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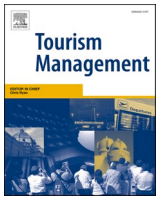

Could AI technologies be harnessed to break down barriers to inclusivity for women entrepreneurship in tourism?

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ABSTRACT

Despite growing scholarly attention to artificial intelligence (AI) and gender-related challenges in tourism research, a void exists in how the responsible AI could be harnessed to enhance women's inclusivity in tourism entrepreneurship. Drawing on Rawls' theory of justice, this study aims to fill this glaring gap by exploring whether and how AI could contribute to fostering a more equitable, inclusive and ethically responsible entrepreneurial ecosystem for women, help break down existing barriers, and thus, support women's entrepreneurial endeavors in the tourism sector. Based on qualitative data collected from semi-structured interviews and focus group discussions with elite informants, the study highlights significant positive externalities of AI technologies adoption, beyond the generally recognized benefits in customer engagement and personalized offerings, efficiency, and overall performance, to help female entrepreneurs in particular deal with work-life balance predicaments, unanimously considered the most significant barrier to inclusivity. The findings also emphasize how responsible AI design, adoption and governance can help deal with prevalent ethical concerns of AI in tourism, namely, bias, lack of transparency, fairness and privacy, the absence of a human-centered approach, and accountability. The latter two, alongside gender biases, emerge as the 'most sensitive ethical parameters' for women's inclusivity in tourism entrepreneurship. By integrating Rawls' perspective the study offers a novel analytical lens for understanding how responsible AI can foster a more just and equitable entrepreneurial ecosystem for women in tourism, and for evaluating attendant strategies contributing to sustainable and inclusive growth. Important theoretical contributions and actionable managerial implications flow from the findings.

1. Introduction

Women entrepreneurship has been recognized as a vital catalyst for economic development in various societies (Ribeiro et al., 2021). It drives both economic activity and social transformation by generating employment and uplifting communities (Rosca et al., 2020). In tourism, women entrepreneurs are increasingly recognized for introducing innovative and sustainable business models, often focusing on community-based tourism and social support (Kimbu & Ngoasong, 2016; Kutlu & Ngoasong, 2024). However, despite the growing recognition of the importance of women's entrepreneurship in tourism, the existing literature remains limited.

Current research primarily focuses on entrepreneurial motivations, challenges, enablers, and outcomes of women's entrepreneurial activities. For instance, Jaafar and Rasoolimanesh (2015) and Bensemann and Hall (2010) highlight the non-economic lifestyle motivations as a significant factor driving women to start tourism businesses. Additionally, some women entrepreneurs launch businesses to preserve cultural heritage and promote cultural sustainability at their destinations. In terms of challenges, the literature identifies several key obstacles faced by women entrepreneurs in tourism. These include limited access to financial capital (Ali, 2018), lack of management knowledge and

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orientation (Jaafar et al., 2011), the scale of operations (Tajeddini et al., 2017), and gender prejudices (Carvalho et al., 2019). Furthermore, there are increasing barriers to digital adoption, including limited access to technology, digital infrastructure, and competency training (Khoo et al., 2024; Pécot et al., 2024), which further constrain women entrepreneurship in tourism. Despite the challenges, women entrepreneurs have demonstrated resilience and benefited from various enablers, including opportunities offered by the tourism industry, family, and government support (Seyfi et al., 2025, çek et al., 2017). Several studies also note that women's entrepreneurial activities have led to increased income levels and enhanced self-identity (Gentry, 2007, çek et al., 2017).

The existing entrepreneurship literature advocates that entrepreneurial ecosystems should be more inclusive, ensuring that all individuals—in particular women—have equal opportunities to engage in entrepreneurial activities (Bakker & McMullen, 2023). Creating a supportive environment and fostering a culture of inclusion have been cited as crucial factors to facilitate the removal of cultural, economic, and political obstacles, and thus level the playing field to participate and thrive in entrepreneurial ventures. As emblematically summarized by Bakker and McMullen (2023, p. 6), the "critical question for the field of unconventional entrepreneurship is thus whether and how ecosystems can be made more open and inclusive".

Our study responds to this glaring gap in the literature by investigating whether and how Artificial Intelligence (AI) could make the entrepreneurial ecosystem more inclusive for women and, thus, assist them in running and growing their tourism business. Despite the recent explosion of interest in AI, including multi-layered ethical investigations of AI products at the product-, consumer-, and society-levels (e.g., Du & Xie, 2021), examinations of digital technology implications for firm performance in contexts marked by growing privacy worries and legal ramifications (see, *inter alia*, Quach et al., 2022), and the value and costs for consumers in their interactions with AI (e.g., Puntoni et al., 2021), no study to date has focused on uncovering whether and how AI technologies could be harnessed to break down barriers to inclusivity for women entrepreneurs in tourism. The managerial need for filling this void through this study, and its wider importance in the context of efforts to expand opportunities for the achievement of the gender equality embedded in the United Nations Sustainable Development Goal 5, is exemplified also by the recent attention devoted by the international collaboration between UNESCO, the Inter-American Development Bank (IDB) and the Organisation for Economic Co-operation and Development (OECD) to explore the effects of AI on the working lives of women (UNESCO/OECD/IDB, 2022). The report calls for more focus and research on the impacts of AI on women and the digital gender gap, a call this study addresses with the aim of ensuring women entrepreneurs in tourism are not left behind in the future of work.

Although empirical evidence remains scant, authoritative voices have recently cited AI technologies as a powerful tool to level the playing field for women entrepreneurs (see, e.g., Forbes, 1 August 2024). Yet, a more reflectively critical take on the barriers typically faced by women entrepreneurs, also in the tourism industry, suggests that women business owners have historically faced a unique set of challenges, including limited access to capital, markets and opportunity. Tourism is often cited as a sector playing a key role in closing the gender gap and one leading the way to greater equality in the workplace (see, e.g., Garcia, 2024; Manfreda et al., 2024), yet no evidence exists in the literature to indicate whether the transformative power of AI in tourism is likely to make the industry more or less inclusive to women entrepreneurs. So, just because an increasing number of commentators are hailing AI as having the potential to disrupt gender-based barriers and smooth the way to success for women entrepreneurs in tourism, this does not automatically mean that it can. Indeed, some very recent research (see, e.g., Silalahi et al., 2025) highlights specific barriers to inclusivity for women entrepreneurs in tourism (distinct or more pronounced than those faced by women entrepreneurs in general) such as gender biases in investment and market access, that continue to persist. Silalahi et al. (2025) provide evidence pointing to the difficulties female entrepreneurs have to deal with when trying to scale their tourism ventures due to, for example, limited access to networks, lack of mentoring, and exclusion from tourism associations that tend to favor male entrepreneurs. These arguments provide a strong managerial justification for the study and make our primary purpose not only one of considerable significance but a timely one, too. In addition, while existing literature on AI in entrepreneurship and SMEs often centres on operational efficiency, scalability, and digital innovation in technologically advanced contexts, AI adoption in tourism introduces a different set of challenges. The tourism sector is experiential, emotionally charged, and co-creative, relying heavily on human interaction and service authenticity (Filieri et al., 2021). Unlike many other SMEs, tourism businesses, particularly those run by women, are embedded in local communities and deliver culturally grounded services where trust and personalization are essential (Kimbu et al., 2019; Kutlu & Ngoasong, 2024). AI in this setting does more than streamline backend processes; it mediates customer relationships, shapes service narratives, and impacts emotional labour (Dwivedi et al., 2024; Kong et al., 2023). Furthermore, tourism entrepreneurship is dominated by micro-enterprises, many of which operate in regions with limited digital infrastructure and low AI readiness (Pécot et al., 2024). These businesses often rely on informal support networks and seasonal revenues, resulting in heightened risk aversion and resource constraints compared to SMEs in other industries (Figueroa-Domecq et al., 2020). Ethical concerns such as fairness, inclusivity, and human-centric design become even more pronounced in tourism, where AI tools directly shape customer-facing interactions that affect trust and satisfaction (Chalmers et al., 2021). These issues are especially salient for women entrepreneurs, who contend with entrenched social and institutional biases that impact their access to funding, decision-making spaces, and market visibility (Jesús Carrasco-Santos et al., 2024; Pécot et al., 2024; Seyfi et al., 2025).

