrik (2018), institutional and policy changes are rarely driven by explicit appeals to economic interests. Instead, political entrepreneurs often rely on ideational narratives to persuade the public, emphasizing that the world has changed and that the proposed policies are therefore suitable for these new circumstances. Alternatively, these agents may highlight identity values, such as justice, freedom, or overarching normative principles.

This strategy demonstrates that idea-based politics can be as transformative—or even more so—than interest-based politics. Historical examples support this notion: the abolition of slavery in the United States, women's rights and the suffrage movement, and the global collapse of socialism all reflect how ideas have shaped institutional change. Similarly, policy reforms such as Reagan-era deregulation and tax cuts in the U.S. and Thatcher's privatization efforts in the U.K. underscore the role of ideas in reshaping economic strategies (Mukand & Rodrik, 2018).

Skidelsky (2010) also observes that the influence of ideas on economic policies is evident in cases of fiscal austerity. Public acceptance of balanced budgets stems from the perception that government finances operate like household budgets, where sacrifices are necessary to balance accounts. This shared narrative, supported by widely accepted ideas, shapes societal and economic expectations.

A significant contrast arises between identity politics and worldview politics. While identity politics tends to be divisive and exclusionary, worldview politics, though less polarizing, faces structural challenges in catalyzing change. Mukand & Rodrik (2018) emphasize that economic and social conditions—such as unemployment, inflation, or institutional stability—are critical in determining the public's acceptance of new ideational narratives.

Thus, evidence suggests that ideas, more than direct interests, often serve as catalysts for political and institutional transformations. This dynamic underscores the importance of integrating ideational narratives into policymaking, creating pathways for sustainable and inclusive transformation.

8. Methodology and Concepts: Integrating Ideas and Interests in Political Models

Mukand & Rodrik (2018) employ a methodological approach that analytically distinguishes and clarifies the roles of ideas and interests in political economy models. Their central aim is to integrate the classical perspectives of Keynes and Hayek on the relevance of ideas with standard frameworks predominantly focused on interests. This approach challenges traditional rational choice models by suggesting that ideas are crucial in shaping interests and, by extension, policymaking.

The authors demonstrate that there is no incompatibility between constructivist arguments and formal rational choice models. They propose a structure where ideas and interests function as complementary forces. For instance, in democratic institutions, dominant interests, such as those of the median voter, often reinforce the status quo. However, the innovation in Mukand & Rodrik's framework lies in incorporating ideas, conceptualized

as “memes,” that shape both worldviews and individual preferences. These ideas have the potential to alter political equilibria by transforming beliefs and perceptions.

Emerging technologies, such as blockchain and artificial intelligence (AI), play a pivotal role in aligning ideas with sustainable interests. Blockchain, for example, enhances transparency and accountability in supply chains, particularly in the food and fashion industries. Saberi et al. (2018) report that blockchain’s capacity to trace materials from origin to consumer fosters sustainable practices, aligning economic interests with environmental objectives. Similarly, AI offers opportunities to democratize access to resources and streamline governance processes, as highlighted by Harari (2018). However, the impact of these technologies depends on their adoption and integration into inclusive governance frameworks.

Brazil’s “Lei do Bem” (2005) exemplifies how well-conceived ideas can drive technological innovation and economic inclusion. This fiscal policy incentivizes companies to invest in research and development (R&D), supporting over 13,000 innovative projects from 2006 to 2022. Studies indicate that firms leveraging these incentives enhance their productivity and global competitiveness (MCTI, 2022). Such initiatives illustrate the practical application of ideas in fostering sustainable economic transformation.

Mukand & Rodrik further draw parallels between technological innovation, now endogenous in many economic models, and political persuasion. Their framework emphasizes that the inclusion of ideas can significantly expand the range of possible political outcomes. Ignoring the role of ideas, as Rodrik warns, may undermine the explanatory power of political economy models, particularly regarding the stability and transformation of political-economic dynamics. By incorporating ideas, policymakers gain a more robust framework for institutional transformation and strategic policymaking.

Despite not relying on traditional empirical methodologies, Mukand & Rodrik (2018) developed a systematic approach to empirically differentiate ideas from interests. While their model simplifies the analysis by focusing on a single electoral cycle and does not delve into detailed microfoundations for elements like memes, it highlights the fluidity of ideas and their capacity to redefine entrenched interests. This approach significantly expands the scope for political and institutional innovation.

9. The Role of Ideas and Institutions in Sustainable Transformation

The distinction between ideas and interests, while theoretically clear, remains challenging in empirical terms. This difficulty is reflected in the political economy literature, which often highlights diverse and conflicting interpretations. Mukand & Rodrik (2018) argue that political and economic behavior is often shaped more by ideational narratives than by concrete interests, although empirically differentiating between the two remains a central challenge.

Recent advances suggest that combining innovative ideas with clear economic incentives can accelerate the development of inclusive institutions—one of the greatest challenges of the 21st century (Acemoglu & Robinson, 2012). For instance, the 2023 Global Governance Index demonstrates that countries with greater institutional inclusion also exhibit higher rates of sustainable growth. Indonesia’s *Digital Indonesia* program exemplifies how ideas and interests can converge to foster social inclusion. Since 2020, this initiative has provided free online courses to rural populations, training over three million individuals and significantly boosting small business creation and employment in previously neglected regions (ADB, 2023).

Mukand & Rodrik’s analysis underscores how transformative ideas can redefine entrenched interests, especially during crises or structural changes. Predictable behavior based on ex-ante preferences or worldviews is often attributed to interests, while ex-post changes driven by ideational narratives reveal the impact of ideas. This dynamic reinforces the notion that “today's interests are yesterday's ideas, and today's ideas become tomorrow's interests.”

Historical examples further illustrate how elites can either promote or block transformations. While Britain’s aristocracy supported industrialization despite its adverse effects on land values, other nations encountered

institutional barriers as elites resisted power loss (Acemoglu & Robinson, 2006). These dynamics highlight the need for balancing ideas and interests alongside inclusive institutions to ensure equitable access to economic and social opportunities.

Although emerging technologies present significant opportunities, they also pose risks of power concentration. Harari (2018) observes that AI can be either a tool for democratization or authoritarian surveillance, depending on its regulation and use. Inclusive governance is thus critical to mitigating these risks and maximizing the benefits of innovation.

Technological advancements like patents in the U.S. demonstrate how inclusive institutions can protect innovators, drive technological progress, and foster a more equitable economy. Conversely, economic growth in authoritarian regimes, such as Russia and Singapore, often occurs "despite" their institutions and lacks sustainability and inclusivity. Acemoglu and Robinson (2012) emphasize that inclusive economies—marked by property rights and equitable access—are essential for maximizing economic potential and improving quality of life.

In conclusion, ideas emerge as essential catalysts for sustainable transformation, particularly when paired with well-defined interests and inclusive institutions. This integration not only mitigates political conflicts but also paves the way for more resilient and equitable economic and political models. Recognizing the fluid relationship between ideas and interests offers a fresh perspective for policymaking that addresses contemporary sustainability and inclusion challenges.

10. Conclusion: Integrating Ideas and Interests for Sustainable Governance

The primary finding of this article lies in demonstrating that ideas and interests, often perceived as opposing forces, can be integrated to shape institutional and economic transformations. This theoretical and empirical articulation highlights the transformative role of ideas, even in contexts dominated by entrenched interests, and underscores the need for innovative policies and emerging technologies to build more inclusive and sustainable economies. By redefining the dynamics between elites and governance, the article emphasizes that ideational strategies can catalyze positive change when strategically adapted to power structures.

Beyond theoretical expansion, the integration of ideas offers substantial practical contributions. Examples such as India's renewable energy program and Kenya's digital land reform demonstrate how ideational narratives can align economic interests with sustainability goals, driving significant structural transformations. In the institutional realm, inclusive systems such as blockchain applications stand out for their role in enhancing transparency and trust in public policies, reinforcing the importance of emerging technologies in modernizing governance.

This article proposes that contemporary political economy must transcend traditional dichotomies, recognizing the complementarity between ideas and interests. When applied to practical contexts, this integration presents a promising path to mitigating political and economic conflicts, fostering more resilient and equitable governance. By aligning innovation, sustainability, and inclusion, the article opens the door to transformative policymaking capable of addressing the complex challenges of the 21st century.

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The perception of Banco Ideal employees about technological evolution in their functions in the digital era

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Author 1: Raúl Navas, ISCAL—IPL, Portugal, rdnavas@iscal.ipl.pt.
Author 2: Ana Sotomayor, ISCAL—IPL, Portugal, amsotomayor@iscal.ipl.pt.
Author 3: Celeste Darame, Master's Student in Management for Financial Institutions, celestedarame@outlook.pt.

Abstract

During the 21st century, we are experiencing a revolution that is fundamentally transforming how we live, work, and interact. Industry 4.0, or the fourth industrial revolution, is driven by the convergence of technologies and intelligent systems, leading to significant changes in production systems and business models. Concepts such as the Internet of Things (IoT), Big Data, and Artificial Intelligence (AI) are becoming integral to daily life and business operations. Companies must analyze these market shifts and adapt their strategies to leverage the potential of this transformation. The banking sector, which has historically adapted its business model to meet market demands, must now address the emerging threats and opportunities posed by rapid technological advancements.

This study aims to understand the perceptions of Banco Ideal, SA employees regarding technological evolution and its impact on their roles. The survey explored respondents' attitudes toward technological tools, automation, decision-making, and future advancements. Results indicated a predominantly positive perception among employees regarding technology's contribution to their work, simplification of tasks, aiding in decision-making, and risk prevention. While opinions varied concerning future task automation and the future impact of technological progress, the overall sentiment leaned toward optimistic views on the advantages offered by technological evolution. Given the crucial role of banking institutions in society and the importance of human capital, this research investigates how employees perceive current and future technological changes and their implications for their job functions.

Keywords: Artificial Intelligence; Banking Sector; Big Data; Human Capital; Industry 4.0.

1. Introduction

The job market is in a state of continuous transformation, constantly renewing and adapting to social, economic, and technological changes. Over time, both individuals and companies have faced and adapted to periods of significant technological development, known as industrial revolutions. These revolutions have profoundly changed work processes, conditions, and workforce qualifications, directly impacting employment. In the 21st century, we are confronted with Industry 4.0, characterized by the integration of intelligent systems with production techniques, organizations, and people. This revolution connects workers, machines, and resources through technology, creating a more interconnected environment and enabling more effective processes and decisions (Neto, 2019). Schwab (2017) highlights the fourth industrial revolution's unprecedented speed, scope, and impact, distinguishing it from previous revolutions.

With the onset of Industry 4.0 and increasing technological development across various sectors, several questions and uncertainties have emerged regarding the future of jobs and workers. Schwab (2017) asserts that, despite the potential positive impact of technology on economic growth, it is crucial to address its possible negative effects on the job market. The future of work is uncertain, and society must be prepared to adjust to a

new paradigm. Organizations must adapt and provide essential tools to support their people in facing new challenges resulting from technological evolution.

Pires (2020) notes that the banking sector has closely followed this evolution and invested significantly in technology to satisfy customer needs, maximize revenue, and minimize operational costs. Considering this statement and the fundamental economic and social role played by the banking sector and its agents in the lives of families and businesses, the following research question arises: What is the perception of banking sector employees regarding technological evolution in their roles?

The aim of this study is to analyze the current and future perceptions of professionals within a banking institution, Banco Ideal, SA, regarding the contribution of technology to their job performance. The study seeks to understand their opinions on the impacts and challenges that may arise due to technological expansion, such as functions that could potentially be replaced or even eliminated. It aims to conclude the employees' stance on future threats and their viewpoint regarding the type of preparation provided by their employer. Moreover, the study intends to ascertain whether the employees perceive themselves as valuable resources with decisive capabilities for their institution.

The specific bank, Banco Ideal, SA, was selected as a case study to provide in-depth insights into the impacts of technological evolution within the banking sector. This detailed case study approach allows for a comprehensive analysis of a single institution, ensuring the confidentiality of gathered information while providing relevant and specific data for analysis.

To address the research question, the scientific method chosen for this study is the hypothetical-deductive method. This method seeks to discover, among a set of hypotheses, the one that best fits its resolution, even if that solution is not entirely true and absolute. Following the identification of the problem, the definition of the research question led to the formulation of a general objective: to understand the perceptions, both current and future, of employees from Banco Ideal, SA regarding the impact of technological evolution on their roles. This resulted in the formulation of two hypotheses:

Hypothesis 1: Employees perceive technological advancement to enhance their daily job performance, viewing it not as a threat but as an advantage or complement. They believe that human intervention will always be crucial.

Hypothesis 2: Employees perceive that their work over the years will no longer require human intervention, leading to their replacement or the extinction of certain areas within banking.

To achieve the overall objective and address the research question, the case study method will be employed as the procedural approach. This method involves collecting data about one or more cases and preparing a report or presentation based on the findings. The case study aims to comprehensively analyze and investigate Banco Ideal, SA, utilizing all appropriate methods.

Regarding technological perceptions, the survey explored respondents' attitudes toward technological tools, automation, decision-making, and future advancements. Results indicated a predominantly positive perception among employees regarding technology's contribution to their work, simplification of tasks, aiding in decision-making, and risk prevention. While opinions varied concerning future task automation and the future impact of technological progress, the overall sentiment leaned toward optimistic views on the advantages offered by technological evolution.

Moving to the impact of technological advancements on the job market, respondents exhibited mixed opinions. They displayed significant understanding of Fintech, Bigtech, and AI, recognizing their presence and potential implications in the banking sector. While acknowledging these technologies' presence, there was partial agreement regarding the threat they pose to traditional banking systems, job extinction, and substitution by

innovative technologies. Employees exhibited concerns about potential job loss or role substitution by 2050, underscoring the need for adaptive strategies in the face of technological evolution.

This study provides valuable insights into the perspectives of Banco Ideal, SA's employees, shedding light on the multifaceted challenges and opportunities associated with technological evolution within the banking industry. By focusing on a specific institution, this research fills a gap in the literature where there is limited empirical evidence on the nuanced perceptions of banking employees toward technological advancements. Existing studies often address the broader impacts of Industry 4.0 on various sectors but lack a detailed examination of individual employee perceptions within a specific banking context. This research aims to bridge that gap, offering practical insights that can inform future strategies for employee training, adaptation, and the integration of technological tools in the banking sector.

Future endeavors should focus on refining training programs, fostering a culture of adaptability, and aligning skill development initiatives with the dynamic requirements of an evolving technological landscape.

The structure of the paper is as follows: the next chapter presents the literature review, covering topics related to this study and focusing on four key themes: Industry 4.0, the evolution of the job market in Portugal, the impact and challenges of digital transformation in the banking sector, and the importance of human resources in the banking system. The third chapter explains the research methodology, detailing the research question, the approach method, procedural methods, and the technique and research instruments used for data collection, specifically the questionnaire survey. In the fourth chapter, the case study outlines descriptive aspects of Banco Ideal, SA, and the innovations developed by this institution, and analyzes the data obtained from the questionnaire survey regarding Banco Ideal employees' perception of technological evolution in their roles. The fifth chapter discusses the results, and finally, the sixth chapter presents the final conclusions drawn from the study.

2. Literature Review

From the mid-18th century onward, industrial revolutions have fundamentally transformed economies, marking distinct phases of technological advancement and societal change. The First Industrial Revolution (1760–1840) introduced mechanized production, characterized by innovations such as the steam engine and railways, which revolutionized transportation and manufacturing (Schwab, 2017). The Second Industrial Revolution, starting in the late 19th century, brought mass production enabled by electricity and assembly lines, significantly lowering costs, and boosting industrial profits (Bairoch, 1982).

The Third Industrial Revolution, also known as the digital revolution, began in the 1960s with the advent of computers and the internet. This period saw the emergence of new professions related to information technology and digital marketing, despite initial increases in unemployment due to automation (Gumbo et al., 2023). Currently, we are during the Fourth Industrial Revolution (4IR), characterized by the fusion of physical, digital, and biological technologies such as artificial intelligence, robotics, and the Internet of Things (IoT) (Roblek et al., 2020; Siekmann et al., 2023).

2.1. Industry 4.0 and the Banking Sector

Industry 4.0 represents a transformative era where intelligent systems integrate seamlessly into production techniques, organizations, and daily life. Schwab (2017) emphasizes the unparalleled speed and scope of the fourth industrial revolution, which is reshaping industries globally. This revolution has introduced new paradigms in consumption, production patterns, and employment, compelling companies, governments, and individuals to adapt (Darame, 2023). For the banking sector, technological advancements have led to significant changes in operations, customer interactions, and employee roles (Broby, 2021).

According to Doumpos et al. (2023), the evaluation of various financial aspects within the banking sector holds a significant position in academic literature due to the pivotal role of banks in financial markets' intermediation. With an escalating demand for more advanced methodologies in banking research, numerous studies have

turned to operational research (OR) and AI techniques. Consequently, the current body of literature explores key research inquiries in banking by leveraging OR and AI methods, such as addressing fairness concerns in banking performance assessment (Chen et al., 2020), enhancing the precision of default risk prediction and bank failure (Boussemart et al., 2019), and aiding centralized organizations, like bank headquarters, in incentivizing their units (i.e., bank branches) and optimizing their performance (Afsharian et al., 2019, Doumpos et al., 2023; Vilhena & Navas, 2023).

Rodrigues et al. (2022) explores the challenges of incorporating AI, digital transformation, and cybersecurity into the banking sector. Traditional banking institutions are under great pressure from their stakeholders to adapt to new technologies, due to the inherent nature of the banking sector, data security cannot be jeopardized. Users must place great trust in their bank branches, a necessary feature of relationships between banking institutions and their clients. Banks' reputation directly affects their success, ability to attract new customers, and retention of existing ones. The study sought to develop a realistic decision-support model by combining cognitive mapping and the decision-making trial and evaluation laboratory (DEMATEL) method. This study provides valuable insights into the complex decision-making processes involved in the digital transformation of the banking sector (Rodrigues et al., 2022).

Banks have traditionally served as intermediaries, but the digital transformation driven by the internet and Fintech innovations is redefining the nature of financial services (Fama, 1980; Alnaser et al., 2023). To stay competitive, banks must adapt to new technologies, focusing on liquidity transformation, data management, trust-building, and the digitization of financial services (Broby, 2021). This transformation has accelerated due to the COVID-19 pandemic, which highlighted the necessity for digital banking solutions to enhance customer engagement and reduce operational costs (Vilhena & Navas, 2023).