The study draws upon Rawls' theory of justice to explore the responsible and equitable use of AI for women entrepreneurship in tourism. Rawls' theory emphasizes fairness, equality, and a just distribution of opportunities (Rawls, 1971), offering a particularly fitting philosophical framework for understanding how the responsible use of AI may reduce gender disparities and foster inclusivity in entrepreneurial activities. Furthermore, although the feminist jury is still out as to the extent to which Rawls' account of free and equal citizenship constitutes, by itself, an emancipatory ideal for women, we consider the logic underlying the two key tenets of Rawls' theory, namely freedom and equality, as a very fertile theoretical lens through which to explore barriers to women's inclusion in the entrepreneurial ecosystem of the tourism sector and how such barriers are perceived not just by them, but also by men, who still maintain a dominant position in the situational context thus frequently leaving women exposed to the arbitrary power and judgment of their male counterparts. This is the reason why in our data collection via 28 in-depth interviews and focus groups we select both female and male participants (with expertise and experience in tourism entrepreneurship and AI technologies). As to the issue of the choice of the cultural context of women entrepreneurs in the tourism sector, it is well known that the predominance of small enterprises and relatively low entry barriers and sunk costs have led, particularly over the past few decades (with women entrepreneurs gaining more education and experience), to tourism entrepreneurship being premised on its potential to empower women and provide opportunities specifically for women entrepreneurs (see, e.g., Figueroa-Domecq et al., 2020).

Our theoretical lens and chosen context, therefore, provide an ideal evaluative perspective to answer the central question of 'whether and how can AI contribute to women's inclusivity in tourism entrepreneurship?'. A secondary question we address is 'What are the ethical aspects of using AI for entrepreneurial activities?'. This secondary question is motivated by our need to also consider the ethical issues as well as the inclusiveness in AI-driven entrepreneurship since, as we elaborate later in the paper, current discussions on ethics and inclusiveness around AI

highlight AI's potential to discriminate or democratize access to women entrepreneurs. The second research question, therefore, is closely connected to the primary purpose of this work (as defined by the first research question), especially since by integrating Rawls' theoretical perspective our study offers a holistic perspective of AI's role across the many facets of the entrepreneurial process, calling for expanding the notion of responsible AI to incorporate gender equity and inclusivity to help promote the use of AI systems that prioritize societal wellbeing. The analysis is articulated around the key themes of work-life balance-related barriers faced particularly by women entrepreneurs in the tourism sector and how AI can aid breaking down such barriers, the role of AI in facilitating entrepreneurial activities in the tourism sector, and the ethics of the responsible adoption of AI in the context (tourism) and unit of analysis (women entrepreneurs) under scrutiny.

On these accounts, the present study makes three key contributions to the existing body of literature on women entrepreneurship in tourism. First, by integrating Rawls' theoretical perspective, this study introduces a novel framework for understanding the role of AI in creating a more equitable entrepreneurial ecosystem for women in tourism, thereby contributing to fostering a more sustainable and inclusive growth of the tourism sector. Indeed, although some prior studies have already explored the intersection of Rawlsian ethics, AI, and entrepreneurship, providing valuable insights of how this philosophical framework can guide the development of responsible AI systems (e.g., Payne & Joyner, 2006), our novel integration of Rawls' theory of justice into the design and governance of AI systems to promote women inclusivity, adds a fresh dimension to evaluate how AI technologies can be deployed in a more socially responsible manner, aligning with the broader goals of equity and fairness in terms of women entrepreneurs' role and their contribution to the tourism sector. Second, the present study advances the discourse on responsible AI, deepening the conversation through an evidence base showing that technological advancements can indeed promote ethical and inclusive business practices, benefitting marginalized groups (Vatankhah et al., 2024). Third, it bridges the gap in research concerning the intersection of AI and women entrepreneurship in tourism, offering new insights of how technology can support women in overcoming systemic sectoral challenges (Khoo et al., 2024; Pécot et al., 2024).

2. Literature review

Our literature review begins by articulating Rawls' theory of justice and our novel adoption of this philosophical lens to evaluate aspects of design and governance of AI systems to promote women inclusivity. We then consider literature domains dealing with issues around our two research questions, starting with a critical synthesis of women entrepreneurship in tourism. Next, we cover the transformative role of AI in entrepreneurship both as an enabler of entrepreneurial growth, and in terms of ethical considerations and inclusiveness in AI-driven entrepreneurship. The review culminates in a synthesis and rationale for responsible AI in women entrepreneurship in tourism.

2.1. Rawls' theory of justice

John Rawls' theory of justice, grounded in the principles of fairness, equity, and the protection of society's most vulnerable (Rawls, 1971), provides a critical ethical framework for evaluating the governance of AI systems. Central to Rawls' theory is the notion that fairness arises when "all social primary goods - liberty and opportunity, income and wealth, and the bases of self-respect - are to be distributed equally unless an unequal distribution of any or all of these goods is to the advantage of the least favored" (Rawls, 1971, p. 303). This distributive justice framework is highly relevant for AI governance, where inclusivity and equitable access must be prioritized to ensure that technological advancements benefit all individuals, particularly marginalized and/or disadvantaged groups.

Rawls' "veil of ignorance", which is premised on the idea of the decision maker designing policies without being influenced by knowledge of their own social standing, offers a particularly powerful tool for assessing the fairness of AI systems and the broader regulatory frameworks that govern them (Resseguier, 2023). Rawls uses the idea of 'a veil of ignorance'—one of the most beautiful examples of the power of philosophical theory—to argue that fair and just distribution can be defended on moral, deontological grounds. He argues that if a woman/man keeps herself/himself under a 'veil of ignorance', uncontaminated by social status and social conditioning, then she/he would naturally come up with the just distribution, fair laws, policies, and codes of conduct conducive to a better society for all.

Of course, any uncritical application of the Rawlsian veil of ignorance to the argument that AI can support the creation of fairer and more inclusive systems is vulnerable to the criticism that AI is not always neutral in affecting societal outcomes (the ethical concerns relating to the recent application of AI-driven facial recognition software programs, are a case in point). However, notwithstanding the fact that AI is not necessarily blind to those who use it, by removing biases associated with one's societal position, the veil of ignorance promotes the idea of designing systems that serve the common good, particularly vulnerable populations, such as women entrepreneurs in the tourism sector who often face systemic disadvantage (Jørgensen & Søgaard, 2023). Applying the Rawlsian veil of ignorance to our context, therefore, suggests the use of AI-powered systems to save time and money, particularly valuable virtues for women entrepreneurs who are constantly juggling a business (i.e., to keep up a livelihood; not a hobby as some authors seem to suggest) and family life. In the tourism sector, AI technologies are already proving indispensable for streamlining and automating painstaking tasks such as invoicing, financial management, marketing (now also done through social media platforms), potentially leaving women business owners with more resources and more time to focus on developing and growing their business (Seibert, 2024).

In the context of AI governance, Rawlsian justice emphasizes transparency, inclusivity, and the equitable distribution of technological benefits (Bay, 2023). This also means that AI systems used in entrepreneurship must not perpetuate gender biases or deepen existing inequalities. Instead, these technologies must be developed with a focus on equity, ensuring that they do not disproportionately favor dominant groups but rather provide equal opportunities for all (Bay, 2023; Resseguir, 2023), particularly for women entrepreneurs who often face difficulties gaining access to digitalized resources (Khoo et al., 2024; Pécot et al., 2024). The implementation of equitable AI technologies has the potential to create a more inclusive entrepreneurial environment, allowing women to thrive without the barriers typically imposed by inequitable technological practices.

Several scholars have explored the intersection of Rawlsian ethics, AI, and entrepreneurship, providing key insights into how these ethical frameworks can guide the development of responsible AI systems (e.g., Payne & Joyner, 2006). The application of Rawlsian ethics in entrepreneurship underscores the necessity of designing AI systems that adhere to the principles of transparency and moral responsibility, ensuring that businesses operate ethically while embracing technological innovation (Fink et al., 2023). Rawls' theory of justice continues to play a prominent role in conversations about AI governance, particularly concerning fairness, transparency, and bias mitigation. Yet, our novel integration of Rawls' theory of justice into the design and governance of AI systems to promote women inclusivity, adds a fresh dimension to evaluate how AI technologies can be deployed in a more socially responsible manner, aligning with the broader goals of equity and fairness in terms of women entrepreneurs' role in, and contribution to the tourism sector.

2.2. Women entrepreneurship in tourism

Our review of literature on women entrepreneurship—the unit of

analysis of this study—highlights four dominant thematic areas, namely, motivations, challenges, enablers, and outcomes; each of which prompts valuable inclusivity considerations our later analysis of AI adoption will intersect with. Starting with motivations, Jaafar and Rasoolimanesh (2015) claim that women business operators in tourism are attracted to this industry as a hobby; often referred to as 'lifestyle entrepreneurs'. Although there may be instances where this is in fact the case, we consider such a stereotypical depiction of women entrepreneurs one that is biased and misogynistic in nature. Bensemann and Hall (2010) uncover that non-economic lifestyle motivations encourage many women to start their own tourism business. However, women in tourism are often also found to be seeking an income source that they may directly control (see Figueroa-Domecq et al., 2020; Filimonau et al., 2024; Ribeiro et al., 2021) and economic independence (Tajeddini et al., 2017).

The most frequently cited challenge faced by women entrepreneurs in tourism is the lack of capital access and financial resources (see Ali, 2018). According to Alonso-Almeida (2013), men may obtain more generous funding at lower interest rates for tourist company financing than women. Moreover, lack of collateral access hinders women's ability to secure loans. The scale of operations is also considered a critical obstacle for most women-run tourism start-ups, which often remain small firms (Tajeddini et al., 2017). Recent studies also unveil the gender prejudices women entrepreneurs face outside their firms (Carvalho et al., 2019), with mounting evidence showing that gender-based discrimination is a significant barrier for women entrepreneurs (Bagheri et al., 2023). In their exploration of gendered challenges for Iranian women careers in tourism, Jesús Carrasco-Santos et al. (2024) highlight the impact of gender power dynamics unveiling what they call "*inhibitory factors*" that affect women's quest for equal career opportunities, including "*deeply ingrained societal influences on gender roles, institutionalized gender discrimination, and self-imposed constraints.*" (p. 1) This evidence tunes in with the gender influences (defined as socially embedded drivers) on sustainable business models by tourism women entrepreneurs in a highly patriarchal and established tourism destination (Turkey) uncovered by Kutlu and Ngoasong (2024). Their study shows how gender influences can materialize as gendered perceptions of identity, role expectations, and even legislative practices.

With respect to the enablers, Pécot et al. (2024) argue that empowerment and social innovation are important factors in promoting gender justice and equality in women entrepreneurship in tourism. Support from family and government too, can be vital enablers of success for women exploring self-employment in the tourism industry (Çiçek et al., 2017). In their systematic review on gender, entrepreneurship, and tourism, Figueroa-Domecq et al. (2020) conclude that, to equip females with the capabilities to compete with successful masculine entrepreneurial performances, education must be seen as the foundation of women's empowerment and entrepreneurship in tourism. Also being part of wider networks can help women entrepreneurs, to gather advice and resources (Kutlu & Ngoasong, 2024), and assist their businesses gain access to markets (Kimbu et al., 2019).

According to Gentry (2007), tourism business ownership helps some single women to run their families independently of any financial support from men. Scholars also found that women entrepreneurs become "*stronger figures both within their families and in social life*" (Çiçek et al., 2017, p. 231). Such women generate a livelihood for themselves and usually create more jobs than companies of the same scale managed by men (Alonso-Almeida, 2013). At the macro level, women entrepreneurship in tourism has also been associated with women empowerment (Bagheri et al., 2023), community well-being (Tajeddini et al., 2017), accomplishments of sustainable development goals (Figueroa-Domecq et al., 2020), and socio-cultural development (Kimbu et al., 2024).

Despite the growing attention on women entrepreneurship research in tourism, there are critical research gaps at the intersection of women entrepreneurship, tourism, and AI. No research directly examines how AI technologies help to overcome existing barriers and foster greater inclusivity in women entrepreneurship in tourism. Such an investigation is not only much needed but long overdue since AI could address some of the structural challenges that women face in tourism entrepreneurship. AI-driven tools can optimize operations, enhance customer engagement, and support data-driven decision making thus allowing women entrepreneurs to scale their business and compete more effectively in a digitalized economy. AI can assist women entrepreneurs in tourism in understanding market trends, reaching broader audiences through digitalized platforms, and creating personalized customer experiences (Filieri et al., 2021; Khoo et al., 2024). Empowering women through AI could lead to more inclusive and sustainable tourism practices as women often bring socially responsible and community-oriented approaches to entrepreneurship (Figueroa-Domecq, de Jong, Kimbu, & Williams, 2024; Pécot et al., 2024).

The following section explores how AI, as a transformative force in tourism entrepreneurship, can provide innovative solutions to ease these barriers and empower women entrepreneurs by enhancing their capacity to access resources, scale operations, and create more inclusive sustainable businesses.

2.3. AI in entrepreneurship

Existing literature suggests that the nexus between AI and entrepreneurship falls under two main categories—namely, AI as an enabler of entrepreneurial growth, and ethical considerations and inclusiveness in AI-driven entrepreneurship. While the former deals with AI for business model innovation and sustainable growth (e.g., Jorzik et al., 2024), AI for customer interaction and personalization (e.g., Li & Gao, 2025), AI adoption and acceptance (e.g., Prüfer & Prüfer, 2020), and entrepreneurial orientation and resilience (e.g., Short & Short, 2023), the latter is concerned with the challenges of AI-driven entrepreneurship (e.g., Castillo et al., 2021; Obschonka & Audretsch, 2020; Tigges et al., 2024) and AI for inclusive growth (e.g., Leong et al., 2022). But what does the literature specifically tell us about how AI can serve as an enabler of entrepreneurial growth? We offer a synthesis of the answers from this specific strand of literature in the section below.

2.3.1. AI as the enabler of entrepreneurial growth

Advocated for by a large body of relevant literature (see Table 1), AI is increasingly recognized as a powerful enabler in entrepreneurship, transforming how entrepreneurs identify opportunities, innovate business models, and make decisions (Chalmers et al., 2021). By providing advanced tools for data analysis, trend prediction, and operational automation, AI helps to streamline business operations, improve customer service, and support better informed decision making (Shepherd & Majchrzak, 2022).

AI's role in business model innovation and sustainable growth is highlighted by several studies. Jorzik et al. (2024) demonstrate how AI-driven business models can support green technology start-ups, thus enhancing environmental sustainability. AI's capacity to create, capture, and deliver value positions can be an essential tool for start-ups aiming to innovate their business models. Filieri et al. (2021) extend this perspective by analysing AI's role in reshaping the tourism supply chain through automation, segmentation, and customization, contributing to sustainable digital entrepreneurship. Additionally, Elia et al. (2020) explore a digital entrepreneurship ecosystem framework revealing how AI and digital technologies are transforming entrepreneurial processes to foster sustainable growth.

The use of AI to enhance customer interaction and personalization is evident in research by Filieri et al. (2021) and Li and Gao (2025). While Filieri et al. (2021) show how AI helps tourism start-ups to personalize customer experience, focusing particularly on the pre-trip and post-trip phases, Li and Gao (2025) explore how AI-driven customer insights are influenced by tourism entrepreneurs' personality traits such as extraversion and agreeableness, which affect customer interaction and market exit rates. The different perspectives of these two studies are, of

Table 1
Key research on AI as the enabler of entrepreneurial growth.

Key areas of research	Key discussion	Sources
AI for business model innovation and sustainable growth	AI is used by businesses and start-ups to innovate their business models, and is highlighted as key tool for creating, capturing, and delivering value.	Brown (2017); Chowdhury et al. (2024); Elia et al. (2020); Etemad (2023a); Filieri et al. (2021); Jorzik et al. (2024); Kulkov et al. (2024); Palmié et al. (2020); Qin (2024); Raneri et al. (2023); Reyes-Menendez et al. (2023); Schiavone et al. (2023)
AI for customer interaction and personalization	AI-driven tools enable personalization in customer interaction, improving the accuracy of targeting and market segmentation. The use of AI in video pitches, healthcare solutions, and other customer-facing aspects shows its effectiveness in creating personalized customer experiences, leading to better service quality and customer satisfaction.	Filieri et al. (2021); Kulkov et al. (2024); Li and Gao (2025); Yuan et al. (2016)
Adoption and acceptance of AI in entrepreneurship	AI is used for educational purposes, affecting entrepreneurial intentions of current and prospective entrepreneurs. The role of AI combined with other technologies like cloud computing and blockchain, additive manufacturing, and 5G creates competitive advantage, helping entrepreneurs transition from simple devices to actionable solutions.	Chowdhury et al. (2024); Duong et al. (2024); Goel and Nelson (2024); Hannigan et al. (2022); Kulkov et al. (2024); Prüfer and Prüfer (2020); Shore et al. (2024); Truong (2024); Upadhyay et al. (2022, 2023)
Entrepreneurial orientation and resilience with AI	AI supports entrepreneurial resilience by enabling business model reassessment, enhancing decision making, and transforming economic growth models to adapt to market disruptions and crises such as COVID-19.	Duong et al. (2024); Somia and Vecchiarini, 2024; Raneri et al. (2023); Schiavone et al. (2023); Shore et al. (2024); Short and Short (2023); Somià and Vecchiarini (2024); Wang et al. (2023)

course, not mutually exclusive, but it is interesting to note that interest in how AI can aid the personalization of customer interactions is a rich line of enquiry that started almost a decade ago. For example, Yuan et al. (2016) examined how machine learning and text analytics enhance crowdfunding campaigns through tailored project descriptions, showing AI's potential in personalizing digital fundraising.