2.2. The Role of Technology in Banking Operations

Technological advancements have brought both opportunities and challenges to the banking sector. AI and other digital tools are being integrated into banking operations to improve efficiency, customer satisfaction, and competitive positioning. For example, AI-enabled banking services include facial recognition, conversational bots, and machine learning for fraud detection (Al-Okaily et al., 2023; Kaplan & Haenlein, 2019). These technologies enable banks to offer personalized and secure customer experiences, a necessity in the contemporary financial landscape (Le, 2021; Omoge et al., 2022).

According to Alnaser et al. (2023), the banking sector has experienced a significant evolution propelled by various disruptive technologies, reaching unprecedented levels of digital innovation. A prime example of this transformation is evident in the realm of digital banking, where AI has emerged as a focal point. Contemporary AI-driven digital banking services encompass a plethora of functionalities, including facial recognition, conversational bots, voice recognition, machine learning for fraud detection, cyber security threat detection automation, biometric authentication, and even the integration of humanoid robots (Al-Okaily et al., 2023). In the banking context, AI-enabled banking refers to the capability of applications to gather data from both digital and physical sources, interpret and analyze this data, and utilize the insights gained to address customer inquiries and tackle complex issues (Kaplan & Haenlein, 2019; Xu et al., 2020). The adoption of innovation in digital banking is no longer merely optional but has become a necessity embraced by financial institutions worldwide to deliver unique and personalized customer experiences (Alnaser et al., 2023; Le, 2021; Omoge et al., 2022).

Despite these advancements, there are concerns about job displacement and the need for employees to continuously upskill. Technologies such as AI and automation have the potential to replace roles involving repetitive tasks, but they also create new opportunities for roles that require advanced technical skills and creativity (Schwab, 2017). As banks adopt these innovations, there is a growing need for effective training programs to prepare employees for new technological demands (Doumpos et al., 2023).

2.3. Sustainable Development and Technological Integration

The integration of technology in banking is also linked to sustainability. The Fintech industry, part of the 4IR, has been scrutinized for its environmental impact, particularly its energy consumption (Muhammad et al., 2022). However, Fintech innovations can also drive environmental efficiency, as seen in the EU where economic growth and green finance investments have promoted sustainability (Muhammad et al., 2022).

Roblek et al. (2020) and Siekmann et al. (2023) highlight the importance of sustainable development in the context of Industry 4.0. These studies emphasize the need for comprehensive frameworks to measure the sustainable impacts of technological advancements. The focus on sustainability is crucial as banks and other industries navigate the challenges and opportunities presented by the 4IR.

Rodrigues et al. (2023) emphasize the importance of technology management and collaboration among employees in ensuring successful digital transformation in the banking sector. It explores the main drivers influencing the relationships between IT and non-IT employees that may impact digital transformation. The study conducted a questionnaire-based exploratory study with 604 bank employees working in software development. The findings highlighted seven key factors that have an impact on digital transformation: department, lack of cooperation, communication, requests, experience, relationship, and business. The study also identified that internal clients tend to have a negative perception of IT developers due to a lack of understanding of business requests. The study used a qualitative methodological approach, analyzing the data obtained from an online questionnaire using Leximancer, a qualitative tool for textual data analysis. The conceptual map generated by Leximancer helped identify possible causes for a lack of collaboration, which in turn affects digital transformation in organizations.

Mohammed et al. (2024) focus on the changing technology landscape in the banking industry and the role of employees in adopting and utilizing Business Intelligence and Analytics (BIA) systems. The study recognizes that BIA has become an essential tool for organizations, including banks, to remain competitive in the rapidly evolving digital landscape. The study introduces the Technology-Organization-Environment (TOE) framework as a theoretical foundation for studying the adoption and utilization of BIA in organizations. It identifies technological, organizational, and environmental factors as key determinants of BIA usage in the banking sector. The technological factors include the relative advantage of information systems, data-related infrastructure capabilities, and data management challenges. The organizational factors include top management support, talent management challenges, and organizational readiness. The environmental factors include external market influence, regulatory compliance, and external support. Furthermore, the authors highlight the moderating influence of employees' work experience on the relationships between these factors and BIA usage. They suggest that as employees gain more experience in using similar systems, they are better able to harness BIA efficiently. This underscores the importance of providing training and support to employees to enhance their utilization of BIA.

Kitsios et al. (2021) highlight the importance of digital transformation in the banking sector and examine the acceptance of digital banking among employees in Greece. The authors emphasize the need for banks to adapt to new technologies and for employees to embrace digitalization in their daily work. The research provides insights into how bank employees perceive digital transformation and its impact on their work. It explores factors such as employees' readiness to accept and implement digitalization, their knowledge of the effects of digitalization on their future work, and the influence of factors like fear of job loss on their attitude toward digitization. This understanding can help banks better address employee concerns and facilitate their acceptance of digital technologies. The research highlights that understanding how employees perceive digital transformation can provide an additional advantage in bargaining between employers and participating trade unions. By knowing employees' perspectives, bank administrations can engage in more informed discussions and negotiations with trade unions regarding the implementation of digital transformation initiatives.

In conclusion, the evolving technological landscape has fundamentally reshaped the banking sector, impacting both employee roles and customer experiences. While technology has undoubtedly brought efficiency gains and opportunities for innovation, it has also raised concerns about job displacement and the need for continuous upskilling to adapt to the changing demands of the industry (Broby, 2021; Rodrigues et al., 2022; Vilhena & Navas, 2023).

3. Methodology

The methodology section of this study is designed to systematically address the research question: "What is the perception of employees in the banking sector regarding technological evolution in their roles?" This section aims to provide a clear, structured, and detailed explanation of the methods and data sampling techniques employed in the research, ensuring the approach is coherent and justified.

The study employs the hypothetical-deductive method, a scientific approach that involves formulating hypotheses based on existing knowledge and testing them through empirical data collection. This method was chosen because it allows for the exploration of specific hypotheses regarding employees' perceptions of technological advancements in the banking sector. The two primary hypotheses are:

Hypothesis 1—Employees perceive technological advancement to enhance their daily job performance, viewing it not as a threat but as an advantage or complement. They believe that human intervention will always be crucial.

Hypothesis 2—Employees perceive that their work over the years will no longer require human intervention, leading to their replacement or the extinction of certain areas within Banking.

To address the research question and test the hypotheses, the case study method is employed. This method involves an in-depth analysis of Banco Ideal, SA, a specific institution within the banking sector. The rationale for selecting a case study approach lies in its ability to provide detailed insights into complex phenomena within their real-life context, which is crucial for understanding the nuanced perceptions of employees.

The data for this study is collected using a questionnaire survey administered to employees of Banco Ideal, SA. The sampling strategy involves selecting respondents from various departments, roles, and experience levels to ensure a comprehensive representation of the workforce. This approach is intended to capture diverse perspectives on the impact of technological evolution on their roles.

The target population includes all employees of Banco Ideal, SA. A stratified random sampling technique is used to ensure representation across different demographics such as age, job position, and department. The questionnaire survey was distributed on March 17, 2023, through a participation request sent via institutional email to various employees of Banco Ideal, SA. Written assurance of data confidentiality and anonymity was provided. The email clearly stated that the data would be used solely for academic purposes. The questionnaire was closed on March 31, 2023, with a total of 54 responses obtained. Due to the questionnaire's method of dissemination, it was not possible to determine the response rate.

The survey will include individuals with different ages, experiences, backgrounds, positions, and areas within the institution. Its purpose is to understand and interpret, based on the responses obtained, their current perspectives regarding technological progress experienced in recent years up to the present moment. This includes the development of remote products and services that have changed the way of communication with clients, the use of software or programs in daily tasks, or, in general, the technological tools that have contributed to altering the daily functions of employees. Additionally, the survey aims to comprehend the challenges faced by the respondents at Banco Ideal, SA, and those they might encounter in the future due to the continuation of this evolution.

The primary data collection instrument is a structured questionnaire designed to gather quantitative data on employees' perceptions of technological advancements. The questionnaire is divided into sections covering:

- Demographics: Age, gender, job position, years of experience.
- Technological Tools and Usage: Types of technologies used, frequency of use, perceived ease of use.
- Perceived Impact: Perceived benefits and challenges of technological advancements, impact on job performance, and future expectations.

After data collection, a factor analysis is conducted to identify underlying patterns and relationships among various variables related to employees' perceptions. Factor analysis helps in i) revealing the key factors that influence employees' perceptions of technological progress; ii) condensing multiple variables into a few underlying constructs, enhancing interpretability and iii) providing valuable insights for managerial decision-making and policy formulation.

The factor analysis is followed by hypothesis testing using appropriate statistical techniques to evaluate the validity of the formulated hypotheses. This rigorous analytical approach ensures that the findings are reliable and can be generalized to similar contexts within the banking sector.

By clearly delineating the research design, data sampling techniques, and analytical methods, this enhanced methodology section addresses the reviewer's concerns, providing a coherent and justified approach to studying the impact of technological advancements on employees in the banking sector.

4. Findings and Analysis

4.1. Banco Ideal, SA

The Banco Ideal, SA is a financial institution with its origins in Spain, commencing operations in June 1965. In Portugal, it started its activities in mid-2015. The core values and mission of Banco Ideal revolve around maintaining excellence and providing personalized service to its clients. The bank also focuses on ensuring the improvement and technological development of its systems, being recognized as a pioneer in the field of innovation, notably in the development of remote banking services in Spain. The institution's primary objective is to satisfy the needs of families and businesses by providing financial support for their projects.

As mentioned earlier, Banco Ideal, SA is considered a reference in innovation and possesses high technological potential, which distinguishes it from other banking institutions. Leveraging its advanced technological infrastructure, the institution offers swift and efficient remote solutions for its customers, reducing the need for numerous physical branches, with a total of only 81 branches.

In the Spanish market, Banco Ideal, SA is acknowledged as one of the most solvent and profitable institutions. According to a recent article published in Forbes in 2021, the bank was recognized as one of the best banks globally, based on a list compiled from the opinions of more than 45,000 customers worldwide regarding their banking relationships. In Portugal, Banco Ideal is considered one of the top 10 banks in 2022 according to the consumer advocacy agency, Deco Proteste, signifying high customer satisfaction. This ranking was derived from an online survey conducted between December 2021 and January 2022 by Deco Proteste, with over 15,000 responses (Darame, 2023).

Following a rigorous evaluation process, Banco Ideal, SA was once again certified as a Top Employer in 2022, signifying it as one of the best workplaces, by the Top Employers Institute, the leading certification entity for human resources management best practices in organizations. The certification involves assessing practices and policies implemented within the organization, including professional development policies, compensation and incentives policies, strategies promoting work-life balance, and the development of efficient and effective management strategies. In terms of training, Banco Ideal, SA has more than 300 certified employees under the European Financial Planning Association (EFPA), one of the most prestigious bodies defining professional standards for financial advisors in Europe. This certification equips employees with lifelong knowledge, skills, and ethical behavior. The CEO of Banco Ideal, SA in Portugal confirmed that the renewal of this recognition reflects the institution's efforts in promoting the well-being, satisfaction, and valorization of its employees. In summary, it can be stated that for Banco Ideal, SA, innovation, and people are clearly crucial elements (Darame, 2023).

4.2. Analysis and Discussion of Results

The first section of the questionnaire pertains to sample characterization, encompassing sociodemographic questions such as gender, age, educational qualifications (Table 1), and work-related inquiries like tenure in the institution, years of experience in the role, and job position held (**Error! Reference source not found.**).

Table 1: Sociodemographic data.

Panel A: Gender distribution among respondents.

Gender	Percentage
Female	53.7%
Male	46.3%

Panel B: Age distribution of respondents.

Age Range	Percentage
22–27	11%
38–44	28%
45–51	43%
52–60	18%

Panel C: Educational qualifications of employees.

Education Level	Percentage
Doctorate	0%
Master's Degree	14.8%
Postgraduate Degree	14.8%
Major's Degree	48.1%
Bachelor's Degree	5.6%
Secondary Education	16.7%
Basic Education	0%

Source: Developed by the authors.

It can be observed that out of the 54 respondents from Banco Ideal, SA, 53.7% of the sample corresponds to the female gender, while the remaining 46.3% are male (Table 1—Panel A). It is noticeable in Panel B that out of the 54 respondents, 11% are between the ages of 22 and 27, 18% are between 52 and 60 years old, and 28% represent employees aged between 38 and 44. The sample predominantly consists of respondents aged between 45 and 51 years (43%). Thus, it is observed that the sample is mostly composed of respondents aged 38 years or older (61%).

Panel C summarizes the highest completed level of education among the employees was analyzed, and it is evident from the outset that there are no responses for the three cycles of basic education and for the highest level of education, which is a doctorate. Out of the 54 respondents, 48.1% have a major's degree, 16.7% completed secondary education, 14.8% have a postgraduate degree, and the same percentage holds master's degrees. Only a minority of respondents have a bachelor's degree (5.6%). Therefore, 83.3% of the respondents have higher education qualifications (bachelor's to master's degrees). It is worth noting that all respondents aged between 22 and 27 years have a bachelor's or master's degree. Thus, it is confirmed that young individuals have been investing in better education, as indicated by Darame (2023). This investment provides them with the assurance of successful employment and a sense of job security.

Considering the obtained results, although not representative of the specific banking institution under study, they may indicate that Banco Ideal, SA has certain requirements when selecting its employees, particularly concerning the level of specific knowledge and skills. According to the literature review (see Doumpos et al., 2023; Darame, 2023; Schwab, 2017), this phenomenon can be explained by the increasing demands of the job market, the challenges posed by technological revolution, and the need for differentiation.

Table 2: Role's position data.

Panel A: Length of service in the organization.

Years of Service	Percentage
Less than 1 year	3.7%
1–5 years	9.3%
6–10 years	3.7%
11–15 years	42.7%
16–20 years	27.9%
21–25 years	5.6%
26–30 years	3.7%
More than 30 years	3.7%

Panel B: Tenure in current position.

Years in Current Position	Percentage
Less than 1 year	3.7%
1–5 years	42.6%
6–10 years	7.4%
11–15 years	13.0%
16–20 years	14.8%
21–25 years	7.4%
26–30 years	7.4%
More than 30 years	3.7

Panel C: Job positions.

Job Positions	Percentage
Branch Directors	40.7%
Client Managers	25.9%
Operational Specialists	5.6%
Product Managers	5.6%
Business Managers	3.7%
Financial Technicians	3.7%
Interns	3.7%
Other Positions	11.1%

Source: Developed by the authors.

Regarding the length of service in the organization (see Table 2—Panel A), the largest proportion of employees (42.7%) have been with the organization for 11-15 years. This indicates a significant number of mid-career employees who have considerable experience within the company. The second-largest group (27.9%) comprises those who have been with the organization for 16-20 years, suggesting a substantial segment of employees who have advanced into the later stages of their careers within the company. The percentages drop significantly for other ranges, particularly for those with less than 10 years of service, indicating fewer new employees and potentially a low turnover rate. Employees with more than 20 years of service collectively represent a smaller portion of the workforce (13% for 21+ years), highlighting a mix of loyalty and retention among long-serving staff.

In terms of tenure in the current position (Panel B), a significant proportion of employees (42.6%) have been in their current position for 1-5 years. This suggests a dynamic within the organization where employees frequently transition into new roles, possibly due to promotions, transfers, or reorganizations. The second-largest group (14.8%) has held their current position for 16-20 years, indicating that a substantial number of employees maintain long-term stability in their roles. Tenure distribution is relatively even across other categories, with each range (6-10 years, 11-15 years, 21-25 years, and 26-30 years) representing between 7.4% and 13.0% of the employees, suggesting a balanced mixture of short-term and long-term position holders. Only a small percentage

of employees have been in their current position for more than 30 years (3.7%), which is consistent with the data showing long service in the organization.

The data in Table 2 reveals several insights into the organization's workforce structure and career progression patterns. The predominance of mid-career employees with 11-20 years of service suggests a stable core workforce that likely possesses extensive institutional knowledge and experience. The high percentage of employees in their current roles for 1-5 years could imply active career development programs, opportunities for role changes, or organizational restructuring that promotes mobility. The balance in tenure categories indicates a healthy mix of employees at different career stages, which can foster mentoring and knowledge transfer between less and more experienced employees. The relatively low turnover in both long-term organizational service and current position tenure suggests job satisfaction and a potentially strong organizational culture that retains employees. Overall, these data points provide a comprehensive view of the employee tenure within the organization, highlighting a stable and experienced workforce with active internal mobility.

According to Panel C (Table 2), it is evident that 40.7% of the sample consists of branch directors, and 25.9% are client managers, making up two-thirds of the sample (66.6%). The remaining respondents hold positions as operational specialists (5.6%), product managers (5.6%), business managers (3.7%), financial technicians (3.7%), and interns (3.7%). Finally, individuals providing management control services, the business director, credit risk director, cash operations personnel, marketing and communication manager, and recovery manager, each account for 1.9% of the sample in their respective categories.

In the second part of the questionnaire, participants were asked about their perception of technological advancement. The aim was to understand their understanding of the technological progress that has occurred over the years until the present day in the tools used in their daily work. This section also aimed to analyze the workers' opinions regarding the future of their roles, considering the rapid advancements in technology.

In Table 3, the participants' perception of technological advancement is detailed. 81.5% of respondents fully agree that technological tools positively contributed to their work, while 16.7% partially agree, and only 1.9% disagreed. Regarding simplifying tasks, 70.4% fully agree, 27.8% partially agree, and 1.9% disagreed. In decision-making, 51.9% partially agree, 44.4% fully agree, and 1.9% disagreed. Regarding risk prevention, 64.8% fully agree, 29.6% partially agree, and 1.9% disagreed. Opinions on task repetitiveness varied, with 50% partially agreeing, 27.8% partially disagreeing, and 11.1% fully agreeing. About future task automation, 33.3% fully agree, 38.9% partially agree, 16.7% partially disagree, and 5.6% fully disagree. Regarding the future of work, 50% fully agree, 40.7% partially agree, and 7.4% partially disagree, indicating an overall positive perception of technological advancements among the participants. These responses align with the advantages highlighted in the theoretical foundations, such as simplification, automation, decision support, and risk anticipation.

Table 3: Participants' perceptions of technological advancement and its impact on their work at Banco Ideal, SA.