Like all new technologies, their introduction, acceptance, and adoption, follow a process. A key question, therefore, begs at this point. What drives the process of acceptance and adoption of AI in entrepreneurship? The adoption of AI in entrepreneurship is driven by various cultural, technological, and contextual factors. Hannigan et al. (2022) explore AI adoption in entrepreneurial ecosystems, highlighting the importance of cultural and material factors. In a similar vein, Upadhyay et al. (2022, 2023) discuss AI adoption intention in family businesses, emphasizing entrepreneurial orientation and digital entrepreneurship as influential factors. It appears that there is a growing acceptance of AI in analyzing entrepreneurial skills, demonstrating the evolving landscape of entrepreneurship research facilitated by AI (Prüfer & Prüfer, 2020).

AI also supports entrepreneurial resilience and orientation. Evidence to this effect comes with reference to different contexts such as SMEs and family businesses. For instance, Wang et al. (2023) identify key success factors—including market access threshold and competitor analysis, the social resources of partners, self-energy efficiency, independence and passion among others—for AI-driven entrepreneurship, illustrating how AI supports resilience in entrepreneurial processes. In the context of SMEs, Shore et al. (2024) highlight how generative AI aids in building resilience during crises like the COVID-19 pandemic. Upadhyay et al. (2023) further emphasize the role of digital entrepreneurship and entrepreneurial orientation in AI adoption in family businesses, demonstrating resilience in embracing technological advancements.

2.3.2. *Ethical considerations on inclusiveness in AI-driven entrepreneurship*

The discussion on inclusiveness highlights AI's potential to democratize access to entrepreneurial opportunities, enabling diverse groups, including women entrepreneurs, to participate in and benefit from new business ventures (Chalmers et al., 2021; Leong et al., 2022). We should note at this point that we are by no means apologists for AI, nor we intend to purport a biased, evangelical picture of AI technologies and entrepreneurship. We are well aware that while AI can assist in fostering inclusive growth, it can also be biased, and that technologies such as IoT and blockchain, just to provide common examples, are not immune to downsides, including non-trivial hidden ecological and environmental impacts. However, given our central interest, we are more concerned with uncovering the responsibility to address ethical challenges that may arise from increasing reliance on AI in tourism entrepreneurship. These challenges include concerns around data privacy, transparency, algorithmic bias, and the broader socio-economic impacts (Obschonka & Audretsch, 2020; Tigges et al., 2024). Hence, it is crucial to delve deeper into these ethical considerations, particularly regarding the responsible use of AI to ensure fairness, accountability, and the protection of vulnerable groups (Jorzik et al., 2024; Vatankhah et al., 2024).

Despite the numerous opportunities that AI presents, it also brings challenges. Specifically, with AI's growing influence in entrepreneurship, ethical considerations become increasingly pertinent in entrepreneurial processes (Chalmers et al., 2021; Giuggioli & Pellegrini, 2023). One significant concern is the responsible use of AI, particularly related to data privacy, transparency, fairness, algorithmic bias, and the potential for increased unemployment due to automation (Makridakis, 2017; Vatankhah et al., 2024). Tigges et al. (2024) emphasize the significant impact of AI and alternative data on credit scoring and fintech lending. They show that while AI can enhance credit scoring accuracy, extend access to unbanked populations, and improve financial market stability, it also necessitates rigorous ethical scrutiny. This positions AI as a pivotal operational tool that improves access to financial resources, vital for entrepreneurial success, but a tool that also poses risks. Similarly, Obschonka and Audretsch (2020) discuss the disruptive influence of AI and Big Data on entrepreneurship. They highlight how AI can contribute to "smart entrepreneurship" while underscoring an inherent ethical contradiction: the rational, rule-driven nature of AI may clash with the uncertain, dynamic nature of entrepreneurial ventures. This juxtaposition raises important ethical questions about the use of AI in entrepreneurial decision making—where human intuition, creativity, and flexibility are often crucial (Vatankhah et al., 2024). Consistently, researchers discuss ethical concerns around AI and data access, highlighting competitive fairness in entrepreneurship (Norbäck & Persson, 2024) as well as the ethical challenges of AI replacing traditional roles, potentially leading to augmenting economic inequality and the disintermediation of small firms (Chalmers et al., 2021).

Jorzik et al. (2024) called for a deeper understanding of AI's dual role in enabling growth while potentially disrupting traditional structures. Ethical frameworks and responsible AI practices are necessary to ensure equitable and sustainable business practices. AI's 'black box' connotations often complicate accountability and transparency, making explainable AI (Rai, 2020; Vatankhah et al., 2024) an important area of focus for development. Against this backcloth, consolidation of power

among large technology firms that control critical AI resources such as data and infrastructure represents another challenge. This centralization can unleash another dark side of AI by supressing innovation and increasing inequality of opportunity by making it more difficult for smaller firms (more likely to be owned by women business owners) to access necessary resources, thus limiting their ability to compete effectively (Miles & Huberman, 1994).

AI serves as a driver of inclusive growth, especially for underserved communities. Leong et al. (2022) highlight AI's role in breaking down barriers to entrepreneurship by providing digital infrastructure and support tools that allow businesses to thrive. As a digital enabler of entrepreneurship, AI plays a significant role in equalizing opportunities, aggregating resources, and emulating essential services. AI-enabled digital entrepreneurship is a driving force for emancipation, moving beyond profit-making to address social barriers (Chalmers et al., 2021; Leong et al., 2022). By democratizing access to information and resources, AI can help create opportunities for diverse groups, including women and minority entrepreneurs. AI could enable individuals from diverse background to effectively articulate business ideas, thus overcoming traditional communication barriers. AI tools such as ChatGPT are also being used to enhance entrepreneurial rhetoric, which helps underrepresented groups to persuasively present their business ideas in pitches and social media content (Short & Short, 2023).

Moreover, AI is transforming traditional entrepreneurial processes and educational environments to support more inclusive engagement. For example, Raneri et al. (2023) propose an AI-enhanced lean start-up framework that makes data-driven experimentation accessible to entrepreneurs with limited technical expertise. Similarly, Makaya et al. (2023) advocate for an ecological approach to entrepreneurship education, emphasizing learner-centric and supportive ecosystems that are essential for nurturing a diverse range of aspiring entrepreneurs. Additionally, Etemad (2023b) explores the impact of digital platforms on transforming entrepreneurial ecosystems, underlining how multi-sided online ecosystems reduce traditional barriers to market access and create more opportunities for marginalized groups to participate in the global economy. Taken together, these studies suggest that responsible AI and digital technologies hold immense potential to foster a more inclusive entrepreneurial ecosystem (Bakker & McMullen, 2023), providing tools, resources, and platforms that enable diverse individuals to innovate, compete, and succeed in the entrepreneurial landscape.

2.4. Synthesis and rationale for responsible AI in women entrepreneurship in tourism

The review of the interface between AI and entrepreneurship underscores the dual role of AI as a powerful enabler of entrepreneurial growth and a factor necessitating ethical consideration, particularly in the context of inclusive entrepreneurship (Bakker & McMullen, 2023). On one hand, AI's capability in automation processes, providing data-driven insights and enhancing decision making, has demonstrated its potential to transform business model innovation (Jorzik et al., 2024), personalize customer interaction (Filieri et al., 2021), and foster entrepreneurial resilience (Shore et al., 2024). This transformative capacity is particularly important in the tourism industry where systemic barriers limit the participation of women entrepreneurs (Khoo et al., 2024; Pécot et al., 2024). AI can act as a bridge to address these inequalities by democratizing access to technology, reducing barriers to digital adoption, and supporting women entrepreneurs in scaling their ventures and competing in the digital economy (Filieri et al., 2021; Khoo et al., 2024). On the other hand, increasing reliance on AI also raises significant ethical concerns related to transparency, algorithmic bias, and privacy (Obschonka & Audretsch, 2020; Tigges et al., 2024), highlighting the need for responsible AI practices to ensure equitable outcomes.