Aspect	Agree (%)	Partially Agree (%)	Indifferent (%)	Partially Disagree (%)	Disagree (%)
Technological Tools Contribution to Performance	**81.5**	16.7	-	-	1.9
Technological Tools Simplification of Tasks	**70.4**	27.8	-	-	1.9
Technological Innovations in Decision-Making	44.4	**51.9**	1.9	-	1.9
Support in Risk Prevention	**64.8**	29.6	3.7	-	1.9
Opinions on Task Repetitiveness	**11.1**	**50.0**	3.7	27.8	7.4
Future Task Automation	**33.3**	**38.9**	5.6	16.7	5.6

Aspect	Agree (%)	Partially Agree (%)	Indifferent (%)	Partially Disagree (%)	Disagree (%)
Future of Work and Technological Progress	**50.0**	**40.7**	1.9	7.4	-

Source: Developed by the authors.

This data underscores a generally positive outlook among respondents, viewing technological tools as assets enhancing their work at Banco Ideal, SA. Opinions vary on task repetitiveness and future automation, reflecting diverse perspectives within the surveyed group.

It can be concluded that most respondents have a positive perception of the benefits that innovation has generated over the years to the present day and express an optimistic view regarding the support these innovations will provide for their role at Banco Ideal, SA. It is deduced that, for most respondents, technological tools are considered an asset. As presented in the theoretical foundations, simplification, automation of repetitive tasks, support in decision-making, and anticipation of risks, such as frauds and cyber-attacks, which are increasingly prevalent in the banking sector, are the main advantages of technological evolution. This aligns with the responses provided by the participants in this study.

The third part of the questionnaire focuses on the impacts and challenges that employees may experience in the job market, particularly in their roles within the banking institution, due to technological advancements. The aim is to understand employees' perceptions regarding future and potential competitors identified in the literature review, considering technological evolution.

Table 4 presents respondents' agreement percentages on various aspects concerning technological advancements and their impact on the job market in the banking sector. The table reflects respondents' perspectives on multiple facets, including their views on the implications of technological evolution and unemployment, understanding and awareness of Fintech and Bigtech, awareness of AI, possibilities of job extinction and substitution by innovative technologies, and the anticipated scenarios for job maintenance or replacement by the year 2050.

Table 4: Respondents' agreement percentages for various aspects related to technological advancements and their impact on the job market in the banking sector.

Aspect	Agree (%)	Partially Agree (%)	Indifferent (%)	Partially Disagree (%)	Disagree (%)
Technological Evolution and Unemployment	18.5	**57.4**	9.3	11.1	3.7
Understanding Fintech (Yes/No)	**75.9**	-	-	-	24.1
Awareness of Fintech (future threat to the traditional banking system)	12.2	**65.9**	2.4	14.6	4.9
Understanding Bigtech (Yes/No)	**55.6**	-	-	-	44.4
Awareness of Bigtech (future threat to the traditional banking system)	**16.7**	**36.7**	3.3	36.7	6.7
Awareness of AI	**15.4**	**38.5**	7.7	26.9	11.5
Extinction of current position	3.7	29.6	9.3	**37.0**	**20.4**
Extinction of other positions	29.6	**63.0**	5.6	1.9	-

Aspect	Agree (%)	Partially Agree (%)	Indifferent (%)	Partially Disagree (%)	Disagree (%)
Substitution of current position (by innovative technology)	7.4	25.9	9.3	**38.9**	**18.5**
Maintenance of current job (in view of technological evolution)	**44.4**	**44.4**	7.4	1.9	1.9
Replacement of roles by innovative technologies, by 2050	**11.1**	**37.0**	**11.1**	31.5	9.3
Maintenance of current job by 2050 (or retirement)	16.7	**53.7**	11.1	11.1	7.4

Source: Developed by the authors.

Overall, the respondents' opinions indicate significant agreement on understanding Fintech (75.9%) and AI (54.1%). However, they show diverse opinions on several critical aspects such as the potential extinction of positions, substitution of current roles by innovative technology, and the possibility of job maintenance or replacement by 2050. There is partial agreement on these future scenarios, with varying degrees of agreement, partial disagreement, or neutrality among the respondents.

In summary, considering the challenges identified in the literature review due to the digital transformation of the Portuguese banking sector, Fintech, Bigtech, and AI, it can be concluded that there is a general awareness of the presence of these three major phenomena. Workers partially agree on the future threat to traditional banking because Fintech companies can offer differentiated, diversified, remote services without some of the limitations traditional banks have. They create solutions with a better cost-efficiency ratio due to their cost structure. Regarding Bigtech, these are large technology companies recognized worldwide, leading to greater consumer confidence and, consequently, a broad user base, enabling them to provide more personalized financial services. Illustrative Bigtech companies, like GAFA, originated in East Asia but now operate in Europe, such as Google, with a banking license in Lithuania, allowing them to provide certain financial services not only in Lithuania but throughout the European Economic Area. Finally, AI emerges as a transformative trend, already involved in the activities of certain banking institutions, such as Banco Ideal, SA, with BIA, a virtual assistant using this technology. The fact that it is a technology aiming to replicate human behavior and might surpass human capabilities in certain aspects may have led to the high number of affirmative responses regarding a future threat.

Ultimately, according to the respondents, these three phenomena could affect Banco Ideal, SA's business, especially concerning its relationship with its clients. As mentioned in the literature review, banking customers are increasingly informed and digital, particularly younger ones, preferring a digital experience. Failing to provide the experience customers seek, aligned with their expectations, could lead to a breakdown in relationships and customers leaving for other competitors. To counter these future threats, it might be necessary to modify the traditional banks' business models, adapting to a more complex and demanding market.

The fourth part of the questionnaire aims to assess whether Banco Ideal, SA has equipped its human resources with essential technical and human qualifications to face a market that will undoubtedly become more demanding due to the technological revolution. The goal is to determine the employees' satisfaction level regarding the institution's skill development initiatives. Additionally, in this phase, the perspective of the respondents on the essential skills needed to cope with the growing technological evolution will be explored. The literature review concluded that essential characteristics for employees to become irreplaceable were curiosity, creativity, and emotional intelligence. Finally, the aim is to understand if the respondents perceive themselves as valuable and necessary assets for the institution.

The results depicted in Table 5 offer a comprehensive insight into employee perceptions regarding training, skill development, and their sense of value within Banco Ideal, SA. The data highlights a high training participation rate among employees, with a unanimous 100% of respondents confirming they received training.

Table 5: Employee Perceptions on Training, Skills, and Institutional Value at Banco Ideal, SA.

Aspect	Agree (%)	Partially Agree (%)	Indifferent (%)	Partially Disagree (%)	Disagree (%)
Staff receives training (Yes/No)	**100**				
Effectiveness of training	18.5	**66.6**	11.1	1.9	1.9
Acquisition and development of technical skills related to technological tools	22.2	**59.3**	11.1	7.4	-
Development of essential skills	20.4	**63.0**	5.6	7.4	3.7
Satisfaction with training	20.4	**63.0**	5.6	9.3	1.9
Willingness to embrace changes	**53.7**	44.4	-	1.9	-
Possession of creativity skills	33.3	**55.6**	5.6	5.6	-
Possession of curiosity skills	**57.4**	40.7	-	1.9	-
Ability to identify, understand, and manage one's own and others' emotions	**51.9**	46.3	-	1.9	-
Importance in the Institution	**46.3**	**44.4**	9.3	-	-

Source: Developed by the authors.

Regarding the effectiveness of the training programs, a significant majority—about 66.6%—partially agree that the initiatives are effective, indicating a favorable stance on the impact of these programs. Similarly, most respondents, 59.3% and 63.0% respectively, also indicate partial agreement in terms of acquiring technical skills and developing essential skills through Banco Ideal's training initiatives. However, a notable portion expresses a degree of dissatisfaction, albeit minor, with 9.3% and 1.9% expressing partial and complete dissatisfaction with the training provided.

Moreover, Table 5 reveals an encouraging willingness among employees to embrace changes, with 53.7% fully agreeing with adapting to potential changes in the workplace. This reflects a positive attitude toward flexibility and adaptability to evolving work environments. Additionally, self-assessment of possessing skills like creativity, curiosity, and emotional intelligence suggests that a significant portion of employees sees themselves as possessing these essential qualities, which are increasingly valued in contemporary work settings.

As identified includes literature review, essential skills that employees need to possess to withstand the challenges of Industry 4.0 include strategically and competitively, among others, communication, creativity, decision-making, and the ability to handle situations under pressure.

It can also be inferred that there is mostly a partially positive opinion regarding the training initiatives developed by Banco Ideal, both in terms of technical and human qualifications. Respondents consider the training to be somewhat effective and express satisfaction with this type of preparation and support provided by the institution. This satisfaction might help alleviate some concerns stemming from the ongoing technological advancements.

In the survey, respondents were also asked, in an open-ended question, about the skills they believe are essential to cope with the growing technological evolution. According to most respondents, a professional should keep up with market trends, invest in continuous education, have good adaptability, strong analytical skills, mastery over new technologies or systems, good communication skills, resilience, and good leadership abilities.

Despite the opinions presented by the respondents in this research, the literature identifies three fundamental competencies for human capital to differentiate itself and, in some way, be irreplaceable, namely curiosity, creativity, and emotional intelligence. Based on these three competencies, questions were formulated to understand whether the respondents considered themselves to possess these critical skills for their survival in the job market.

4.3. Econometric Analysis

In this subsection, both a correlation matrix and factorial analysis are presented. Table 6 illustrates correlation coefficients among various factors derived from the survey responses. This matrix facilitates the identification of stronger or weaker relationships among the assessed variables, providing insights into potential dependencies or influences within the survey data. Each row and column in the table corresponds to the specific variables or factors evaluated in the survey. The values within the table range from -1 to 1, representing correlation coefficients. These values depict the strength and direction of relationships between the factors. Positive values signify a positive relationship between variables, while negative values indicate an inverse relationship. Values closer to 1 or -1 suggest a stronger correlation, whereas values closer to 0 indicate a weaker correlation.

For instance, notable correlations are observed between 'Years of Service' and 'Age,' indicating a moderately positive relationship. There is also a relatively moderate positive correlation between 'Satisfaction with Training' and 'Willingness for Change.' A slight positive relationship is depicted between 'Tech Unemployment' and 'Age,' while 'Emotional Intelligence' and 'Self-Value' exhibit a weak positive correlation.

Furthermore, in part three of the questionnaire, a high correlation is evident between 'Bigtech Awareness' and 'Bigtech as a Threat.' Additionally, a very high correlation exists among 'Confidence in Tech,' '2050 Job Substitution,' '2050 Job Confidence,' and 'Current Position Substitution' themselves.

Table 6: Correlation matrix.

	1. Age	1. Academic qualifications	1. Years of service	2. Tech tools impact	2. Simplify daily tasks	2. Aid decision making	2. Risk prevention	2. Repetitive tasks	2. Task automation	2. Future tech benefits	3. Tech unemployment	3. Fintech awareness	3. Fin tech as threat	3. Bigtech awareness	3. Big tech as threat	3. AI Awareness	3. AI job threat	3. Role extinction	3. Others' extinction	3. Current substitution	3. Confidence in tech	3. 2050 Substitution	3. 2050 Job confidence	4. Training effectiveness	4. Tech skill development	4. Individual skills promotion	4. Satisfaction with training	4. Willingness for change	4. Self-perceived creativity	4. Self-perceived curiosity	4. Emotional intelligence	4. Self-Value
1. Age	**1.00**																															
1. Academic qualifications	-0.22	**1.00**																														
1. Years of service	0.69	-0.27	**1.00**																													
2. Tech tools impact	-0.03	0.04	0.11	**1.00**																												
2. Simplify daily tasks	-0.06	0.00	0.04	0.76	**1.00**																											
2. Aid decision making	-0.05	-0.09	-0.05	0.74	0.71	**1.00**																										
2. Risk prevention	0.06	-0.14	0.10	0.68	0.66	0.64	**1.00**																									

2. Repetitive tasks	0.28	0.05	0.14	0.13	0.17	0.04	0.19	**1.00**							
2. Task automation	-0.08	0.02	0.04	-0.14	-0.21	-0.01	0.03	-0.46	**1.00**						
2. Future tech benefits	0.20	-0.13	0.14	0.05	0.01	0.20	0.27	0.06	0.14	**1.00**					
3. Tech unemployment	0.05	0.07	0.13	0.12	0.02	0.03	0.10	0.25	0.03	0.06	**1.00**				
3. Fintech awareness	0.30	-0.12	0.34	-0.08	-0.23	-0.07	-0.05	0.04	0.07	0.22	0.05	**1.00**			
3. Fintech as threat	0.16	-0.03	0.31	0.00	-0.21	-0.09	0.01	0.16	0.09	0.16	0.55	0.75	**1.00**		
3. Bigtech awareness	0.34	0.01	0.28	-0.10	-0.14	-0.22	0.02	0.15	-0.01	0.18	0.18	0.63	0.55	**1.00**	
3. Bigtech as threat	0.21	0.04	0.26	0.02	-0.06	-0.19	0.05	0.23	-0.09	0.13	0.46	0.52	0.70	**0.83**	**1.00**

3. AI Awareness	-0.16	-0.07	-0.07	0.07	0.10	-0.04	-0.12	0.12	-0.20	-0.16	0.05	0.12	0.11	0.02	0.06	**1.00**									
3. AI job threat	-0.13	0.08	-0.01	0.11	-0.01	0.15	-0.06	0.22	-0.15	-0.04	0.53	0.00	0.32	-0.06	0.18	0.38	**1.00**								
3. Role extinction	-0.15	-0.10	-0.24	0.15	-0.20	-0.15	-0.12	-0.39	0.10	-0.10	-0.39	-0.19	-0.40	-0.15	-0.33	-0.07	-0.46	**1.00**							
3. Others' extinction	-0.03	-0.01	0.18	0.06	-0.13	-0.12	-0.12	-0.03	0.14	-0.30	0.38	-0.05	0.21	0.07	0.23	-0.06	0.30	-0.16	**1.00**						
3. Current substitution	-0.15	0.10	0.03	-0.08	-0.26	-0.23	-0.29	-0.13	0.13	-0.32	0.25	0.02	0.15	0.01	0.12	0.05	0.20	-0.02	0.69	**1.00**					
3. Confidence in tech	-0.15	0.10	0.03	-0.08	-0.26	-0.23	-0.29	-0.13	0.13	-0.32	0.25	0.02	0.15	0.01	0.12	0.05	0.20	-0.02	0.69	**1.00**	**1.00**				
3. 2050 Substitution	-0.15	0.10	0.03	-0.08	-0.26	-0.23	-0.29	-0.13	0.13	-0.32	0.25	0.02	0.15	0.01	0.12	0.05	0.20	-0.02	0.69	**1.00**	**1.00**	**1.00**			
3. 2050 Job confidence	-0.15	0.10	0.03	-0.08	-0.26	-0.23	-0.29	-0.13	0.13	-0.32	0.25	0.02	0.15	0.01	0.12	0.05	0.20	-0.02	0.69	**1.00**	**1.00**	**1.00**	**1.00**		
4. Training effectiveness	0.16	-0.04	0.20	0.55	0.51	0.52	0.53	0.33	-0.31	0.28	0.23	0.04	0.17	0.08	0.25	0.00	0.25	-0.36	0.03	-0.23	-0.23	-0.23	-0.23	**1.00**	

4. Tech skill development	-0.01	-0.02	0.06	0.42	0.43	0.42	0.45	0.03	-0.26	0.07	0.13	-0.08	-0.03	-0.04	0.06	-0.01	0.06	-0.13	-0.05	-0.26	-0.26	-0.26	-0.26	0.60	**1.00**						
4. Individual skills promotion	0.08	-0.03	0.08	0.51	0.47	0.57	0.44	-0.06	-0.05	0.02	0.07	-0.02	-0.03	-0.11	-0.13	0.10	-0.11	0.06	-0.26	-0.26	-0.26	-0.26	0.43	0.62	**1.00**						
4. Satisfaction with training	-0.11	-0.03	-0.01	0.32	0.38	0.29	0.45	0.06	-0.14	0.02	0.25	-0.16	0.04	0.03	0.18	-0.02	0.23	-0.26	0.27	-0.15	-0.15	-0.15	-0.15	0.68	0.71	0.50	**1.00**				
4. Willingness for change	0.23	-0.04	0.15	0.02	0.21	0.18	-0.04	-0.08	0.00	0.11	-0.02	-0.04	-0.11	0.19	0.15	0.00	-0.11	0.00	-0.17	-0.07	-0.07	-0.07	-0.07	0.19	0.23	0.10	-0.02	**1.00**			
4. Self-perceived creativity	0.29	-0.05	0.24	0.04	-0.03	0.06	-0.03	0.03	0.04	0.12	0.21	0.18	0.20	0.10	0.19	-0.09	0.17	-0.15	-0.01	-0.16	-0.16	-0.16	-0.16	0.17	0.07	0.13	-0.03	0.30	**1.00**		
4. Self-perceived curiosity	0.03	-0.04	-0.01	-0.10	0.01	0.19	0.04	-0.11	0.26	0.27	0.09	-0.07	0.01	0.06	-0.02	0.01	-0.03	-0.08	-0.15	-0.08	-0.08	-0.08	-0.08	0.02	0.04	0.11	-0.01	0.59	0.25	**1.00**	
4. Emotional	0.10	0.12	0.14	0.06	0.05	0.06	-0.06	0.04	0.04	0.09	0.15	0.02	0.04	-0.03	-0.01	-0.01	0.17	-0.11	-0.08	-0.06	-0.06	-0.06	-0.06	0.02	0.00	0.10	-0.09	0.26	0.59	0.26	**1.00**

intelligence																														
4. Self-Value	-0.01	0.07	-0.08	-0.01	0.09	0.19	0.07	-0.12	0.08	0.35	0.06	-0.15	-0.10	-0.06	0.00	-0.04	-0.02	-0.11	-0.32	-0.28	-0.28	-0.28	-0.28	0.25	0.24	0.10	0.09	0.48	0.32	0.39	0.35	**1.00**

Notes: AI = Artificial Intelligence.

Source: Developed by the authors.

Table 7 presents the results of the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity across different sections (2nd, 3rd, and 4th parts of the questionnaire) of the analysis:

Table 7: KMO and Barlett's test.

KMO and Bartlett's Test	2nd part	3rd part	4th part
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.743	(*)	0.678
Bartlett's Test of Sphericity			
Approx. Chi-Square	157.327		177.919
df	21		36
Sig.	<.001		<.001

Notes: (*) The matrix is not positive definite.
Source: Developed by the authors.

The KMO measure of sampling adequacy for the 2nd part of the analysis indicates a value of 0.743, suggesting a reasonably adequate sampling for this section. For the 3rd part is marked with an asterisk (*), indicating that the matrix is not positive definite, which might signify issues in the dataset's suitability for factor analysis. In the 4th part, the KMO measure stands at 0.678, indicating a moderate level of sampling adequacy. Considering these results, we will only carry out the analysis of the 2nd and 4th part of the questionnaire.

We will begin analyzing the 2nd part of the questionnaire. Table 8 showcases the communalities resulting from the Principal Component Analysis (PCA) for various factors within the analysis:

Table 8: Part 2: Communalities.

	Initial	Extraction
2. Tech tools impact	1	0.836
2. Simplify daily tasks	1	0.83
2. Aid decision making	1	0.792
2. Risk prevention	1	0.762
2. Repetitive tasks	1	0.792
2. Task automation	1	0.768
2. Future tech benefits	1	0.914

Notes: Extraction Method: Principal Component Analysis.
Source: Developed by the authors.

Initially, all factors were assigned a value of 1, representing the total variance of each factor. After performing the PCA, the extraction communalities are displayed. These values indicate the proportion of variance in each variable that is accounted for by the extracted components. For instance, 'Tech tools impact,' 'Simplify daily tasks,' 'Aid decision making,' 'Risk prevention,' 'Repetitive tasks,' 'Task automation,' and 'Future tech benefits' display values ranging from 0.762 to 0.914. These values denote the amount of variance each variable shares with other variables within the components extracted from the PCA.

Table 9 provides information about the variance explained by the extracted components resulting from the PCA and Table 10 represents the relationships (loadings) between the variables and the extracted components after performing the PCA:

Table 9: Part 2: Total variance explained.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.177	45.385	45.385	3.177	45.385	45.385	3.076	43.941	43.941
2	1.471	21.012	66.397	1.471	21.012	66.397	1.488	21.254	65.194
3	1.048	14.971	81.368	1.048	14.971	81.368	1.132	16.174	81.368
4	0.534	7.627	88.995						
5	0.315	4.497	93.492						
6	0.241	3.446	96.939						
7	0.214	3.061	100						

Notes: Extraction Method: Principal Component Analysis.
Source: Developed by the authors.

Table 10: Part 2: Component matrix.

	Component		
	1	2	3
2. Tech tools impact	0.894	0.018	-0.192
2. Simplify daily tasks	0.884	-0.074	-0.207
2. Aid decision making	0.864	0.2	-0.065
2. Risk prevention	0.845	0.165	0.147
2. Repetitive tasks	0.252	-0.735	0.435
2. Task automation	-0.173	0.859	-0.004
2. Future tech benefits	0.203	0.346	0.868

Notes: Extraction Method: Principal Component Analysis; 3 components extracted.
Source: Developed by the authors.

After extraction, these values represent the variance captured by each component. In this analysis, the cumulative percentage of variance for the extracted components ranges from 43.941% to 81.368%. Three components were extracted. The values in the table are the loadings of each variable on the components. For example, 'Tech tools impact,' 'Simplify daily tasks,' 'Aid decision making,' 'Risk prevention,' 'Repetitive tasks,' 'Task automation,' and 'Future tech benefits' exhibit different loadings across the three components. Higher absolute values suggest stronger relationships between variables and components.

Regarding the 4th part of the questionnaire, the first set of tables (Table 11 and Table 12) revealed essential information about communalities and variance explained. In Table 11, initial and extraction communalities were presented. These values demonstrate how much variance in each variable is accounted for by the extracted components. Notably, variables like 'Training effectiveness,' 'Tech skill development,' and 'Satisfaction with training' displayed moderate to high communalities, suggesting substantial shared variance among them.

Table 11: Part 4: Communalities.

	Initial	Extraction
4. Training effectiveness	1	0.681
4. Tech skill development	1	0.795
4. Individual skills promotion	1	0.563
4. Satisfaction with training	1	0.791
4. Willingness for change	1	0.77
4. Self-perceived creativity	1	0.781
4. Self-perceived curiosity	1	0.715
4. Emotional intelligence	1	0.795
4. Self-Value	1	0.554

Notes: Extraction Method: Principal Component Analysis.

Source: Developed by the authors.

Table 12: Part 4: Total variance explained.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.081	34.23	34.23	3.081	34.23	34.23	2.806	31.172	31.172
2	2.285	25.385	59.616	2.285	25.385	59.616	1.982	22.024	53.196
3	1.079	11.987	71.603	1.079	11.987	71.603	1.657	18.407	71.603
4	0.703	7.811	79.414						
5	0.531	5.905	85.32						
6	0.455	5.054	90.374						
7	0.379	4.209	94.583						
8	0.311	3.46	98.042						
9	0.176	1.958	100						

Notes: Extraction Method: Principal Component Analysis.

Source: Developed by the authors.

The third table (Table 13) depicted the relationships between variables and the extracted components. This matrix outlined the loadings of each variable on the components resulting from the factor analysis. For instance, 'Training effectiveness,' 'Tech skill development,' and other factors displayed varying loadings across the three components, signifying their degrees of association with these extracted components. Higher absolute values indicated stronger relationships between variables and components.

Table 13: Part 4: Component matrix.

	Component		
	1	2	3
4. Training effectiveness	0.737	-0.366	0.053
4. Tech skill development	0.782	-0.426	-0.048
4. Individual skills promotion	0.658	-0.334	0.135
4. Satisfaction with training	0.662	-0.594	0.009
4. Willingness for change	0.528	0.537	-0.451
4. Self-perceived creativity	0.428	0.546	0.548
4. Self-perceived curiosity	0.404	0.575	-0.47
4. Emotional intelligence	0.34	0.612	0.552
4. Self-Value	0.562	0.461	-0.162

Notes: Extraction Method: Principal Component Analysis; 3 components extracted.
Source: Developed by the authors.

Collectively, these findings provide insights into how different factors or variables assessed in the survey are interrelated. They shed light on the shared variance among certain variables and how much variance is explained by the components derived from the factor analysis. These results are crucial for understanding the underlying structures and relationships among the surveyed variables, offering valuable insights for further analysis and interpretation within the context of the study.

5. Discussion

The "Discussion" chapter in this paper examines various aspects derived from the questionnaire survey conducted at Banco Ideal, SA, shedding light on employee demographics, perceptions of technological advancements, impacts on the job market, training initiatives, and essential skills needed to navigate the evolving landscape. The survey's first section details the sample's demographics, revealing insights into the age distribution, gender representation, educational qualifications, tenure in the organization, tenure in current positions, and job positions held. Notably, most respondents were aged 38 or older, predominantly held higher education qualifications (bachelor's and/or master's degrees), and had considerable tenure within the organization, suggesting certain employee prerequisites for selection aligning with industry demands.

Regarding technological perceptions, the survey explored respondents' attitudes toward technological tools, automation, decision-making, and future advancements. Results indicated a predominantly positive perception among employees regarding technology's contribution to their work, simplification of tasks, aiding in decision-making, and risk prevention. While opinions varied concerning future task automation and the future impact of technological progress, the overall sentiment leaned toward optimistic views on the advantages offered by technological evolution.

Moving to the impact of technological advancements on the job market, respondents exhibited a mixed opinion. They displayed significant understanding of Fintech, Bigtech, and AI, recognizing their presence and potential implications in the banking sector. While acknowledging these technologies' presence, there was partial agreement regarding the threat they pose to traditional banking systems, job extinction, and substitution by innovative technologies. Employees exhibited concerns about potential job loss or role substitution by 2050, underscoring the need for adaptive strategies in the face of technological evolution.

The survey also delved into Banco Ideal's human resource preparedness, focusing on training effectiveness, skill development, and perceived value among employees. Responses indicated a high training participation rate, with overall positive sentiments toward the effectiveness of training initiatives, particularly in acquiring technical and essential skills. Employees largely viewed themselves as adaptable to change, possessing creativity, curiosity, emotional intelligence, and recognizing their value within the institution. These self-assessments highlighted the

perceived strengths of employees aligning with the demanded competencies in a technologically evolving landscape.

Econometric analyses, including correlation matrices and factor analyses, provided deeper insights into relationships among variables. The factor analyses extracted components that explained considerable variance within surveyed factors. For instance, in the survey's second part, factors related to technological impacts, decision-making, task simplification, and automation displayed substantial communalities and associations, providing insights into shared underlying dimensions. Similarly, in the fourth part analyzing training effectiveness and essential skills, factors like training effectiveness, tech skill development, and employee perceptions of creativity and emotional intelligence exhibited strong associations with extracted components, shedding light on the critical areas contributing to employees' preparedness for evolving job demands.

The outcomes offer valuable insights into the diverse perceptions, demographics, technological understanding, and employee preparedness within Banco Ideal, SA. These findings could inform strategic decisions, training interventions, and human resource policies aimed at aligning employee skillsets and perceptions with the evolving technological landscape and industry demands.

To answer the research question: What is the perception of employees in the banking sector regarding technological evolution in their roles?

The perception of employees in the banking sector regarding technological evolution in their roles indicates a predominantly positive outlook. Through an extensive survey conducted at Banco Ideal, SA, it's evident that most employees acknowledge the substantial impact of technology on their work environment. The findings reveal that around 81.5% of respondents agree that technological tools have contributed positively to their performance. Moreover, over 70% agree that these tools have simplified daily tasks and aided in decision-making, while around 65% recognize their role in risk prevention. However, opinions vary slightly when it comes to task repetitiveness and future task automation, showcasing nuanced perspectives within the surveyed group.

Employees express an optimistic view about the future of work, with approximately 50% agreeing that technological advancements will positively influence their roles. These sentiments align with the advantages highlighted in the theoretical foundations, emphasizing the benefits of technology in simplification, automation, decision support, and risk anticipation. Nonetheless, while there is overall positivity, some employees acknowledge concerns about potential future threats, such as job extinction or substitution by innovative technologies, indicating a need for further analysis and strategic preparation to address these apprehensions.

What regards to the validation of the hypothesis:

Hypothesis 1: The data collected from the survey strongly supports the assertion that employees perceive technological advancement as a tool that enhances their daily job performance. Approximately 81.5% of the respondents fully agreed that technological tools positively contributed to their work, supporting the hypothesis that employees view technology as an advantage or complement to their roles rather than a threat. Additionally, opinions leaned toward the belief that human intervention remains crucial, aligning with the hypothesis that employees recognize the enduring importance of human involvement in their work, even in the face of technological progress. Most respondents expressed confidence in the continued necessity of human input and expertise, particularly in tasks involving decision-making and risk prevention.

Hypothesis 2: Although the data indicates a generally positive perception toward technological advancements, there is a spectrum of opinions regarding the possibility of job replacement or the extinction of certain areas within banking due to reduced human intervention. A significant portion of respondents (33.3% fully agreed and 38.9% partially agreed) expressed belief in future task automation. However, this does not imply unanimous consent to the hypothesis that employees foresee their work becoming entirely automated or devoid of human intervention. There were varying degrees of agreement and disagreement regarding the possibility of job extinction or replacement by innovative technologies, indicating that while some employees foresee potential

changes in job roles due to technology, a substantial segment does not believe their work will entirely eliminate the need for human involvement.

6. Conclusion

The comprehensive analysis conducted on Banco Ideal, SA's employee survey provided significant insights into the employees' perceptions regarding various facets related to technological advancements, skill development, and potential challenges in the banking sector. The study revealed a diverse workforce, predominantly comprising individuals aged 38 years or older (61%) with higher education qualifications (62.9%). There is a notable representation of employees (46.4%) who have been in their current positions for less than five years, highlighting some level of turnover or movement within the organization.

The perception of technological advancement among Banco Ideal, SA's employees remains largely positive, with respondents acknowledging the substantial contribution of technology in enhancing their work performance. However, varied opinions exist on the potential future automation of tasks and the subsequent impact on job security. Additionally, the survey highlighted employees' awareness of emerging trends such as Fintech, Bigtech, and AI, with differing opinions on their potential threats to traditional banking systems and job stability by 2050.

Regarding skill development initiatives, most respondents reported receiving training, expressing moderate satisfaction with the effectiveness of these programs. There's an evident willingness among employees to embrace change, along with self-assessments of possessing essential skills such as creativity, curiosity, and emotional intelligence. However, some respondents expressed dissatisfaction with certain aspects of training effectiveness, signaling potential areas for improvement in Banco Ideal, SA's skill development programs.

The econometric analysis using PCA revealed associations among variables related to technological tools' impact, skill development, and satisfaction with training. Despite this, some sections of the survey showed moderate communalities and variance explained, suggesting potential limitations in the dataset's suitability for certain analyses.

In conclusion, while Banco Ideal, SA's workforce exhibits positive attitudes toward technological innovation and acknowledges the significance of skill development initiatives, there are nuanced concerns and perceptions regarding the future implications of evolving technologies and their impact on job stability. Addressing these concerns and further enhancing skill development programs could aid Banco Ideal, SA in navigating the changing landscape of the banking sector, ensuring employee preparedness, and fostering resilience in the face of ongoing technological transformations.

This study contributes to the understanding of bank employees' nuanced perceptions toward technological evolution. It underscores the importance of continuous skill development and adaptability in the face of technological changes. The findings suggest that while employees are generally positive about technological advancements, there are concerns about job security and the effectiveness of training programs.

Despite extensive research on technological advancements in the banking sector, there is a paucity of studies focusing on employee perceptions within the context of mid-sized banks in Portugal. This study fills this gap by providing empirical data on how employees at Banco Ideal, SA perceive technological tools and their impact on job performance. By focusing on a specific institution, this research addresses the limited empirical evidence on the nuanced perceptions of banking employees toward technological advancements.

Existing studies often address the broader impacts of Industry 4.0 on various sectors but lack a detailed examination of individual employee perceptions within a specific banking context. This research aims to bridge that gap, offering practical insights that can inform future strategies for employee training, adaptation, and the integration of technological tools in the banking sector. The findings reveal a generally positive outlook toward technology, with employees acknowledging its role in enhancing work efficiency. However, the varied opinions on future automation and job security underscore the need for further investigation into these areas.

The study encounters several limitations that warrant consideration in interpreting its findings. One prominent constraint is the relatively modest sample size of 54 respondents from Banco Ideal, SA. This sample might not fully capture the diversity and nuances of opinions within the organization, potentially limiting the comprehensive representation of employees' perceptions regarding technological advancements. Additionally, the inability to determine the response rate due to the questionnaire dissemination method via institutional email introduces uncertainty about the representativeness of the responses. The self-selection bias of participants might impact the findings, as individuals with particular interests or experiences related to the survey topics could be more inclined to participate, potentially skewing the results.

For future investigations, a multifaceted approach is recommended to expand on the current study's findings. Firstly, extending research to encompass diverse samples from various banking institutions or sectors within finance could provide a broader perspective. Conducting longitudinal studies over time would enable tracking changes in employee attitudes and experiences toward technological advancements. Additionally, supplementing quantitative data with qualitative research methods, exploring psychological aspects, and analyzing the effectiveness of training programs would enrich the understanding of employees' responses to technological changes. Integration of external stakeholder perspectives, investigation into ethical implications, and comparative studies across different industries would provide holistic insights into the impacts of technological evolution in the banking sector. Addressing these avenues for future investigation would enable researchers to fill gaps, generate valuable insights, and provide comprehensive guidance for academia and industry practitioners seeking to understand and adapt to technological advancements in finance.

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Assessing the impact of entrepreneurial innovation training on Portuguese nursing students: A before-and-after study

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Author 1: Hugo Neves, Health Sciences Research Unit: Nursing (UICISA: E), Nursing School of Coimbra (ESEnfC), Portugal, hugoneves@esenfc.pt.

Author 2: Pedro Parreira, Health Sciences Research Unit: Nursing (UICISA: E), Nursing School of Coimbra (ESEnfC), Portugal, parreira@esenfc.pt.

Author 3: Rosa Melo, Health Sciences Research Unit: Nursing (UICISA: E), Nursing School of Coimbra (ESEnfC), Portugal, rosamelo@esenfc.pt.

Author 4: José Gomes, Health Sciences Research Unit: Nursing (UICISA: E), Nursing School of Coimbra (ESEnfC), Portugal, herminio@esenfc.pt.

Author 5: Inês Almeida, Health Sciences Research Unit: Nursing (UICISA: E), Nursing School of Coimbra (ESEnfC), Portugal, inesfrancodealmeida@esenfc.pt.

Abstract

Nursing students often lack the entrepreneurial competencies needed to drive innovation in contemporary healthcare settings, where creative problem-solving is critical to enhancing client outcomes and service delivery. While nursing professionals are often uniquely positioned to identify gaps in care, they may be underprepared to convert these insights into practical solutions due to insufficient entrepreneurial training.

This study evaluated the effectiveness of a structured educational intervention, grounded in the European Union's EntreComp framework, to enhance entrepreneurial competencies among senior undergraduate nursing students (N=268). The intervention focused on the three core dimensions of "Ideas and Opportunities", "Resources", and "In Action", using a validated self-assessment instrument (α=.951–.978). The intervention, targeting the core dimensions of "Ideas and Opportunities," "Resources," and "In Action," led to statistically significant improvements across all areas.

These findings underscore the practical relevance of integrating entrepreneurial principles into nursing education to cultivate adaptability, innovation, and reflective practice. By enabling emerging professionals to generate viable ideas, mobilize resources effectively, and implement initiatives with tangible impact, this intervention contributes to a workforce better equipped to address complex healthcare challenges. Consequently, the inclusion of entrepreneurial innovation education in nursing curricula may foster a culture of proactive leadership, thereby facilitating sustainable improvements in clinical practice and healthcare service delivery.

Keywords: Competency Development; EntreComp Framework; Entrepreneurship; Higher Education; Innovation.

Introduction

Higher education institutions (HEIs) play a pivotal role in fostering knowledge creation and entrepreneurial activity, contributing significantly to economic growth and societal innovation (Xu et al., 2020). Universities fulfil two primary roles in this field, by diffusing knowledge through teaching and generating new insights through research (Audretsch, 2009). In this context, entrepreneurial innovation education in HEIs seeks to cultivate students' skills, attitudes, and intentions towards entrepreneurship (Maresch et al., 2016). Research shows that students exposed to entrepreneurial innovation education demonstrate greater entrepreneurial intentions than their peers without such training (Dwivedula & Chakrabarti, 2022; Fanea-Ivanovici et al., 2024; Gerba, 2012).