By positioning responsible AI as a tool that can empower marginalized groups and foster inclusivity while mitigating ethical risk, our study provides a strong justification for applying Rawls' theory of justice (Rawls, 1971). Rawls' framework, which emphasizes fairness, equity, and protecting the vulnerable, is particularly relevant in advocating for the responsible and inclusive deployment of AI in tourism entrepreneurship. Responsible AI—guided by principles of fairness, transparency, and accountability—could help to bridge the gender gap in tourism entrepreneurship, fostering more sustainable and community-oriented business models (Kutlu & Ngoasong, 2024). Hence, it seems opportune to utilize Rawls' theory as a justice-oriented framework in the development and deployment of AI in women entrepreneurship in tourism to ensure fairness and support marginalized entrepreneurs in overcoming systemic barriers. This philosophical lens provides a basis for promoting equitable opportunities and advancing the role of women as key drivers of socio-economic growth in the tourism sector, while responding to the following research questions:

1. How can AI contribute to women's inclusivity in tourism entrepreneurship?
2. What are the ethical aspects of using AI for entrepreneurial activities?

3. Methodology

The primary purpose of our study is to shed light on how AI technologies can be responsibly harnessed to promote inclusivity and support women-led ventures, thus ensuring ethical and equitable growth within the tourism entrepreneurial ecosystem. In doing so, we employ a qualitative research approach, underpinned by an interpretivist epistemology (Denzin & Lincoln, 2011) to capture the complex interplay between technology, gender, and entrepreneurship within the tourism industry. We adopt a two-phase research process to investigate the research questions thoroughly. Accordingly, consistent with existing research (e.g., Chathoth et al., 2014), our study consists of two phases of data collection—(1) semi-structured in-depth interviews, and (2) a focus group discussion—to complement phase 1. The first phase aimed at gathering in-depth, individualized data on the barriers and enablers of women's entrepreneurship in tourism, alongside the opportunities and risks posed by AI technologies. Informed by Giuggioli and Pellegrini (2023), the interviews explored themes such as work-life balance challenges, the role of AI in entrepreneurial activities and ethical issues of AI. Participants' experiences with AI-driven tools and how they help with women entrepreneurial activities were explored.

Insights from Phase 1 were systematically analyzed using an iterative coding approach, which identified recurring themes and key findings. These findings shaped the design of the focus group discussion in Phase 2, ensuring it built upon the issues raised during the interviews for both validation purposes and a more in-depth exploration of the issues. The focus group allowed the data collection strategy to capture the language of participants on the issues at hand alongside their values and beliefs. The benefit of Phase 2 (discussion through a focus group) to complement interviews (Phase 1), also lies in extracting through the interaction of participants their views also by means of the questions they ask of each other, and the opportunity for them to re-evaluate their own understandings of their experiences (see, e.g., Kitzinger, 1994). This group setting after interviews allows researchers to move beyond individual perspectives and observe how views and experiences of participants intersect, revealing insights about social dynamics, shared understandings and potential tensions or disagreements that may not emerge from one-to-one interviews alone (Willis et al., 2009). This advantage was particularly evident in our case when discussing issues related to the ethics of AI and AI governance (AI-driven gender biases, human-centric AI design, the need for human accountability, etc.), discussions which generated collective strategies and recommendations for implementing AI inclusively and responsibly.

This two-phase approach aligns with the elaboration principle of mixed-methods research, as outlined by Gibson (2016). Phase 1 focused

on capturing depth (individual experiences), while Phase 2 broadened the scope by examining collective perspectives on ethics and ethical governance, ensuring the complexity of the phenomena was fully addressed. In line with recent studies (see, e.g., Ameen et al., 2024; Seyfi et al., 2025), we apply several rounds of interpretation to identify the emerging themes.

3.1. Data collection

We adopted a purposive sampling method to select participants based on their expertise and experience with tourism entrepreneurship and AI technologies. This method allows us to use our judgment to select the participants that will be most able to answer the research questions (Altinay et al., 2015; Miles & Huberman, 1994). The selected participants were (a) women entrepreneurs who use IT and AI and (b) IT/AI experts/consultants who are engaged in entrepreneurial activities. These inclusion criteria ensured that participants could provide informed insights into the role of responsible AI, also from a user perspective, and the extent to which AI could promote inclusivity for women entrepreneurship in tourism. An added benefit of engaging participants with varying degrees of AI experience is that it helped us deal with reference dependence bias in sample selection. Reference dependence theory suggests that individuals' judgments and preferences are influenced by their reference points or past experiences (see, e.g., Tversky & Kahneman, 1991). Hence, the inclusion of participants with diverse technological backgrounds and varying degrees of AI exposure, allows us to account for differing reference points of users (entrepreneurs in tourism) in assessing AI's perceived benefits, risks, and inclusivity potential. This approach reduces the risk of homogeneity in responses and reference dependent bias, thereby enhancing the robustness of our findings. To control for any other biases or external factors such as seasonality or workload factors, interviews and focus group discussions were scheduled during consecutive weeks at similar times of the day.

3.1.1. Phase one: in-depth interviews

A total of 28 in-depth, semi-structured interviews were conducted. The interviews took place between September and October 2024 and were held virtually (via Zoom) to accommodate participants from different geographical regions, with each lasting no more than 1 h. The interview questions were guided by the themes identified in Giuggioli and Pellegrini (2023), including the implication of AI as an enabler for entrepreneurship in industry 4.0, responsible AI practices, gender inclusion, and barriers faced by women entrepreneurs in tourism. By leveraging Giuggioli and Pellegrini's (2023) framework concerning AI-enabled entrepreneurial processes, the interview guide was designed to capture both the opportunities and the challenges that AI presents in enhancing decision making, opportunity identification, and performance (in marketing, customer engagement, etc.), specifically within the tourism sector.

While the interviews in particular aimed at responding to "How can technology in general and AI in particular be used to support women entrepreneurship in the tourism industry?", some sample original questions included: "How do/could technology in general and artificial intelligence in particular support businesses?"; "What are the challenges/constraints of women (mothers with dependents) in running a business?"; and "How could women be supported with their entrepreneurial activities through the use of AI (training [what areas of training], finance, use of both formal and informal networks, technology)?".

As shown in Table 2, the interviews included participants from diverse stakeholder groups, including women entrepreneurs, IT professionals, and tourism consultants. This diversity allowed for enriched perspectives on the influence of AI on women's entrepreneurship in tourism. While it is true that most entrepreneurs use IT to varying extents, participants were selected based on their self-reported usage of AI tools or technologies in business processes such as customer

Table 2
Interviewee's profile.

Interviewee Role/ Title	Location	Gender	Experience/ Expertise	Years of experience
Worldwide Public Sector Senior Education Industry Advisor/ Microsoft Corporation	Asia	Female	IT and employee training	20+
Head of Innovation, Blenheim Palace Heritage Site	UK	Male	Tourism	20+
Entrepreneur	Turkmenistan	Female	STEM, community development, women empowerment	5
Senior Consultant responsible for Women Entrepreneurship Training	Switzerland	Female	Education, tourism, HR, organizational behavior, partnership, project management	20
Entrepreneur	Tunisia	Female	Travel agency	25
Entrepreneur	Kazakhstan	Female	Tourism, handcrafts	10
Entrepreneur	Kazakhstan	Female	Tourism, travel agent	6
Entrepreneur	Kazakhstan	Female	Tourism	8
Entrepreneur	Kazakhstan	Female	Tourism	12
IT Specialist, Owner and Manager of IT Firm	Kazakhstan	Male	IT	10+
IT Specialist, Owner and Manager of IT Firm	Kazakhstan	Male	IT	6
Entrepreneur	Turkey	Female	Tourism	5+
Entrepreneur	Turkey	Female	Tourism	5+
Entrepreneur	Turkey	Female	Tourism	5+
Entrepreneur	Turkey	Female	Tourism	5+
Entrepreneur	Turkey	Female	Tourism	5+
Tourism/ Hospitality Consultant	Belgium	Female	Boutique hotel assistant director, luxury resort events	5+
Consultant and Auditor for Public Transport at PKF IVT	Germany	Male	Tourism, hospitality	8+
Managing Partner, Market Entry Strategist	Switzerland	Female	Hotel, leisure, travel sectors, impact investor	15+
Director Meaningful Tourism Center/ COTRI	Vietnam	Male	Tourism	25+
IT Consultant, Owner and Manager of Security Services Firm	Turkey	Male	IT	20+
IT Consultant, Consultant and Educator	UK	Male	IT	15+
Director @ Touch TD, Heritage, tourism & community engagement Expert	UK	Male	Tourism	15+
IT Specialist, Consultant	Cyprus	Female	Technology consultancy	15+

(continued on next page)

Table 2 (*continued*)

Interviewee Role/ Title	Location	Gender	Experience/ Expertise	Years of experience
Manager, Tour Operator/IT Consultant	Cyprus	Male	Tourism, IT	10+
Woman Entrepreneur, Founder and CEO	UAE	Female	Tourism, hospitality	15+
Computer Science Specialist, Owner and Manager of IT Firm	Spain	Male	IT	10+
IT Consultant, Owner and Manager of IT Firm	Germany	Male	IT	10

engagement, operational efficiency, or strategic planning. This ensured relevance to our research question without excluding entrepreneurs whose use of AI might not yet be extensive but nonetheless impactful.