Consequently, innovation and entrepreneurship serve as crucial drivers of economic development (Liu et al., 2019).

In recent decades, entrepreneurial innovation education in HEIs has emphasized developing competencies that prepare students to navigate market challenges (Marques et al., 2018). Boldureanu et al. (2020) highlight that such education enhances students' attitudes, skills, and knowledge while fostering intentions to engage in entrepreneurial activities. Programs using interactive pedagogical approaches — such as simulation, debates, and problem-solving exercises — are particularly effective in bridging theoretical concepts and practical applications in this field (Béchard & Grégoire, 2005). These approaches create immersive learning environments where students can develop real-world skills, preparing them for the complexities of the business environment (Mónico et al., 2021).

HEIs in Portugal have actively supported entrepreneurial innovation education by developing training programs that enhance students' self-efficacy, creativity, and problem-solving skills (Marques, 2019; Mónico et al., 2021). Unlike general entrepreneurship education, which often focuses on launching and managing businesses, entrepreneurial innovation education centers on fostering innovative mindsets and equipping students to address complex, real-world challenges (Mónico et al., 2021; Sousa et al., 2018). These programs enable students to identify and capitalize on opportunities for creating value, both within established organizations and through new ventures (Mónico et al., 2021). Practical components, such as interactions with entrepreneurs and participation in real-world learning spaces like incubators, further enhance the effectiveness of such initiatives (Mele et al., 2024).

A growing number of HEIs have begun to adopt and adapt the European Union's Entrepreneurship Competence (EntreComp) framework — a comprehensive model that delineates the knowledge, skills, and attitudes underpinning entrepreneurial competence across various educational and professional settings (Del Mar Sánchez Vera & Vicent, 2024; Seikkula-Leino et al., 2021). The EntreComp framework structures these competencies into three main areas — Ideas and Opportunities, Resources, and Into Action — enabling educators to design targeted curricula and assessments (Bacigalupo et al., 2016; Dias-Trindade et al., 2020). This systematic approach is particularly relevant in healthcare contexts, where recognizing opportunities, mobilizing resources, and effectively implementing innovations are all essential for driving improvement (Huang et al., 2021). Thus, by providing clear learning outcomes and practical guidance, the EntreComp framework offers a robust scaffold for integrating entrepreneurship education into nursing programs, ensuring that learners acquire not only theoretical insights but also the tangible competencies needed for effective innovation in clinical settings.

Building on the EntreComp framework, competency-based approaches to entrepreneurial innovation education further emphasize real-world problem-solving and collaboration with industry professionals, thereby enhancing the relevance and impact of academic programs. Such approaches, which align academic training with labor market demands, have proven to be particularly impactful (Morris et al., 2013), promoting adaptability, resilience, and creativity, which are skills essential in today's dynamic professional environments (Almaleh et al., 2019). This alignment is particularly relevant in nursing, where professionals are uniquely positioned to translate innovative competencies into impactful healthcare solutions.

Nurses are the backbone of every healthcare system in the world. As the largest professional group in the health sector across Europe, they are primarily responsible for care delivery across all levels of the healthcare system, from primary to tertiary care. Nurses' unique and privileged contact with patients, families, and communities positions them ideally to identify emerging health needs and devise practical and sustainable solutions. Thus, the relevance of entrepreneurial innovation education is increasingly recognized in nursing, where the growing complexity of healthcare systems demands creative and adaptive solutions.

Nurses equipped with entrepreneurial innovation competencies can identify service gaps, propose innovative solutions, and implement these ideas through start-ups or intrapreneurial initiatives within healthcare

organizations (Bagheri & Akbari, 2018; Wilson et al., 2012). Such competencies empower nurses to design novel care models, including autonomous clinics or specialized health education programs, thereby improving patient outcomes and service delivery (Parreira et al., 2018). Beyond technical skills, entrepreneurial innovation education cultivates leadership, decision-making, and resource management — attributes critical for addressing evolving challenges in healthcare systems (Béchard & Grégoire, 2005). Despite increasing recognition of the importance of entrepreneurial innovation in nursing, research on training programs specifically tailored to nursing students remains limited. While Europe is home to leading nursing education institutions and research organizations, the nursing profession lags behind others in fostering a cohesive innovation agenda. This disparity is evident in the comparatively lower emphasis on activities such as licensing, patenting, and new venture creation within the field.

Addressing this gap is essential as entrepreneurial innovation education equips nurses with the competencies required to navigate intricate healthcare systems, devise creative interventions, and spearhead meaningful change in practice. This study aims to advance the field by examining the impact of a tailored educational program, underpinned by the EntreComp framework, on senior undergraduate nursing students' perceptions of their entrepreneurial innovation competencies. By situating this study within the EntreComp framework, we provide a structured lens through which to evaluate the development of essential entrepreneurial skills in future nursing professionals, thereby fostering a new generation of nurses proficient at translating innovative ideas into tangible healthcare solutions.

Methods

Study Design and Setting

This before-and-after study was conducted at the Nursing School of Coimbra in Portugal, the oldest nursing institution in the country and one of the leading nursing schools in Europe.

In 2023, a group of senior lecturers with expertise in entrepreneurial innovation developed an educational program titled "Innovation and Entrepreneurship in Health", which was later integrated into the nursing bachelor's program as a mandatory. The program consisted of 54 total hours, including 30 contact hours (14 theoretical and 16 practical) and 24 hours of autonomous work, spanning over an academic semester, from November 2023 to January 2024.

Participants and Study Size

All fourth-year nursing students (n = 268) enrolled in the bachelor's program were invited to participate, as the newly introduced educational program was integrated into their curriculum. A convenience and purposive sampling strategy was applied to include those most likely to benefit from and complete the program. Eligibility criteria required that participants be full-time students, regardless of prior degrees or formal training. Part-time students and those in short-term mobility programs were excluded to minimize post-test bias. Students who did not provide consent were also excluded. Recruitment occurred during the opening session of the educational program, immediately before the baseline (t0) data collection.

Tailored Education Program

The educational program was meticulously developed to address the specific needs of nursing students, fostering competencies in the cognitive, reflective, metacognitive, operative, and psycho-affective domains. The primary objective of the program is to prepare students for the complex and rapidly evolving demands of healthcare innovation, equipping them with essential skills to tackle real-world challenges and contribute to value creation in society. This focus aligns with the broader aim of empowering students to integrate creativity and strategic thinking into their professional nursing practice.

Given the absence of a pre-existing structured curriculum in innovation and entrepreneurship within the healthcare domain, the program was designed based on a comprehensive analysis of national and international programs in these fields. Subsequently, the content was adapted to the healthcare context. This process drew

on the extensive practical expertise of the faculty, which includes up to 37 years of experience in nursing, ensuring contextual relevance and alignment with evidence-based practices.

Program Structure

The curriculum was structured to provide a balanced blend of theoretical instruction, theoretical-practical sessions, and autonomous student work, totaling 54 hours. This comprehensive approach ensured that students gained both foundational knowledge and hands-on experience, fostering a deep understanding of the subject matter. The program used a multidisciplinary approach, seamlessly integrating theoretical frameworks with practical applications to prepare students for real-world challenges in entrepreneurship and innovation within the healthcare sector.

Key topics covered in the program's curriculum included the entrepreneurial process, from the initial stages of idea generation to the goal of value creation. Students are introduced to various ideation and creative techniques, such as brainstorming, SCAMPER, design thinking, and brainwriting, to equip them with tools to generate innovative solutions. The curriculum also included business plan development, encompassing essential components like SWOT analysis, PESTEL analysis (Political, Economical, Social, Technological, Environmental, and Legal dimensions), and financial planning. Additionally, students explore critical aspects of intellectual property and legal considerations, including patent registration, utility models, design, trademarks, and copyrights, ensuring they understand the legal landscape of innovation. The evaluation of Technology Readiness Levels (TRL) was also a focal point, enabling students to assess the maturity of their technological solutions. Practical examples drawn from clinical practice further enriched the learning experience, with a particular emphasis on the development of medical devices and innovative solutions tailored towards the social and healthcare sectors. These examples were carefully selected to inspire students to identify entrepreneurial opportunities that directly enhance patient safety, quality of care, and overall healthcare outcomes.

To achieve these goals, the program adopted a participatory and constructivist pedagogical approach, emphasizing active and collaborative learning. The methodology was designed to engage students through a variety of interactive and practical activities. Interactive lectures, supported by audiovisual resources, introduced fundamental concepts in an engaging manner, while group dynamics and case studies foster teamwork, critical thinking, and creative problem-solving. Text analysis and practical exercises allowed students to examine real-world case studies and articles, contextualizing theoretical knowledge within practical scenarios. A significant component of the program was the development of innovative project ideas, where students were guided through a structured template to articulate their concepts. This template included a summary description of the innovative idea, highlighting its primary characteristics and degree of innovation; identification of the problem or unmet need, supported by theoretical foundations and evidence from databases, reports, or market studies; a detailed value proposition, including competitor analysis and the strengths and weaknesses of the proposed solution; a market study and future perspectives, identifying target audiences and analyzing growth potential; and a strategic plan, incorporating SWOT analysis, marketing strategies, and financial projections.

To further support students, the program provided personalized mentorship, with groups of 5 to 8 students receiving continuous guidance from faculty members. This mentorship ensured that students receive constructive feedback and tailored advice to refine their projects, fostering a supportive learning environment that encourages innovation and excellence. Through this complex but engaging approach, the program equips students with the skills, knowledge, and mindset necessary to become effective entrepreneurs and innovators in the healthcare sector.

The assessment framework was meticulously designed to evaluate both individual and collective performance, ensuring a comprehensive integration of theoretical knowledge with practical applications. Central to this framework was the Innovative Idea Project, which accounted for 15 points and involved a written evaluation of the final proposal. Students were required to follow a structured template, demonstrating their ability to articulate theoretical concepts effectively while developing innovative and practical solutions to real-world challenges. This component emphasized not only the depth of their understanding but also their capacity to translate ideas into actionable proposals.

In addition to the written component, the assessment included an Oral Presentation, valued at 3.5 points, which took the form of a pitch. This element was designed to evaluate students' communication skills, clarity of expression, and their ability to defend their ideas convincingly in an academic setting. The pitch format encouraged students to present their proposals succinctly and persuasively, mirroring real-world scenarios where the ability to communicate complex ideas effectively is paramount.

Furthermore, the framework incorporated a Participation in Activities component, worth 1.5 points, which employed qualitative criteria to assess students' active engagement in group dynamics and classroom debates. This aspect of the evaluation emphasized the importance of collaboration, critical thinking, and constructive dialogue. To complement this, students were required to submit a critical written reflection on the curricular unit, providing insights into their learning journey, their contributions to group activities, and their personal growth throughout the process. Together, these components created a holistic assessment approach that not only measured academic and practical competencies but also fostered a culture of active participation, reflection, and continuous improvement.

In addition to technical proficiency, the program places a strong emphasis on fostering interpersonal skills such as teamwork, leadership, and effective communication. These competencies are crucial for collaborating across diverse teams and leading initiatives that drive meaningful changes in healthcare. Furthermore, the program nurtures a culture of entrepreneurial innovation, encouraging students to think creatively and strategically. This mindset not only enhances their ability to address current challenges but also empowers them to create value for society by anticipating and leveraging emerging opportunities.

Thus, by aligning with the best pedagogical practices and integrating cutting-edge innovation methodologies, the program positions students as key agents of transformation in the healthcare sector. It equips them with the tools and mindset necessary to thrive in complex and dynamic environments, preparing them to tackle pressing challenges and seize opportunities that contribute to the advancement of healthcare systems globally. Through this holistic approach, the program aims to develop future leaders who are not only skilled and knowledgeable but also deeply committed to driving positive changes in the field of healthcare.

Variables and Data Sources

The study primarily focused on assessing students' entrepreneurial innovation competencies, using the European Union's Entrepreneurial Competence Framework (EntreComp) as a guide. EntreComp outlines 15 competencies divided into three domains: Ideas and Opportunities (D1), Resources (D2), and In Action (D3) (Bacigalupo et al., 2016). According to the original authors, these 15 competencies are interrelated and should be considered as a cohesive whole.

To measure these competencies, an anonymized, paper-based self-assessment questionnaire was administered to students at two points: during the first session (before the educational intervention) and at the final session (after the groups had presented their projects). The questionnaire consisted of two sections. The first section gathered sociodemographic information, including details about previous training in entrepreneurial innovation and any close contact students may have had with entrepreneurs within their families or communities. The second section was based on the competency descriptors of EntreComp, comprising 60 closed-ended questions scored on a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Internal consistency ranged from .951 (Ideas and Opportunities) to .978 (In Action), with a Cronbach's alpha of .968 for Resources. The questions were based on the previously official translation to European Portuguese of EntreComp (Dias-Trindade et al., 2020).

Final scores were interpreted using a level progression model, where lower scores indicated a foundation level of competency, and higher scores reflected an expert-like development in entrepreneurial innovation (Table 1). The average time to complete the questionnaire was approximately 30 minutes.

Table 1: Threshold values for profiles by dimension.

Profile	D1	D2	D3
No defined profile	0–24	0–23	0–24
Foundation	25–53	24–63	25–63
Intermediate	54–89	64–103	64–103
Advanced	90–124	104–140	104–146
Expert	125–142	141–156	147–161

Source: Developed by authors.

Statistical Methods

The statistical analysis was conducted using the Statistical Package for the Social Sciences (SPSS, version 29.0; SPSS Inc., Chicago, IL). The normality of the variables was assessed using skewness (Sk) and kurtosis (Ku) coefficients, with thresholds set at $|Sk| < 3$ and $|Ku| < 10$, as per established guidelines for large-sample data. No variables were found to violate the assumption of normality during this preliminary assessment, ensuring the suitability of parametric statistical techniques.

Inferential analysis was conducted to evaluate the impact of the training program on participants' performance across the three skill domains: ideas, resources, and action. This analysis compared pre-test and post-test average scores to determine whether the observed differences were statistically significant and reflected meaningful improvements.

To address missing data, a regression imputation method was employed to estimate and replace missing values (Refaat, 2007). This approach leverages relationships among the observed variables to predict missing values, preserving the integrity and consistency of the dataset.

Ethics

This study adhered strictly to the ethical principles outlined in the Declaration of Helsinki, ensuring the protection of participants' rights, dignity, and well-being throughout the research process. Participation in the study was entirely voluntary, and students were provided with a detailed briefing about the study's objectives, procedures, potential risks, and benefits prior to their enrollment. Written informed consent was obtained from all participants, affirming their understanding of the study and their willingness to take part.

To maintain confidentiality, measures were implemented to safeguard participants' data. Anonymity was ensured by not collecting any personally identifiable information, and data were analyzed in an aggregated format to prevent the identification of individual responses. Additionally, participants were informed of their right to withdraw from the study at any time, without providing justification and with no consequences to their academic standing or participation in related coursework. Researchers made every effort to minimize any potential discomfort or burden on participants, emphasizing transparency and respect throughout the study process.

Results

During the initial phase of the study (t0), a total of 268 students from four different senior year classes agreed to participate by completing the self-assessment questionnaire. This cohort represented approximately 87.0% of the entire senior year population, ensuring a robust and representative sample for the baseline assessment. The high initial participation rate reflects the students' interest and the relevance of the study's objectives to their academic and professional development.

However, due to the burden associated with the response time required for the comprehensive self-assessment scale, it was deemed necessary to limit the post-assessment (t1) phase to a more manageable subset of participants. To address this, one class was randomly selected from the original cohort to complete the

questionnaire after the educational intervention. This decision aimed to reduce the potential fatigue and time burden for the entire cohort while maintaining the validity and reliability of the study's findings.

As a result, 52 students (19.4% of the original cohort) from the randomly selected class participated in the post-intervention self-assessment. This smaller sample size was deemed sufficient to provide meaningful insights into the changes in students' scores across the three assessed skill domains. Random selection ensured that the subgroup was representative of the broader cohort, minimizing selection bias. Detailed results for each subgroup, organized by study phase, are presented below.

This approach reflects a balanced consideration of logistical constraints, participant well-being, and the integrity of the study design. By focusing the post-intervention assessment on a random sample, the study was able to maintain its methodological rigor while respecting the time and effort required from participants.

Assessment Before the Educational Intervention

The average age of respondents was 22.47 years (SD = 4.81), indicating moderate variability around the mean (Table 2). Gender distribution revealed a predominance of female participants (*n* = 229; 85.4%), consistent with demographic trends in Portuguese nursing programs.

A total of 69 students (25.7%) reported having family members who are entrepreneurs, while 67 students (25.0%) identified themselves as entrepreneurs. Similarly, 65 students (24.3%) indicated they had previously conceived an innovative idea, reflecting a reasonable degree of creativity and opportunity recognition within the group. Among those who had innovative ideas, 15 (23.1%) had successfully implemented them, highlighting a moderate transition rate from ideation to execution. This finding suggests an opportunity to explore potential barriers to innovation and implementation within this cohort.

Furthermore, 252 respondents (94.0%) acknowledged being exposed to entrepreneurship concepts within their HEI, indicating widespread availability of entrepreneurship-related education and resources in their academic setting.

Table 2: Demographic and background characteristics by group.

	Mean (SD) Min-Max	**p-value G1 vs G2**
Age	22.47 (4.81) 20–56	.834[1]
	n (%)	**p-value G1 vs G2**
Nationality (*n* = 268)		.707[2]
Portuguese	256 (95.5)	
Brazilian	12 (4.5)	
Gender (*n* = 268)		.124[2]
Male	38 (14.2)	
Female	229 (85.4)	
Rather not say	1 (.4)	
Marital status (*n* = 268)		.951[3]
Single	251 (93.7)	
Civil partnership (*união de facto*)	5 (1.9)	
Married	11 (4.1)	
Widower	1 (.4)	
Experience with mobility programmes, yes (*n* = 268)	67 (25.0)	.074[3]
Entrepreneurs in the family, yes (*n* = 268)	69 (25.7)	.829[3]
Professional activity (*n* = 268)		.122[3]
No	228 (85.1)	

Yes, as an employee	25 (9.3)	
Yes, self-employed	15 (5.6)	
Do you consider yourself an entrepreneur, yes (n=268)	67 (25.0)	.721[3]
Have you ever had an innovative idea, yes (*n* = 268)	65 (24.3)	.561[3]
Did you implement that idea, yes (*n* = 65)	15 (23.1)	**.014**[3]
Have you heard about entrepreneurship in your institution, yes (*n* = 268)	252 (94.0)	.754[3]

[1] Pearson correlation; [2] Student's t-test; [3] Chi-Square test

Source: Developed by authors.