We acknowledge that participants' expertise predominantly resided in the fields of entrepreneurship and tourism rather than in AI technological developments as a technical discipline. This focus was a deliberate methodological choice, as the study aimed to investigate the adoption, challenges, and perceptions of AI from the perspective of user-practitioners (tourism entrepreneurs), rather than AI creators/developers or technical experts. To mitigate this potential limitation and ensure a more comprehensive understanding, participants with varying degrees of AI exposure and competence were included. Additionally, professionals such as AI consultants with domain-specific experience in tourism were incorporated into the study to provide complementary and specialized insights. As displayed in Table 2, this approach facilitated a balanced understanding of AI's practical applications and strategic implications for women entrepreneurship in tourism.

The inclusion of participants without formal, technical AI expertise reflects the reality of entrepreneurship in tourism, where AI adoption is still emergent (Kimbu et al., 2024), but all participants had at least some user-practitioner knowledge and experience of AI. This aligns with the exploratory nature of the study, which aims to understand how responsible AI can support inclusivity from a user-entrepreneur perspective rather than assess technical proficiency from an AI developer perspective.

The second phase of the study, which involved a focus group, enabled collaborative discussions among participants with diverse backgrounds. This collective deliberation ensured that emerging themes, particularly those related to ethical AI governance and inclusivity, were robust and reflective of practical realities as perceivers by practitioners.

The methodological choice to include participants with varying levels of familiarity with AI strengthens the study's relevance to the tourism industry, where AI adoption is not yet ubiquitous. This approach aligns with the study's theoretical framework, which prioritises inclusivity and diverse stakeholder engagement.

The interview findings informed the design of the focus group discussion by providing insights of the broader themes of AI-enabled empowerment and governance in tourism. Theoretical saturation was deemed to be reached when participants' responses began to reflect recurring themes from earlier interviews towards the end of the data collection process and, therefore, no additional interviews were conducted (Ameen et al., 2024).

3.1.2. Phase two: focus group discussion

The second phase involved a focus group discussion of seven members including women entrepreneurs, IT professionals, and tourism consultants who took part in the interviews (see Table 3). Those informants who demonstrated 'more advanced understanding, and

Table 3
Focus group participants.

Interviewee Role/ Title	Location	Gender	Experience/ Expertise	Years of experience
Head of Innovation, Blenheim Palace Heritage Site	UK	Male	Tourism	20+
Entrepreneur	Turkmenistan	Female	STEM, community development, women empowerment	5
Senior Consultant responsible for Women Entrepreneurship Training	Switzerland	Female	Education, tourism, HR, organizational behavior, partnership, project management	20
Woman Entrepreneur	Kazakhstan	Female	Tourism	12
IT Specialist, Owner and Manager of IT Firm	Kazakhstan	Male	IT	10+
IT Consultant, Owner and Manager of Security Services Firm	Turkey	Male	IT	20+
Manager, Tour Operator/IT Consultant	Cyprus	Male	Tourism, IT	10+

experience of using AI' as well as knowledge of ethics of AI, were invited to take part in focus group discussion. This phase aimed to explore in depth the responsible use and governance of AI, particularly in the context of women entrepreneurship in the tourism industry. The focus group discussion was conducted online via Zoom Meeting Platform by the lead and the corresponding authors.

The focus group discussion aimed at answering the following research question: "What are the ethical dimensions of using AI key and how could AI be responsibly governed and implemented?". Specific questions during the discussion focused on topics like AI integration and business opportunities, decision making and strategic planning, customer engagement and service enhancement, and ethical risk. Focus group discussion lasted 2 h.

All participants were provided with an information sheet detailing the research objectives, and informed consent was obtained prior to interviews. Anonymity and confidentiality were assured by assigning unique codes to all participants in the transcription. Given the sensitivity of some topics, such as gender inclusivity and AI ethics, participants were informed of their right to withdraw from the study at any point, even without having to provide a reason. We secured ethical approval from the ethical approval committee of the corresponding author's research institution involved.

3.2. Data analysis

Consistent with prior literature (e.g., Farmaki et al., 2015; Seyfi et al., 2025), our data analysis involves a combination of inductive and deductive approaches to develop a robust understanding of the impact of responsible AI on women entrepreneurship in tourism.

3.2.1. Analytical framework development

An initial coding framework was developed based on the existing literature on responsible AI and inclusive entrepreneurship, including the work of Bakker and McMullen (2023), Chalmers et al. (2021), and Giuggioli and Pellegrini (2023). This framework drew from the

AI-enabled entrepreneurial process outlined by Giuggioli and Pellegrini (2023), which systematizes the use of AI across four main clusters—opportunity creation, decision making, performance improvement, and education and research. Throughout the interviews, we encouraged participants to elaborate on relevant points, and we remained open to other issues and stories they wished to share. These clusters directly informed the categorization of the interview data into themes, such as entrepreneurial activities and business development, strategic decision making and strategic planning of women entrepreneurs, targeted marketing strategies, personalized offerings and customer engagement as well as the role of AI in helping with work-life balance.

Following the deductive approach, our analysis also employed the Gioia methodology (Gioia et al., 2013) for thematic coding, which is inherently a bottom-up approach. This approach allowed themes to emerge inductively from the data, rather than imposing predefined categories. The inductive analysis of the data—which involved the identification of 54 first-order codes (assigned to the data units) and then grouping these first-order codes into (18) broader, second-order thematic dimensions—led to the emergence of themes also regarding the ethics and AI interface across five dimensions, namely, lack of transparency, fairness and bias, privacy, human centricity, and accountability. Moreover, this approach enabled us to inductively construct a final, convergent thematic area focusing on strategies to mitigate AI risks and promote inclusivity. Fig. 1 presents the themes in the form of a coding tree chart; a thematic structure that also guides the organization of the findings and analysis presented in section 4 and the subsequent discussion in section 5.

Overall, the two-phase research design demonstrates the strengths of a qualitative mixed-methods approach in addressing complex phenomena. As Gibson (2016) highlights, integrating individual and collective perspectives enables a deeper exploration of nuanced patterns and shared reflections. Phase 1, comprising qualitative interviews, provided detailed insights into symbolic meanings and personal challenges. These findings were subsequently explored in Phase 2 through a focus group discussion where participants collaboratively examined critical themes, such as ethical AI governance.

By combining individualized insights with collective deliberations, the study captured a broader understanding of varied stakeholder perspectives, avoiding reliance on a single context (Creswell & Clark, 2017; Gibson, 2016). The iterative linkage of findings from interviews to the focus group enhanced the study's interpretative depth and minimized biases, aligning with Gibson's (2016) emphasis on triangulation. This approach also enabled the verification and expansion of themes emerging from the interviews, while also informing nuanced theoretical implications and practical recommendations (Taylor et al., 2015).

4. Findings and analysis

4.1. Work–life balance-related barriers

When asked about major barriers in their entrepreneurial activities, informants—but women entrepreneurs with dependents in particular—highlighted work-life balance-related challenges as the main obstacle. These issues persist despite tourism often being portrayed as a gender-progressive sector. Besides systemic institutional barriers (as discussed in our literature review, e.g., Ali, 2018), these challenges stem primarily from the need to balance business responsibilities with family obligations. Indeed, informants stated that having dependent children "*significantly limits their time and flexibility*" when it comes to networking, makes their schedules "*unpredictable*" and "*more difficult to meet tight deadlines*". Beyond the structural constraints posed by factual work-life balance demands, all women entrepreneurs emphasized the associated cultural aspect of the *'role (mis)perception of the society'*. As one female tourism entrepreneur from Turkey put it:

> The perception of the society is we are mothers, and we need to dedicate
>
> a large chunk of our time for kids and family. Therefore, we have very limited
>
> time for business.