In the initial assessment, students scored an average of 56.17 (SD = 24.59) in the *Ideas and Opportunities* domain (D1), with scores ranging from 0 to 128. The distribution of profiles showed that most students were in the foundational profile (44.4%, *n* = 119), followed by the intermediate profile (38.4%, *n* = 103). A smaller proportion of students self-assessed themselves at the advanced (9.7%, *n* = 26) and expert (0.7%, *n* = 2) levels.

In the *Resources* domain (D2), the average score was 65.68 (SD = 30.00), with scores ranging from 0 to 156. Here, half of the students (50.0%, *n* = 134) were in the foundational profile, while 33.2% (*n* = 89) were at the intermediate level. A smaller proportion achieved the advanced (10.8%, *n* = 29) or expert (1.5%, *n* = 4) levels.

In the *In Action* domain (D3), students had an average score of 73.41 (SD = 34.34), with a range from 0 to 152. The distribution of profiles showed 38.4% (*n* = 103) at the foundational level, 31.0% (*n* = 83) at the intermediate level, and 23.5% (*n* = 63) at the advanced level. Only 1.5% (*n* = 4) of students self-assessed at the expert level in this domain.

Assessment After the Educational Intervention

Among the sub cohort that scored the questionnaire for a second time (*n* = 52), the distribution of profiles in each domain showed a predominance of intermediate-level students. For the *Ideas and Opportunities* domain (D1), 42.3% (*n* = 22) of students were at the intermediate level, followed by 30.8% (*n* = 16) at the advanced level and 21.2% (*n* = 11) at the foundational level. In the *Resources* domain (D2), 48.1% (*n* = 25) were at the intermediate level, 28.9% (*n* = 15) at the advanced level, and 21.2% (*n* = 11) at the foundational level. Concerning the *In Action* domain (D3), 44.3% (*n* = 23) were intermediate, 34.6% (*n* = 18) were advanced, and 19.3% (*n* = 10) were at the foundational level. Expertise was minimally represented, with only 3.8% (*n* = 2) achieving expert-level self-assessment in the *Ideas and Opportunities* domain, and no students reaching the expert level in the *Resources* or *In Action* domains.

A comparison of the average EntreComp scores for this post-intervention cohort with those of the initial sample revealed no statistically significant differences between the two groups (Table 3).

Table 3: Comparison of scores between the one-assessment and two-assessment groups before the educational intervention.

	Mean (SD)[1] Group 1	Mean (SD)[2] Group 2	t	p-value	Cohen *d*
t0 - Ideas and Opportunities	56.88 (24.95)	53.21 (23.03)	.966	.335	.153
t0 - Resources	66.02 (30.19)	64.23 (29.40)	.386	.700	.060
t0 - In action	74.71 (34.95)	68.02 (31.44)	1.262	.208	.201

[1] n = 216;[2]n = 52

Source: Developed by authors.

Before and After the Educational Intervention Comparison

The inferential statistical analysis, conducted exclusively on students who completed both assessments, revealed significant differences before and after the educational intervention. As detailed in Table 4, we found statistically significant differences in students' self-assessment scores across all three EntreComp domains.

Table 4: EntreComp scores comparison before (t0) and after (t1) the educational Intervention.

	n	Mean (SD) Min-Max	difference between t0-t1			
			t	p-value	*d*	*d* CI 95%
D1	52	76.54 (28.16) 18-131	-5.51	<.001	-.764	-1.071; -.452
D2	52	81.31 (30.13) 22-139	-4.38	<.001	-.607	-.901; -.308
D3	52	86.94 (31.00) 22-146	-4.50	<.001	-.623	-.918; -.323

D1 — Ideas and Opportunities; D2 — Resources; D3 — In action

Source: Developed by authors.

Discussion

Based on a detailed analysis of the sample's descriptive statistics, it is possible to observe specific characteristics that help to contextualize and interpret the effects of the training. Firstly, most students report little previous experience in entrepreneurial environments, with only 25.0% considering themselves entrepreneurs and 25.7% reporting a family history of entrepreneurship. This data suggests that the students started the training with limited knowledge of entrepreneurship, which may have intensified the impact of the intervention, as the training introduced new skills and approaches for most of the participants. Family experience in entrepreneurship, when present, acts as a moderating factor, strengthening students' self-confidence and efficacy during entrepreneurial training. This relationship can positively influence the response to training, especially among students who do not have a previous solid foundation in entrepreneurship, making them more receptive to the new skills acquired (Sousa et al., 2018). In addition to this aspect, some studies indicate that entrepreneurship training has a more significant effect on individuals with little or no previous business experience. This is because intensive training introduces skills and increases self-efficacy among participants who initially have limited knowledge, favoring the absorption of new practices and concepts (Lyons & Zhang, 2018; Michaelides & Davis, 2016).

In addition, the demographic composition of the sample demonstrated a predominantly young and studying full-time, with an average age of 22.47 years and 85.1% not working, indicating a profile of students still in the early stages of their careers. This profile may influence their receptiveness and plasticity to new learning and skills, particularly in areas that have not yet been explored, such as entrepreneurship in the context of nursing. The lack of professional experience may paradoxically have facilitated the adoption of entrepreneurial skills, since the students were less anchored in pre-established practices. Training young entrepreneurs, especially those without significant professional experience, tends to have a more profound impact, as they are less anchored in established practices and more open to new approaches. This youthful profile favors a cognitive plasticity that facilitates the internalization of entrepreneurial skills, as suggested by studies that observe that youth and a lack of consolidated experiences amplify the positive effect of training on self-efficacy and innovation (Gielnik et al., 2017; Urban, 2020).

The predominance of female students (85.4%) is in line with the profile present in Nursing, which is also relevant given that some studies suggest gender differences in self-efficacy and entrepreneurial intentions. This predominant female profile, combined with low prior exposure to entrepreneurship, may have influenced both the initial response to the training and the self-critical reassessment of their competences after the intervention (Molino et al., 2018; Polin, 2022).

Regarding the impact of the training, the results show significant gains in the average scores of all three EntreComp domains ("Ideas and Opportunities", "Resources" and "In action") after the intervention. These

findings are in line with the literature, namely the study by Boldureanu et al. (2020), which indicates that entrepreneurship education plays a central role in the development of innovative skills, attitudes and behaviors, especially when programs are structured to explore specific skills in real contexts. The finding that all three domains benefited from the training suggests that the program was effective in providing a balanced educational experience that enables students to develop both the ability to Ideas and Opportunities and to mobilize resources and act innovatively.

This improvement in multiple practical competences is also consistent with the arguments of Béchard and Grégoire (2005), who argue that training based on competency models - especially that focused on solving concrete problems and interacting with the professional environment - generates a deeper and more lasting impact on the development of competences. The practical application of knowledge, combined with interactive and dynamic methodologies such as projects and simulations, facilitates an effective transition from theory to practice, which is reflected in the students' gain in competences in the three EntreComp domains.

Additionally, the results support the notion that exposure to teaching methodologies based on challenges and problem-solving allows for growth that transcends technical competences, including the development of a resilient and adaptable mindset. This is particularly relevant to the field of nursing, where the ability to innovate and identify creative solutions becomes essential in a constantly changing healthcare environment. Nursing students who take part in entrepreneurial training develop a broader perception of healthcare, visualizing new possibilities for implementing changes and improvements, both in traditional clinical settings and in broader entrepreneurial initiatives.

However, the reduction in the Expert profile at time t1 reveals a relevant phenomenon: while the average score increased, the number of students who self-identified at the Expert level decreased. This effect may reflect a more critical and realistic self-perception, something that is common in training contexts that challenge students to reflect deeply on their competences (Liu et al., 2015; Liu et al., 2019). Exposure to new concepts and the need to reflect on specific assessment criteria for each domain may have led students to adopt a more cautious and considered stance in their self-assessment. This change in self-perception, which often occurs in professional maturation processes, demonstrates that the training not only increased competence, but also promoted greater self-awareness, in line with Crespí et al. (2022) study about the challenge and impact of project-oriented entrepreneurial education.

Limitations

Our study provides promising evidence of the impact of innovation and entrepreneurship training on the development of entrepreneurial innovation skills and mindset in nursing students, showing significant improvements across the three EntreComp domains. However, data collection after the educational intervention was only possible for approximately one fifth of the initial sample. This limited follow-up may introduce bias, as the characteristics of this subgroup could have influenced the results, reflecting both sample-specific and contextual factors.

While these limitations do not undermine the findings, it highlights the need for further research in this field. We believe that conducting multicenter studies across various HEIs would enhance the external validity of these results, providing a more nuanced understanding of how contextual factors (e.g., pedagogical approaches, student demographics, and prior experiences) influence the development of entrepreneurial innovation skills and mindset in nursing education. Additionally, based on our experience, it is important that future studies develop specific measures to increase the potential adherence to the data collection.

Finally, our findings reflect students' self-perceptions of their entrepreneurial innovation skills and mindset, which may be influenced by individual and contextual factors. Future studies should complement self-assessments with objective measures of actual competency to provide a more accurate evaluation of students' entrepreneurial skills and mindset.

Practical Implications

Training in innovation and entrepreneurship proved to be effective in promoting an entrepreneurial mindset among nursing students, an area in which such skills are increasingly valued. The gains in the three domains (Ideas and opportunities, Resources and In action) point to a potential practical application of these competences in healthcare contexts. The skills developed enable nurses to identify gaps in care, propose creative solutions and contribute to the continuous improvement of health services, whether in traditional clinical settings or in entrepreneurial projects such as independent clinics or specialized home care initiatives (Loke, 2019).

The increase in self-awareness suggested by the reduction in the Expert profile can be seen as a practical advantage: nurses with a realistic assessment of their competences are more likely to identify areas for improvement and continuous training, increasing the quality of the services they provide. These results suggest that the inclusion of entrepreneurial training in nursing programs can not only increase technical competence, but also foster a critical and reflective stance, essential for professional practice in complex and rapidly evolving environments.

Implications for Education

This study reinforces the importance of pedagogical methodologies that integrate theory and practice in entrepreneurship training. Evidence suggests that interactive approaches, such as solving real problems and simulating innovation scenarios, are particularly effective for developing entrepreneurial skills (Béchard & Grégoire, 2005). By reducing the gap between theory and practice, these methodologies provide a robust learning experience that prepares students for professional practice.

The results of this study also highlight the role of entrepreneurial education in nursing as a vehicle for increasing students' confidence in making informed decisions and implementing creative solutions (Gielnik et al., 2017; Urban, 2020). Training in innovation and entrepreneurship in nursing programs not only prepares students to respond to traditional healthcare challenges but also gives them the tools to innovate and contribute to the evolution of the sector.

The training, by integrating EntreComp principles with a practical and interactive approach, seems to have enabled students not only to achieve greater technical knowledge, but also to incorporate entrepreneurial attitudes and behaviors that are central to meeting the current challenges of the healthcare sector. Thus, this study contributes to the understanding of how a solid and applied entrepreneurial education can be transformative, equipping future nurses with the necessary tools to innovate, lead and respond adaptively and effectively to the complex demands of the sector.

Conclusion

This study's findings suggest that a tailored educational program focused on innovation and entrepreneurship, grounded in the EntreComp framework, effectively enhances senior undergraduate nursing students' perceptions of their entrepreneurial innovation competencies. The observed improvements across the three EntreComp domains indicate that the program not only imparted technical knowledge but also fostered a critical and innovative mindset crucial for modern nursing practice. The shift in self-assessment from an expert/advanced profile to more balanced competencies highlight a mature, reflective understanding of entrepreneurial roles and expectations, preparing students to meet the evolving demands of the healthcare sector.

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Author 1: Dipak Tatpuje, VidyaDeep Foundation, India, dipak.tatpuje@gmail.com.
Author 2: Vaibhav Jadhav, Savitribai Phule Pune University, India, vaibhav.jvg@gmail.com.
Author 3: Rupali Shewale, VidyaDeep Foundation, India, rupalishewale@gmail.com.
Author 4: Avinash Ganbote, SVPM Institute of Management, India, avinashganbote11@gmail.com.

Abstract

In the era of Social Entrepreneurship Education (SEE), it is found that there is no scientifically developed and contextual SEE framework for understanding needs of the society. In this context, this paper contributes in preparation of such a framework for the curriculum of Social Entrepreneurship Education (SEE). It is based on a literature survey and feedback from social entrepreneurs. This framework considers both the practical and academic aspects. This study is designed to explore the competencies, practical and field aspects of curriculum for SEE along with the proposed framework. In this research, a mixed methods approach is used. Literature survey and primary data of both quantitative and qualitative nature were used to provide a unified understanding of this research problem. In this study, researchers have contended that project-based and experiential learning is an effective method for the delivery of SEE. This curriculum framework can fill lacunas those came out in survey with interviewing the social entrepreneurship functionaries of rural and urban area. Practice based curriculum is found useful to empower social entrepreneurs. Various methodical ways of advanced thinking processes can be applied further in this research. Research output addresses and gives more importance to practical aspects, faced by the social entrepreneurs. It also gives light on the effect of policy implications. It gives framework with consideration of field aspects faced by the social entrepreneurs with curriculum for the capacity development. literature survey and primary collected field data and its analysis gave new insight to address the identified problems faced by the social entrepreneurs.

Keywords: Community Service Organizations Social Entrepreneurs; Practice-Based Curriculum; Social Entrepreneurship; Social Entrepreneurship Education Framework; Socioeconomics.

Introduction

In the competitive world, effective capacity building through education and training is very extensive in innovative local development and at the same time this is useful for generating inclusive, sustainable, and resilient local thrifts and communities at local and global level. Social entrepreneurs, being a change agent, support creative thinking for the public welfare and upgrade the change in social structure (Oberoi et.al., 2021). Social innovation is an investigative domain that is closely connected with social entrepreneurship because all individuals are discovering new channels for upgrading their social and economic dimensions in the system (Lisetchi & Brancu, 2014). These needs SEE curriculums more robust, scientifically developed and contextually relevant to address societal problems. Recently social entrepreneurship has gained momentum due to its socioeconomic importance in the business, education, and social paradigm. The concept of social entrepreneurship in curriculum framework rises as a significant component that is responsible for the well-being of everyone in its social and economic growth and social entrepreneurship is a determining factor for social and economic sustainability (Wang, 2022).

Social entrepreneurship has significant impact on organization and institutional development which also helps them in achieving sustainable development of society, national, regional and at global level (Kozlinska et al.,

2020). Hence it is very obligatory to study the role of social entrepreneurship to utilize sustainable economic development for society's well-being. Perhaps, social entrepreneurs are competent enough in attaining sustainability by discovering new possibilities through training on online platforms. These training programs can be implemented by merging the social entrepreneurship activities in the curriculum framework on online platforms which would be accessible from anywhere for anyone. Therefore, social entrepreneurship works for the betterment of society (Barberá-Tomás et al., 2019).

The focus of social entrepreneurship is to foster new dimensions of high income and create new possibilities (Battesti & Petrella, 2013). Hence social entrepreneurial activities incline to impart positive modification into society and work toward economic development. Therefore, it is seen that social entrepreneurship is closely associated with economic and social growth. Some studies analyzed the link between social entrepreneurship and sustainable economic development. Various studies showed a significant connection between these constructs. According to Al-Qudah et al. (2022), who investigated the function of social entrepreneurship on economic development from an economic growth standpoint, the investigation found that social entrepreneurship is positively related to sustainable development.

The policymakers or system can boost their morale at higher level by giving them remarkable acceptance. Social entrepreneurs must be motivated by providing support to their numerous social entrepreneurial activities which can be in offline or online modes. Perhaps, it will boost their universal capacity building, skills development required for economic prosperity and continuity of a stable Social Entrepreneurship. Social entrepreneurs serve for society without asking for any concrete in return. Examining the policy context for social enterprises in the UK, we argue for a comprehensive educational approach to meet the needs of social entrepreneurs and other stakeholders associated with social enterprises. We separate out the requirement of business competence and entrepreneurial capability that will enable the social entrepreneur and his team to assure the sustainability of the enterprise (Chell, E., Karatas-Ozkan, M., & Nicolopoulou, K. 2007) Hence authorities support can encourage their morale. Moreover, few studies have shown that creativity and discovering the opportunities in work and upgrading your potential through social activities have significant impact on social entrepreneurship and sustainable economic growth.

Objectives of the Study

1. To explore information on the current scenario and practices of Social Entrepreneurship Education (SEE) in academia and professional practices and policies for the SEE.
2. To identify parameters for the Social Entrepreneurship Education.
3. To identify gaps between challenges and opportunities in Social Entrepreneurship Education focusing on skills.
4. To design a Curriculum Framework for SEE and provide recommendations for SEE.

Literature Review

. Skivko et al. (2023) described that the existing research on social entrepreneurship lacks an integrated framework that includes the key drivers that promote sustainable solutions for social business. It shows that there is need for developing practice-based curriculum on SEE with framework. Social entrepreneurship is gradually becoming a crucial element in the worldwide discussion on volunteerism and civic commitment. It interleaves the passion of a common cause with industrial ethics and is notable and different from the present other types of entrepreneurship models due to its quest for mission associated influence (Gandhi & Raina, 2018). Shahid & Alarifi, G. (2021) described Social Entrepreneurship (S-ENT) learning programs as context-specific and deeply influenced by the cultural and socio-economic elements characterizing the S-ENT ecosystem in which they take place. Context-specification was one of the points of view for the consideration of designing framework. The flourishing student interest in area of social entrepreneurship is another rare but hopeful start-up for skill development in entrepreneurship (Tracey & Phillips, 2007). The knowledge and skills taught from universities regardless of the academic or cultural background can be used to balance the social problems in the community with the development of social innovation to solve the issues (Roslan et al., 2022). The young

generation is gaining interest in resolving societal challenges on large scale around the world (Youniss et al., 2002). Social entrepreneurship education is one of the fastest-growing subject areas in the world. Despite these developments, scholars and practitioners are far from reaching a consensus about "what" and "how" to educate social entrepreneurship (Alourhzal & Hattabou, 2021). By the 2000s, entrepreneurship acts as a tool for the young generation in formulating as social transformers (Spinosa et al., 1999). SEE is essential to address the problems of society with consideration of local context. Here, the SEE framework plays a role to make it more practical for the field implementations. Therefore, such curiosity can be imparted as a part of curriculum which can boost deep understanding and utilize theoretical knowledge to hands-on effort in meaningful ways for students. Various business corporates can also involve and show their participation with their financial capital in such activities though there are challenges in the SEE in higher education. It was categorically described by Roslan et al. (2022) with some best practices including more SE awareness programmes, university management in solving funding problems, preparing SE coaching professionals, and setting up more university-industry collaborations.

Thinking processes to address the social problem are important with critical and complex processes as specifically narrated by Vázquez-Parra et al. (2022) as an interest in social entrepreneurship, since an alternative to solve local problems can also be noted, on topics such as alternative economies, social economy, agency for change, social activism, social work, and knowledge transfer. Thus, it is noticeable how, thematically, the studies combined social entrepreneurship and complex thinking as commonly relevant tools to address and solve environmental problems. Training social entrepreneurship through previous family entrepreneurship experiences influences the development of complex-thinking sub-competencies (Ibarra-Vazquez et al. 2023). These aspects are found useful to map the various parameters in this study.

Cognitive competencies are easy to explain and assess as compared to non-cognitive competencies. SEE is now also the part of the university courses based on certain competencies and promotion strategies for social impact. Students taking general entrepreneurship courses can be motivated by projects having a social impact; they can feel even more capable in their entrepreneurial skills than students taking social entrepreneurship courses (García-González & Ramírez-Montoya, 2021). The non-cognitive competencies require learning by doing and are more complex for the evaluation process (Moberg, 2014). The present educational policy focus on high quality standardized testing, international assessment procedures and institutional rankings emphasize cognitive competencies, not non-cognitive ones. Hence it narrows the output of the curriculum, teaching methods, and reduce the professionalization of teachers (Ball, 2003; Young & Muller, 2010). With the help of heuristic, project-based and experiential learning techniques, teachers, or teacher educators can deliver divergent necessities of budding entrepreneurs at various levels of their learning process (Kolb, 1984). The project-based learning model is effective for improving entrepreneurial learning outcomes as evidenced by an increase in the average post-test score compared to the pre-test (Affandi et al., 2021). Therefore, the ones in the learning process enhance their skills and sometimes students who already work in social enterprises or organizations are more skilled due to their experiences and working on fund-raising projects (Chang et al., 2014).

Positive beliefs play an important role in students' achievement which is interconnected to positive performance (Bandura & Locke, 2003); it pinpoints the importance of self-efficacy. The beliefs of self-efficiency make a difference in person's thinking of self-upgrading and progressive ways, how they maintain patience, self-motivate and face difficult situations, emotional well-being and tolerate stress and depression (Bandura & Locke, 2003). Mentor gives a positive behaviour model which replicates results and experience which proves as a powerful trigger of attitudes and values which reinforce fruitful learning (Alred & Garvey, 2000). Saripah et al. (2022) concluded in their study that mentoring is a kind of accompaniment to support and encourage students to develop their businesses. Business developed in social entrepreneurship, both commercial and non-commercial, is related to scientific development of community education. Mentoring can encourage aspiring entrepreneurs to facilitate marketing and to implement their developed business plans. Mentoring in SEE is one of the ways of developing competencies among the learners of social entrepreneurship.

Blaschke (2012) has pointed out that the term heutagogy is obtained from the Greek for "Self". The concept of heutagogy is advanced from the study of self-determined learning and has become a popular approach to use in the higher education sector (Canning, 2010; Halsall et al., 2016; Snowden & Halsall, 2016). The benefits that accrue from a self-determined approach to learning are significant not only for individual learner, but most probably for society as a whole (Hase & Kenyon, 2013). When learners are competent, they demonstrate the acquisition of knowledge and skills; and skills can be repeated and knowledge retrieved. When learners are capable, skills and knowledge can be reproduced in unfamiliar situations. Capability is then the extension of one's own competence, and without competency there cannot be capability Blaschke (2012).

Promotion of positive attitudes towards social entrepreneurship can be an introductory step towards social enterprise formation in young people. For this achievement, the caliber of the young generation must be attracted into the sector by merging social entrepreneurship within entrepreneurship education activities in schools, vocational education and training colleges and universities. This can be a crucial factor in broader strategies for promoting social entrepreneurship amongst young people on a large scale and in less time (OECD, 2013).

Social entrepreneurship education is a link or connection between traditional teaching methods and new experiential learning; a bridge between knowledge and practical application; a link between schools, businesses, and communities; and a bridge between nations. Through this process, teachers and entrepreneurs, along with brokers and facilitators, produce new value in the education course. Schools arranged programmes and make volunteers in order to develop and foster entrepreneurship skills in students which will be helpful for them to understand the challenges and discover opportunities by supporting schools to operate innovation labs, makerspaces and laboratories. Excellent knowledge is created, inducing the whole curriculum. Many of the best examples of social entrepreneurship education have been initiated by social entrepreneurs. They bring the revolution, vision, and expertise of the social enterprise sector into schools (OECD, 2015).

Methods, Data Collection and Analysis

Literature review was done with seventy research papers using SCOPUS and Google Scholar database. The searching keywords like Social Entrepreneurship Education, Social Entrepreneurship framework, Social Entrepreneurship curriculum, Social Entrepreneurship programs, Global scenario of Social Entrepreneurship, Parameters of Social Entrepreneurship Education, Social Entrepreneurship Policies etc. were used to access the research papers for this study. Primary data was used for comparison, collected from the thirty Chief functionaries of Community Service Organisations (CSOs) running Social Enterprises located in a state of Maharashtra. This data collection was carried out through interviews and questionnaire through online survey tools even with web and mobile phone gadgets. Google Forms, Google Meet, Slido and Mentimeter tools were used to collect the data. Questionnaire was designed with the seven parameters defined for the SE by Wagner (2010) and defined set of questions for qualitative data. The primary data set and literature review and its analysis were done for this study to draw further inferences and conclusions. The statistical data was analysed with MS Excel to define priorities given by the chief functionaries of the CSOs for capacity building and to design the curriculum of the SEE. The qualitative data of the interviews was organised in different pieces and summarised in descriptive codes to draw inferences about the practical aspects of the SEE. HyperRESEARCH was used limited to find descriptions and notes for each parameter code and further frequency of the text. It was related to the current context, available policy statements known to them, expected outcome standards of SEE, structure of training for capacity development, curriculum, contents, and specific instructional methodology.

In this research, mixed methods approach is used. it is an approach to inquiry in which the researcher links, in some way (e.g., merges, integrates, connects), both quantitative and qualitative data to provide a unified understanding of a research problem (Creswell & Plano Clark, 2007). In this research, rating scale and interview tools were used for data collections. Therefore, quantitative, and qualitative data were gathered and analysed accordingly. The extensive reviews were used for understating current scenarios and practices of Social Entrepreneurship Education (SEE) in academia and professional practices. Reports of various educational

institutions like TISS and Ashoka University etc have been duly referred for the study. It is imperative to note that the most prominent contributions are imitated in this paper. The foremost databases referred to in this case are Google Scholar, Science Direct, Taylor and Francis, Books, and training manuals to identify and review the papers. The data and information were collected to identify the need and parameters in the development of a social entrepreneurship curriculum framework. The sample was 22 people from rural area and 8 people from urban area as a social entrepreneur functionary.

Analysis and Interpretation

The present study is based on specific objectives, which it justifies also. The objectives have been selected to keep the significance and rationality of the research title in mind. The following are the objectives which this research study intents to achieve.

1. Current Scenario and Practices of Social Entrepreneurship Education (SEE) in India

The social entrepreneurship education is reinforced by various crucial skills like teamwork, problem-solving and decision-making skills with technology expertise from internet-based online platforms; and social media. It can upgrade encouragement and cooperation with exchange of ideas and other valuable information related to social entrepreneurship related to fresh ideas and new perceptions. With these benefits, the online platforms and university social media has augmented high acceptance rate among learners (Roslan et al., 2022).

There is tremendous rise of academic institutions those started social entrepreneurship academic courses in regular PG program or diploma program. Social entrepreneurship education is developing in India as many higher education institutions are engaged in social enterprises are emerging nowadays. The Tata Institute of Social Sciences (TISS) was one of the first academic institutions to introduce an academic curriculum on social entrepreneurship as two years regular PG course i.e., M.A. in Social Innovation and Entrepreneurship in 2007. The course is designed for those who trust that social innovation and enterprise can toil as a device for social change. At present, there are other universities and AICTE-approved institutions like Ambedkar University, New Delhi, Azim Premji University, Bangalore, SVKM's Narese Monjee Institute of Management, Mumbai, Institute of Rural Management, Anand and Entrepreneurship Development Institute of India, Gandhinagar are projecting academic institutions that offer courses either as a one- year diploma or two years PG degree on social entrepreneurship. However, various higher institutions are employing their proficiency by exploring social entrepreneurship (Kumar et al., 2021).

The focus of SE in HE leads to the process of discovering experiential learning through an environment that is further shifting from the traditional role of learning process. The goal of SE in education is to have the students develop their abilities as social entrepreneurs with adequate knowledge and skills (Solomon & Ramani, 2019). In HE, SE helps to improve the quality of education and individual personalities by being sensitive to the surrounding problems and exploring innovative solutions for existing problems (Sarıkaya & Coşkun, 2015). Even though SE is a new area of learning, HE has begun attention to SE for developing students' entrepreneurship skills for social responsibility awareness. It is important to assess the scale of SE in HE, not only to inculcate entrepreneurship skills but also to define the characteristics of social entrepreneurs (Capella-Peris et al., 2020). It focuses on promoting and assisting the population and further to adopt the importance of social engagement. SE is a one of the areas that can be successfully integrated to the environment of HE to encompass giving back to society by providing actions for desirable outcomes for livelihood of the common man.

Students enrolled in cultivate SE with the communities with considering possible opportunities may carry out in the future new and innovative social initiatives. By transferring the knowledge of SE through experience, HE can increase awareness and sensitivity to social problems (Dobele, 2016). One of the ways to tackle social problems is to identify the social problems closest to the surroundings of the university (i.e., local problems) and provide innovative solutions through the SE curriculum. The students are given opportunities to engage and contribute solutions to social problems and improve their learning skills and develop professional attitudes. Government

support for SE in education will demonstrate that both employability and the more aspiring goals of a more sustainable and fairer economy will improve achievement in literacy and numeracy.

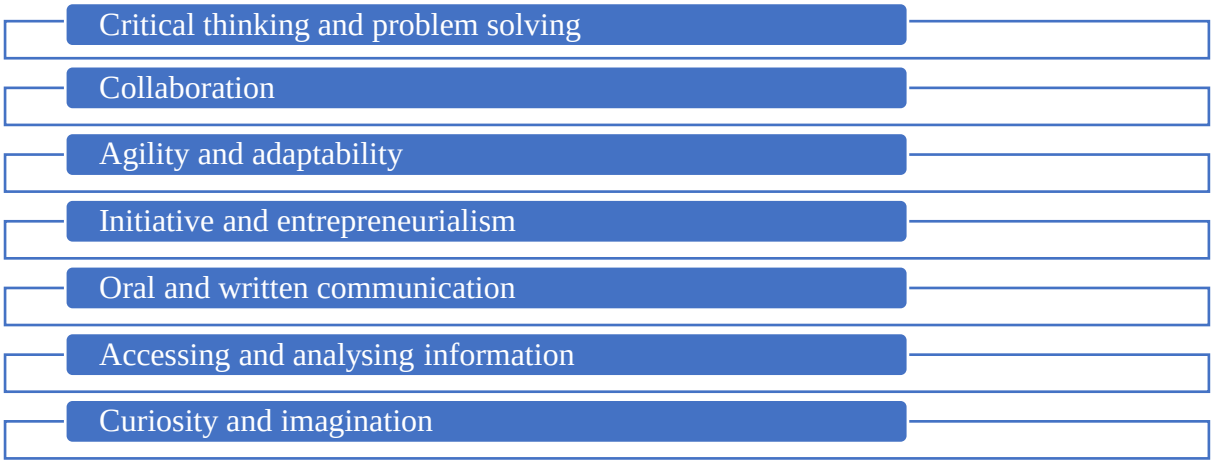
SE is an important field in academia because it helps to shape the young people especially students with positive attitudes, skills, and mindsets for addressing social needs in addition to developing sustainable economic growth. Hence, teaching SE subjects requires relevant skills and capabilities in both academic and research aspects (Dobele, 2016). According to Pache and Chowdhury (2012), Social Entrepreneurship in higher education (HE) can be developed through several implementations. These involve the introduction of SE courses as faculty initiatives, organization of SE events by the university, and comprehensive educational programmes offered to targeted students who are keen to specialize in SE. Inclusion of SE in HE benefits both the university and the community.

More social professionals at the grassroots level in the future are useful for incorporating SE programmes that address social issues and improve community living standards. The development of SE in HE can foster a sense of social responsibility, personal accountability, and spirit of creativity among the students in the HE institutions (Sahasranamam & Nandakumar, 2020). Awareness, intention, and support are the three important aspects of understanding the SE in HE.

2. Parameters of the Social Entrepreneurship Education

According to Wagner (2010) pinpoints the following seven competencies essential for academics, global citizenship, and Social Entrepreneurship Education. Critical Thinking and Problem Solving, Collaboration, Agility and Adaptability, Initiative and Entrepreneurialism, Oral and Written Communication, Accessing and Analysing Information, Curiosity and imagination are the parameters of competencies for the SEE. The listed parameters were identified for the SEE as shown in the Figure 1.

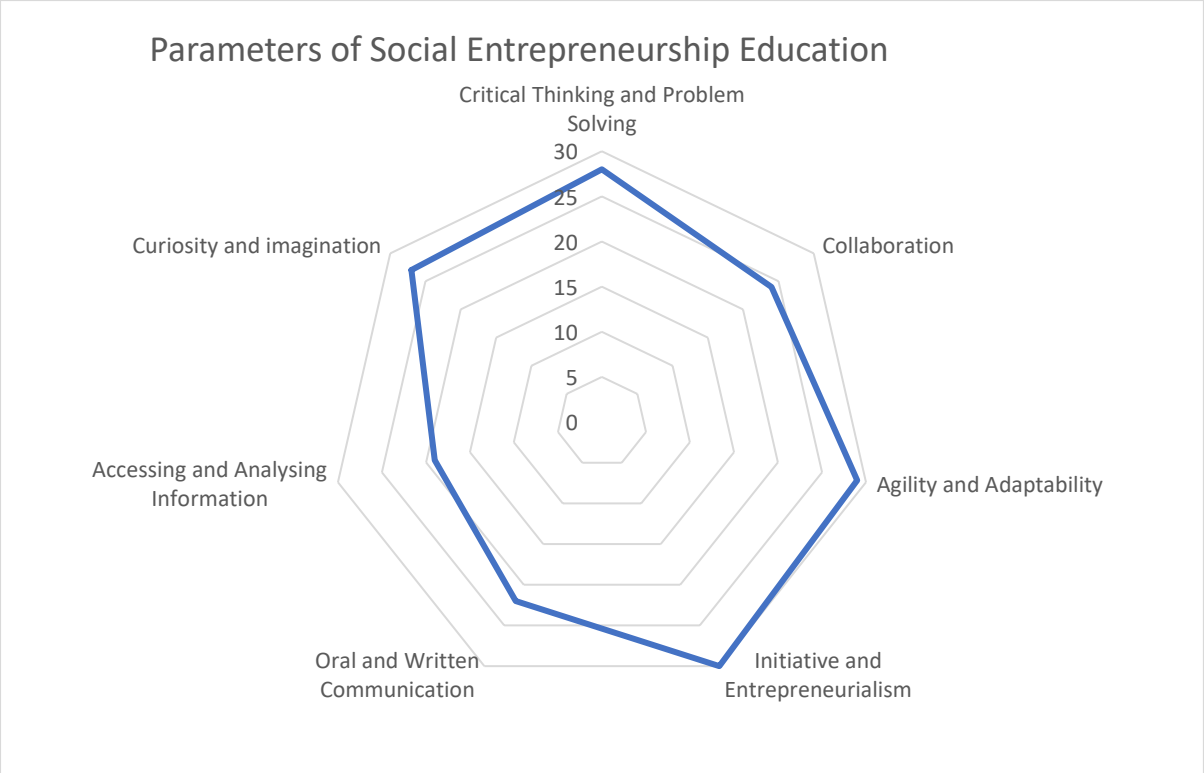
Figure 1: Parameters of Competencies related to SEE.



Source: Wagner T. (2010).

The primary data collected from the thirty Social Entrepreneurs about these parameters is shown in figure 2. It shows top priority for all the competencies except Accessing and Analysing information. To analyze the nature of these responses further, profiles of the Social Entrepreneurs were tapped with more interactions. Out of thirty Social Entrepreneurs (SEs), twenty-one SEs are from the rural area and working for the grassroots local problems faced by the micro-enterprises. It is one of the main reasons to have comparative less priority for accessing and analysing the information.

Figure 2: Responses of SEs on Parameters of Competencies related to SEE.



Source: From Primary Data and Analysis.

3. Policies about Social Entrepreneurship Education (SEE)

There are some educational institutes and organisation working on the policies of SEE and referring the action guidelines for all the new functionaries in the field of Social Entrepreneurship Education (SEE). With the rigorous review of related literature and research of various studies across the world, the following remarkable notes were found and discussed.