Some informants went further by claiming that being a woman and a 'mother' leads to a stereotypical conception, bias and discrimination in their business worlds. These sentiments were captured well in the statement by a female entrepreneur from Kazakhstan:

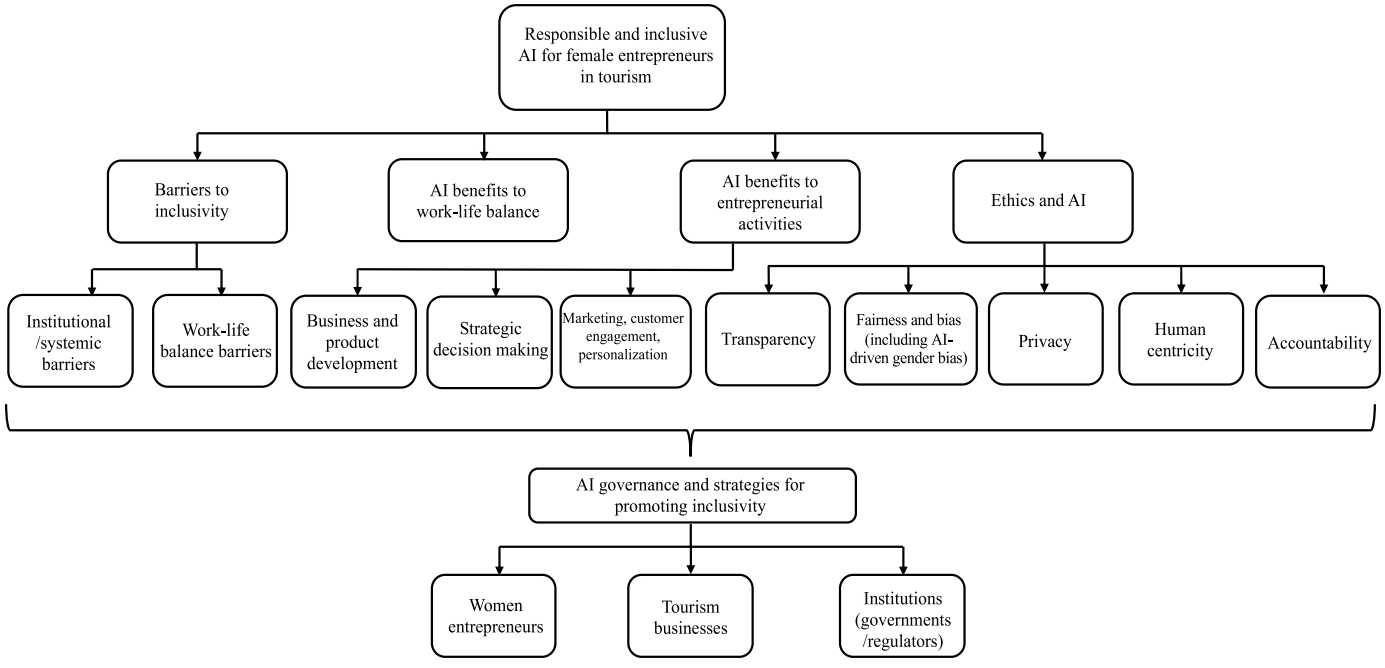

Fig. 1. Coding tree for thematic analysis.

> There are misperceptions among the investors or financial institutions that
>
> being mothers will limit our ability to grow our businesses, or have ambitious plans
>
> for our commercial ventures.

Confirming this, another woman entrepreneur from Tunisia added:

> Women entrepreneurs face bias from customers, clients and even from
>
> employees. There are gender stereotypes in male-dominated industries like
>
> tourism and hospitality.

Although tourism is often heralded as the sector holding the key to the commitments to gender equality and the empowerment of women embedded in the United Nations Sustainable Development Goal 5, these comments highlight an unjust Rawlsian state of affairs, at least in terms of underlying values and gender power distribution, with tourism being still very traditional and male-dominated, segregating and/or discriminating according to gender. This is consistent with findings by Law et al. (2025), who note that AI disruption is often perceived through gendered lenses in hospitality, exacerbating existing inequalities in entrepreneurial participation. The subtext of the Sausserian signifier-signified meaning of the last comment also points to the not so hidden homosocial ties that still cause marginalization effects on women entrepreneurs operating in the industry, as found by Carvalho et al. (2019) in their telling analysis of women managers' careers in tourism organizations.

The existing tourism entrepreneurship literature cited earlier identifies several systemic and institutional barriers to women entrepreneurship, including access to capital access, financial resources and loans, lack of training, scale of operations, and gender prejudices (Carvalho et al., 2019; Jaafar & Rasoolimanesh, 2015). Recent empirical work (Lin & He, 2024) further illustrates how AI-induced workplace shifts can inadvertently amplify these challenges when adoption strategies fail to account for the specific needs and contexts of women entrepreneurs. Our evidence (also beyond the few quotes reported above) confirms these factors as important obstacles to women entrepreneurs in the tourism sector. However, our study goes beyond existing literature by additionally identifying work-life balance factors as the key barrier to female entrepreneurship in tourism. Having dependents or being a mother are perceived as limiting women entrepreneurs' time and flexibility. Critically, the evidence indicates that these structural, factual constraints are compounded by society's stereotype of women not having the capacity and/or time for succeeding in their entrepreneurial activities or in growing their business due to their 'motherhood' role.

Such barriers to the inclusivity of women entrepreneurs in tourism widen the gender gap, internationally. This also means that a truly interconnected entrepreneurial 'ecosystem'—which following Moore's (1993) original conceptualization of the term requires *all the members* of the system (including women entrepreneurs) to work with and around each other to optimize the collective benefit—is lacking in the current state of affairs, since it is not adequately promoting or leveraging women entrepreneurs' fruitful participation and contribution. However, reassuringly, the findings reported in the section below, offer evidence of how AI technologies are already making a difference in helping women with work-life balance demands and in assisting them to establish themselves in a traditionally male-dominated and gender-discriminating industry.

4.2. Role of AI in helping with work-life balance

When informants were asked how AI technology could help them with these challenges, there was a consensus that AI helps them balance their work and life, and, more importantly, supports their entrepreneurial activities. IT and tourism consultants in particular, stated that AI offers targeted solutions that can help women entrepreneurs, particularly mothers, to navigate the complexities of entrepreneurial activities while managing family responsibilities. This aligns with previous research that identifies time poverty, unpaid care responsibilities, and lack of operational flexibility as key barriers to women's sustained entrepreneurial engagement in tourism (Figueroa-Domecq et al., 2020). Our informants stated that AI can play a significant role in fostering better collaboration and networking opportunities for women entrepreneurs by facilitating virtual networking platforms that use AI to connect individuals with complementary skills, interests, and business goals.

A participant's comment epitomizes the transformative power of AI technologies in application to tourism industry workflows and how, though not exclusively for the benefit of women business owners, the role of AI has offered remarkable time-saving advantages to women entrepreneurs in juggling their work-life balance predicaments. As one of the women entrepreneurs who runs a tour operator business in Turkey put it:

> I can honestly say that embracing AI technologies over the last couple of
>
> years has not only revolutionized my tour operator business in how we interact
>
> with customers and personalize our offerings and services to them, but it also
>
> gifted me the most valuable resource in our industry, time, to better manage my
>
> work-life balance as a busy woman-mother-entrepreneur. Virtual assistants and
>
> AI-powered chatbots in particular, have helped me create more efficient and
>
> personalized booking processes in my business, with invaluable time savings in
>
> both our business workflows and personal time investments.

Another woman entrepreneur from Kazakhstan stated:

> As women, we carry out at least double more unpaid household and care work than men do, so we benefit more than men from any AI efficiency gains in our work. AI also helps me to develop personal relationships with my customers and better connect with suppliers. Relationship development is crucial in hospitality and tourism industries. virtual assistants, AI-powered scheduling tools, and remote networking platforms can significantly ease the daily operational challenges of women entrepreneurs.