- It describes the various policies for training, such as universal capacity building, the development of skills needed for economic prosperity and the running of a stable Social Entrepreneurship (SE).
- The central point concerning policy development should be that the Government shall adopt a systemic method to develop capacity building and measure the SEs to promote more effectively sustainable growth and development of the economy. The main feature of the framework lies in its flexibility to acclimatize for diverse participant (students, social entrepreneurs, managers, and academicians) desires and the difficulties of the S-ENT sector. The domains in the framework are interconnected and are designed in a curriculum framework which enables the learners to progressively change the learning outcomes as they progress through the educational journey (Satar, 2016).
- Later, developing the entrepreneurship mindset will support in upgrading the entrepreneurship competencies of young entrepreneurs, and students of all levels of education (Schaltegger & Wagner, 2011). Generally, the EE strives to develop and enhance the entrepreneurship awareness, motivation, knowledge, skills, and other entrepreneurial competencies required to undertake and manage the entrepreneurial pursuits effectively (Moberg et al., 2012).
- After recognizing the importance of skilling, training and entrepreneurship for superior inclusive growth, employment and economic sustainability, the immediate directive of a separate ministry is undertaken for the first time by GOI (2014). The proposed policy signifies an unconventionality in its method as compared to earlier policies. Unlike old policies which had an “enterprise focus‟, the current policy carries an “individual‟ focus to initiate motivation, awareness, networking, skills and opportunity with the individuals with the expectation of nurturing an entrepreneurship movement within the country. In

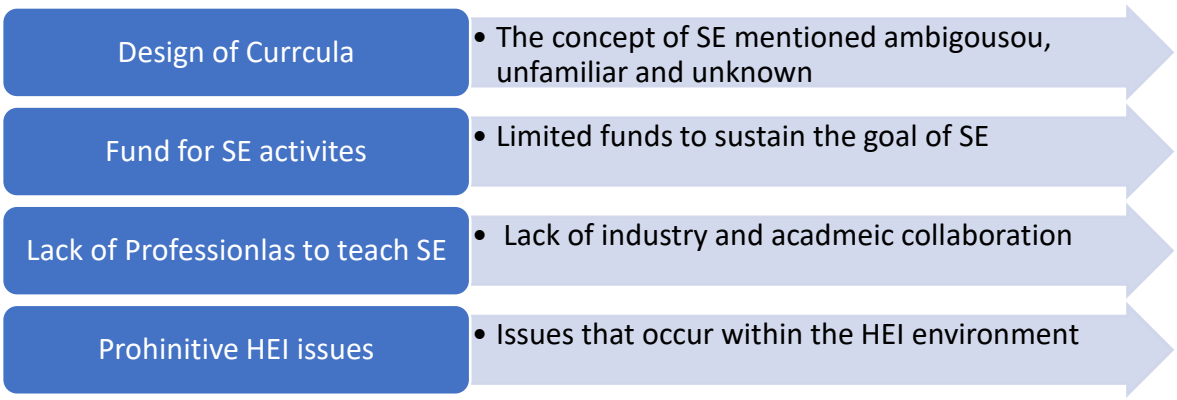
a way, the policy support would favour the social cohesion and more inclusive growth within the national economy (Bega, 2012).

- Since 2011, the OECD has functioned in advancement of policies and programmes to provide support social entrepreneurship and stand-in social enterprise development, with the financial support of the European Commission DG Employment, Social Affairs, and Inclusion (DG EMPL).
- This work has notably materialised in the production of in-depth policy reviews on social entrepreneurship that aim to assess the policy gaps in EU Member States in this field and to promote good policy practices.
- In 2020, the OECD tossed a two-year project, with the monetary support of the European Commission DG for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW), to encourage the development of legal and regulatory frameworks in EU Member States that efficiently allow social enterprises to develop and flourish.
- The OECD helps nations to progress skills governance and the proposal of both VET programmes and adult learning systems that are responsible to changing skill needs. It supports policymakers through better indication on the skills of adults and employer needs as well as through advice on good policy practices. As part of its outputs, a manual providing guidance for policymakers to assess, design and improve legal and regulatory frameworks for social enterprises will be produced.
- In India Social Enterprises are get registered under the BPT act, Society's registration act and nonprofit under section 8 company act. Recently Social Stock Exchange became operational under guidelines and regulated by the SEBI to raise funds.

4. Challenges and Opportunities in Social Entrepreneurship Education

The challenges were identified from the analysis of the quantitative data with the literature review which was hindering SE implementation in higher education can provide a better curriculum structure among the academicians in teaching, learning or research studies. It can be helpful for higher educational institutions in order to grab attention of government to provide support regarding SE implementation for system development to address the social problems. Superlative practices recommended can guide educators and researchers to build guidelines in creating suitable courses to develop comprehensive and holistic SE programs in HE. Funding from universities and government resources can enhance connections with other people engaged in social entrepreneurial activities to certify the calibre and successful information allotment and discussion. Application of social entrepreneurship must not be limited only for business school or studies, but it must be promoted across other disciplines in higher education (Roslan et al., 2022).

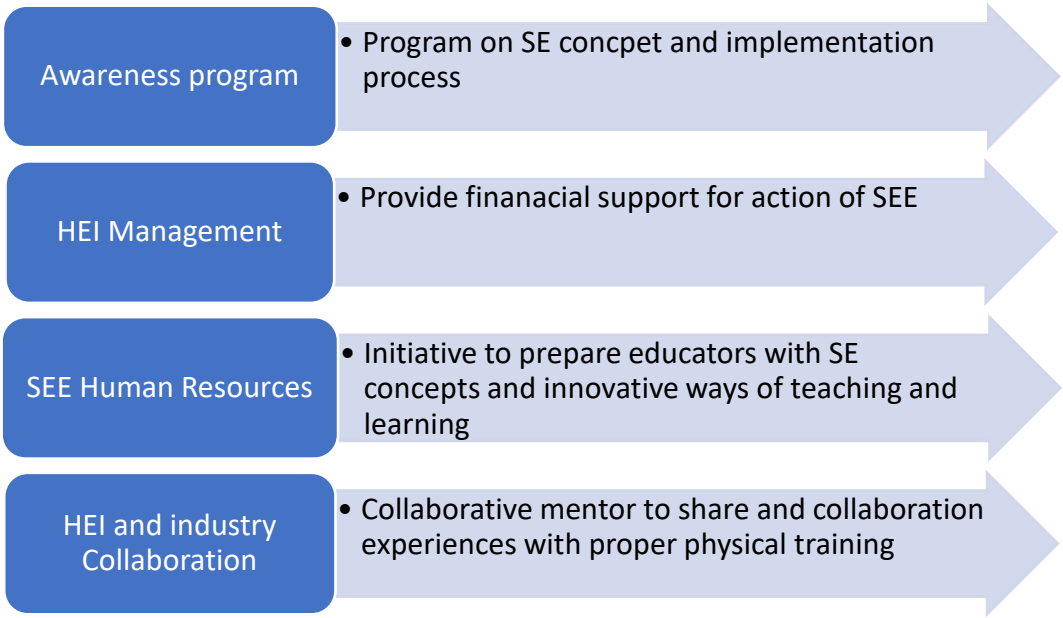
Figure 3: Challenges of SEE implementation in HEI.



Source: From Qualitative Data Analysis.

The best practises on Awareness, HEI Management, SEE human resources, and HEI-Industry collaboration has been come out with Case studies as it is specified as shown in Figure 4.

Figure 4: Best practices of SE in higher education.



Source: From Case Study Analysis.

5. Opportunities for Enhancing Social Entrepreneurship Education

In this research study to explore the opportunities for upgrading the SEE for this entry-level workforce can be understood from the literature review on SEE in terms of opportunities and upgradation of students' skills in SEE and the inputs given by the SEs in the survey. Therefore, in acquiring the right skills, competencies for the novel entrepreneurs, it is necessary to acquire the entrepreneurial ability as a form of human capital with efficient and innovative mindsets, skills, capabilities, attitudes and competencies. Recent literature shows how higher educational institutions play a significant role in creating such human capital capabilities as incubators of knowledgeable individuals who could bring novel ideas for development as well as to develop an innovative entrepreneurial mindset. Entrepreneurs act as recognizers of opportunities, innovators, risk takers, social agents who are able to tackle with COVID-19 societal and economic effects. Hence for effective SEE paradigm shift has to be realized that emphases on delivering educational curricula and activities that enhance the students' creativity, original thinking, and leading qualities as well as supporting activities. Perhaps, the appropriate learning technique depends on "state of knowledge" (Teece, D. J., Pisano, G.,1997), then learning before doing is essential for improving the thoughtful and exploiting the existing knowledge base; if the knowledge is unusual, then learning by doing is a more suitable approach to develop new knowledge and new explanations (Ndou & Valentina, 2021).

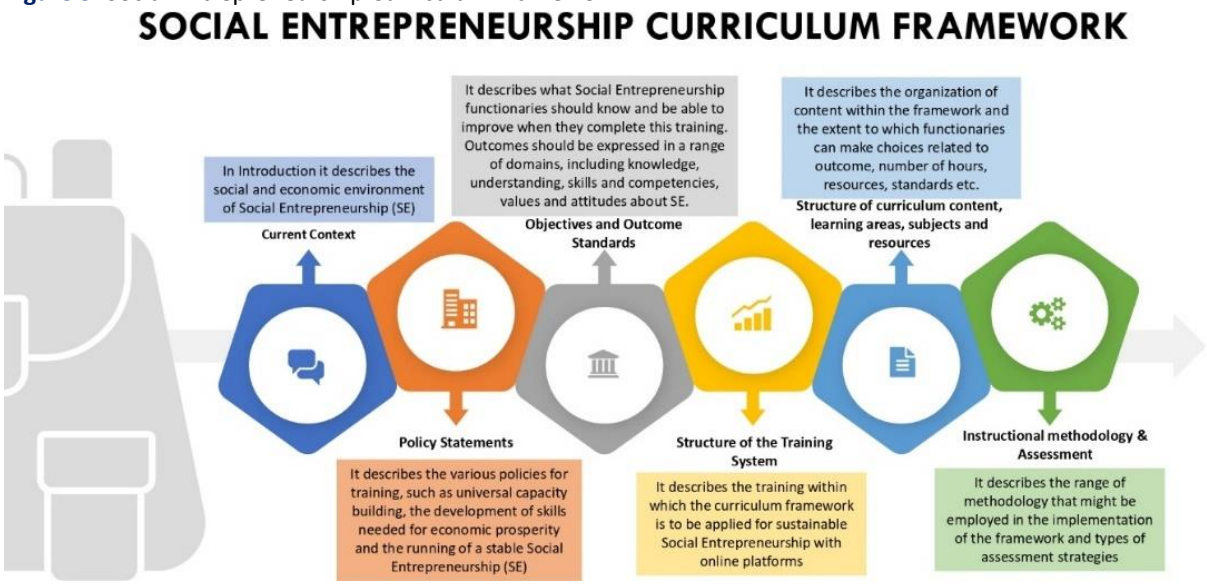
6. Recommendations for SEE and Designing a Curriculum Framework for SEE

The model is designed in a peculiar way after a lot of research, qualitative data analysis and discussion with education experts, and existing Social Entrepreneurs. The target is to produce great and efficient products for learners. The model designers gave lot of time to discover and solve real life problems and find out the root cause of the problem by applying several methods to find out more reliable information which is not seen in the first review.

The dimensions in the proposed SE curriculum framework will act as the key characteristics in structuring and organizing the SEE. The domains in the framework are interlinked and are designed in an evolutionary model as shown in Figure 5. It covers the abstract of the current context, policy statements studied, objectives and outcome standards, mode of structure of the training, curriculum, resources, and further instructional methodology with assessment parameters for a holistic approach to the SE curriculum. A remarkable feature of the framework lies in its flexibility to adapt to the participant requirements and the difficulties of the S-ENT

sector. This element enables us to answer the 'why' of the framework which thus provides perceptions in understanding how the social entrepreneurship curriculum framework works.

Figure 5: Social Entrepreneurship Curriculum Framework.



Source: From Qualitative Data Analysis.

The training focuses on developing entrepreneurial competencies of students and teachers to be ready for a better workplace for 21st century at a global level. The social entrepreneurship curriculum framework helps the trainer in leading the workshop. Activities are discussed in detail and designed after time slots with online platforms. Also, the resources required for each activity in training are listed aside.

After analysing qualitative data received from the SEs, we find that the curriculum contents should be more practical in aspects of the registration processes, mandatory requirements, annual report submissions, fund raising opportunities and avenues and related actions with the prevailing Acts associated with it. Most of the curriculums are academic in nature and not useful to the extent of day-to-day operational aspects of the SEs.

Result and Findings

Social entrepreneurship can change the face of society in India, there have been many such examples and projects which run under the banner of social entrepreneurship and proved to be life-altering for people of that vicinity. In India especially, social entrepreneurship has better prospects as the social problems are in full swing because of heavy urbanisation. Social entrepreneurship is a unique combination of entrepreneurial traits and philanthropy. The research study has various findings as detailed here.

In India, nowadays, social entrepreneurship education is the best blend of social innovation and entrepreneurial skills to overcome social problems. Social entrepreneurship curriculum framework has the potential to innovate socially. These innovations are creative explanation to social issues/problems which are dominant in India. This study explored SSE context of Indian paradigm.

At the international level, OECD recommended financial support for collaboration among the various countries to work in the field of SEE. OECD developed Information Technology Tools for the project assessment and funding processes. At the national level, the importance of skilling, training and entrepreneurship for superior inclusive growth, employment and economic sustainability is underway. The directive of separate ministry is undertaken for the first time by Government of India in 2014. The level of quality education has also augmented due to social entrepreneur education stakeholders and their growth in recent times in India at higher level. Social entrepreneurship is facing a lot of challenges in India and these challenges are very evident as the growth of social entrepreneurship is very low as compared to the other regions in developed nations. One of the ways to address this problem is by finding the relevant parameters of SEE and SEE framework to design the curriculum.

This has been addressed in this study with specific aspect of the contextualisation. Finance has been identified as one of the most vital essentials in the growth of social entrepreneurship stakeholders. The government is making special arrangements for it. Recently Social Stock Exchange has been promoted to CSOs for the activities of social entrepreneurship. It's the major initiative by the government but it's awareness among the SE functionaries needs further with capacity building for raising funds through this mode. Some government organizations, angel investors, crowdfunding etc. are being used for filling the funding gaps. Corporate Social Responsibility (CSR)is also another way of filling the funding gaps. It also observed during the survey that social entrepreneurship is subject to challenges and those challenges can be addressed by appropriate and widespread measures.

The study further underlines that the knowledge, attitude and skills of social entrepreneurship functionaries is growing despite of all the challenges which they face. It is found that acquiring the right skills, competencies for novel entrepreneurs, it is necessary to acquire entrepreneurial ability as a form of human capital with efficient and innovative mindsets, skills, capabilities, attitudes, and competencies. SE functionaries also started to use the various ICT tools for social impact capital assessment and taking advise from SE Mentors to address the challenges. Exploring opportunities for the sustainable social enterprise is possible with such ICT tools and training from international organisations like OECD, ILO and others. These main aspects came out with the primary data survey and details from the SE functionaries. This study gives curriculum framework of SEE with scope and limitations further for testing and modifications.

The government is realizing the worth and impacts of social entrepreneurship education in India and taking proper actions to renovate the guidelines and policies, and awareness programs to merge social entrepreneurship skills in the curriculum framework. On account of all literature reviews and analysis of social entrepreneurship functionaries, this study is designed for developing entrepreneurial competencies of learners to achieve *AatmaNirbhar Bharat Abhiyan* for better India's self-reliance. More Practical and field-based contents may come out for SEE in future study.

Discussion

If the educational institutions, government policies and social entrepreneurship functionaries can resolve the challenges of social entrepreneurship education successfully, then social entrepreneurship education is beyond any doubt is the most important tool which has the full capacity to change the very face of society in India (Kumar et.al, 2021). This research study states that for avoiding and minimizing the lacunas of social entrepreneurship functionaries, the present new social entrepreneurship curriculum framework is designed in order to make them self-efficient about their goals and achievements in a more practical manner. This curriculum framework must merge entrepreneurship into education to understand knowledge, and acquiring skills and mindset of students at the bottom level of their education (Lackeus, 2013). Students can become highly motivated, dedicated and upgrade their creative thinking and help societal well-being. This infusion can fuel deep learning and make them more proficient in the subject knowledge in question. Such students can select a strong interest and aptitude for value creation and then continue with elective courses and programs directing them on how to organize value creation procedures by new organizational structure. Perhaps, such an approach has extensive implications on how to plan, study, execute and assess entrepreneurship in education. Hence there is a need for a greater understanding of when, how and why social entrepreneurship education can develop skills and competencies, especially at primary and secondary levels of education with an inclusive approach (OECD, 2015).

To resolve some of these challenges an idea of putting social innovation in social entrepreneurial education. Research studies, theories and practical applications related to this awareness have been put forward with contrasting of social entrepreneurial education defined this way to other pedagogical methods, discussions, and frameworks. Various tools, methods and approaches from several fields have been outlined and stated to be capable of contributing with practical advice to teachers and students in their challenges to create social innovation to social entrepreneurship functionaries as recognized part of curriculum (Roslan & et.al., 2022).

Conclusion

In this research, we have contended that project-based and experiential learning is an effective method in the delivery of social entrepreneurship education with curriculum framework of SEE. In survey of identified population, it was found that there are some important areas of contribution in this study are perception of how SE education can be taught more efficiently through utilizing practical work on projects, upgrading our knowledge of the nature, and applying collaborative learning approach at higher education level and design a curriculum framework on which university educators can figure out the requirements of student's skills and competencies of a social entrepreneur. It is not just about students; but also, the role and responsibility of teacher educators, social entrepreneurs, and educational institutions.

According to P. Gibb's (2017), we believe higher educational institutions play a significant role in the overall development of students. Hence it just cannot be fulfilled by emphasizing only on course design and outcomes. But it needs more focus on divergent approach from university teacher educators. Perhaps, the social entrepreneurship curriculum framework was helpful in figuring out the lacunas and issues faced by social entrepreneurship functionaries at the bottom level. Therefore, we recommend an evaluation of how other sections in university and other social enterprise functionaries are positively involved in designing of the social entrepreneurship curriculum framework further with micro level contextualisation. There is an urgent need to study the different frameworks, policies and models of SE educational practices which will focus on the parameters which are responsible for enhancing the students' learning abilities, soft skills and competencies required for the novel generation of social entrepreneurs. Although our data suggest that the social entrepreneurship curriculum framework may result in increased participation of university educators, social entrepreneurship functionaries at the bottom level bring greater awareness and develop their soft skills. However, our study revealed that large number of social entrepreneurship functionaries had difficulty in understanding how to pitch for sponsorship. A few social innovation hackathons and social business incubators have programs for pitching processes and thus to raise the funds for the identified social cause.

The suggested SE curriculum framework can fill out those lacunas studied in survey while interviewing the social entrepreneurship functionaries both at rural and urban level to accomplish the achievements. The survey also revealed that social entrepreneurs were more likely to be motivated by their peers rather than academic staff due to which more quality ideas were developed in this intervention. They will become more confident with practical and field-based curriculum contents, encouraged by the teams with understanding SE case studies on how to convince the potential sponsors to fund their projects, which increased their positive attitude and beliefs.

Awareness about the various ICT and AI tools of Social Business Canvas Designing will play a key role along with the SEE framework. The holistic approach of the relevant content of SE based on the policy statements, filling gap between Objectives with standards and structure of the advanced training system, and structured curriculum contents along with specified instructional methodology further with assessment are the main conclusive approaches coming out with the contextualised Social Entrepreneurship Education framework.

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