Hence, by granting entrepreneurs time savings and efficiency gains—which hold a higher marginal benefit for women entrepreneurs *vis-à-vis* men given their greater work-life balance predicaments—AI integration in the tourism industry does appear to offer solutions to women entrepreneurs in the tourism industry to better juggle the demands of domestic and other responsibilities. This is particularly significant in a sector where many women operate sole-proprietor or family-run businesses, often without access to support staff or scalable infrastructure (Figueroa-Domecq et al., 2020; Manfreda et al., 2024; Ribeiro et al., 2021).

It is also evident from the voices of participants that AI technologies offer advantages favoring the development of a more interconnected entrepreneurial ecosystem, one more conducive to female entrepreneur participation, and hence inclusivity, in addition to being one more efficient and more likely to foster innovation. As an informant who holds a senior position in an international technology company in Kazakhstan stated:

> Technology and artificial intelligence have the potential to revolutionize and better integrate various industry segments by enhancing efficiency, improving customer experiences, and driving innovation.

So, overall, our findings tell us that AI is already contributing to break down barriers to inclusivity by helping women achieve a better work-life balance. AI-driven solutions adopted in the tourism sector enable entrepreneurs, including women, to overcome time and resource constraints through automation and more efficient task management. AI also helps women entrepreneurs benefit from online networking and personalized online learning. These online activities offer them the flexibility to manage their time and family responsibilities while dealing with the complexities of entrepreneurial activities.

The literature on women entrepreneurship (but not the tourism entrepreneurship literature) identifies these as IT- and AI-related enablers of women entrepreneurship (Corvello et al., 2022). This study also offers empirical evidence from tourism industries and, more importantly, offers insights from both developed and developing countries, in particular, from male-dominated societies where the gender gap is very pronounced, and women's inclusivity is a serious challenge in every facet of society and daily life. This underscore the relevance of Rawls' theory of justice which emphasizes the importance of ethically using AI technologies to benefit all individuals, especially marginalized groups, such as women entrepreneurs in tourism.

4.3. Role of AI in supporting entrepreneurial activities

4.3.1. Business and product development

The findings of this study indicate that AI empowers women entrepreneurs in tourism to identify emerging market trends and evolving tourist preferences, thereby enhancing their ability to design timely, tailored offerings. As a woman entrepreneur from Turkey who runs a travel agency explained:

> Technology, especially AI, is such a game-changer for businesses today. It
>
> simplifies so many processes, from automating tasks to improving decision making
>
> with data. AI-driven tools give businesses the ability to understand consumer
>
> behaviors and predict trends in ways that were unimaginable before. For women
>
> entrepreneurs, this opens up a world of possibilities.

Participants agreed that AI enables women-led businesses to proactively access new or underserved market segments. By identifying niche opportunities, such as eco-tourism, dietary-specific experiences, or culturally immersive offerings, AI tools assist in content creation, demand forecasting, and product differentiation (see, e.g., Dwivedi et al., 2024). As one entrepreneur from UAE reported:

> AI-driven tools can be specifically designed to cater to the needs of women
>
> entrepreneurs targeting niche markets like eco-tourism, vegetarian food, or
>
> multicultural offerings. These tools could provide market insights, generate
>
> tailored marketing content, and assist in developing unique product offerings
>
> that align with customer values.

This insight is highly pertinent in the tourism sector, where shifts in traveller preferences, seasonal dynamics, and sustainability expectations require continuous adaptation (Chan, 2025). For women who often run micro or family-run tourism ventures with limited access to costly analytics, AI levels the playing field by enabling real-time monitoring of customer sentiment, booking behaviours, and competitor positioning (Zhang et al., 2025). Reflecting upon developing new tourism products, another woman entrepreneur from Turkmenistan added:

> Women entrepreneurs can use AI to build eco-friendly business models that
>
> not only appeal to today's conscious travelers but also set them apart from
>
> competitors. Responsible AI principles, such as minimizing environmental impact,
>
> should guide these innovations.

Other statements emphasized that AI-supported tools could help new products and services to enhance visitors' experience. Integrating AI in tourism and hospitality can enhance personalized experiences, streamline operations, and improve customer service. This creates opportunities for women entrepreneurs to develop tailored travel apps, innovative booking platforms, and specialized concierge services, fostering niche markets and driving growth.

4.3.2. Strategic decision making and strategic planning

Informants were also asked whether, and if so, how, AI could help with women entrepreneurs' strategic decision making and strategic planning. The general view, including that shared by male participants, was that AI could be very helpful, particularly because of the risks of the industry. As a female senior tourism consultant from Switzerland summarized:

> Our industry is high risk because it is hugely impacted by crises of all sorts, such as sudden events in or across source and destination countries including terrorist attacks, natural disasters, pandemics, political instability and civil wars, etc. More recently, we have been hit by cost-of-living crises in many countries that affect travel budgets and business costs and growing cyber-attacks to our travel businesses due to the vast amount of valuable customer data we hold. AI offers data-driven insights and simulations of different business scenarios, thus helping all tourism entrepreneurs, including women, navigate such challenges.

It was stated that, in crises, such as economic downturns, AI could provide solutions by predicting market shifts and building resilience strategies. Tourism is among the most crisis-sensitive sectors, frequently exposed to demand shocks and rapidly shifting consumer behaviours. In this high-risk environment, AI technologies can enable strategic foresight by processing real-time data across global markets, weather conditions, socio-political events, and consumer sentiment to forecast and mitigate risks. This capability is particularly valuable to women entrepreneurs who often operate with fewer buffers and limited access to conventional crisis management tools (Filimonau et al., 2024). As captured in one of the statements by a female IT consultant from Kazakhstan:

> AI-driven decision-making tools can assist women entrepreneurs in high-risk
>
> environments by analyzing vast amounts of data to provide actionable insights,
>
> enabling them to make more informed and strategic business decisions.

This aligns with emerging research suggesting that AI adoption supports resilience-building in tourism by facilitating early detection of vulnerabilities and offering scenario-based planning tools. For instance, Chan's (2025) work on sustainable gastronomy tourism highlights how AI-generated content influences strategic positioning through consumer

perception management. However, participants also recognized the limitations of AI in certain unpredictable situations. As a tourism consultant from the UK observed:

> As for economic downturns, I think yes, as there are usually signs of a crisis
>
> long before the crisis starts, so AI may be able to detect these signs easier than
>
> humans. As for pandemics, affecting the tourism industry, it may be more difficult,
>
> as there are usually no signs that a pandemic is about to begin. However, using
>
> data from previous situations like that, AI can surely assist in how to deal with
>
> the challenges arising during financial, societal, or political crises.

Other comments by informants gave examples of AI capabilities assisting in decision making and strategic planning including the capacity to analyze big-data across markets, and real-time data across countries ranging from weather condition to events. Informants also mentioned the yet untapped potential of AI to further enhance the speed, quality, and scale of strategic analysis, enabling new tools to emerge for use by industry operators such as virtual strategy simulations.

With specific reference to financial planning in strategic decision making, informants noted how AI helps women entrepreneurs gain greater access to funding through grants or loans aimed at women-owned businesses. It was stated that AI can do so by helping with *'analyzing regulatory requirements and streamlining compliance processes'* in addition to *'identifying* funding *sources'*, thereby reducing complexity and easing access to financial resources.

4.3.3. Marketing and customer engagement

There was widespread agreement that AI-driven tools could also enable targeted marketing strategies aligned with specific demographics. Using AI in this way, '*can make marketing campaigns less costly and more successful.*' One of the tourism consultants from Switzerland stated that marketing:

> *… is a complex process that needs to be well planned and coordinated. Without*
>
> proper planning, a lot of money can be wasted without achieving the expected
>
> effects. You need to know the market, the target group, the marketing techniques, the
>
> competition. So using AI for this can reduce costs and make campaigns a lot more
>
> efficient and successful.

A female entrepreneur from UAE further highlighted the capabilities of AI-driven marketing:

> AI is amazing when it comes to marketing—it can help personalize campaigns,
>
> optimize ad targeting, and even predict customer preferences. Women
>
> entrepreneurs can use AI to automate social media content, run email marketing
>
> campaigns, and analyze the success of these efforts in real time. It's all about
>
> using AI to make their marketing smarter and more efficient.

This evidence underlines how AI can indeed enhance customer engagement by providing personalized services and faster response times. The finding is consistent with the view of AI as enabler of entrepreneurial growth, as discussed earlier in our literature review, but it is nonetheless telling that we found a consensus among informants that this can be a significant advantage particularly for women entrepreneurs in tourism and hospitality industries. In the tourism sector, where consumer preferences shift rapidly due to seasonality, socio-cultural trends, and global events, AI enables precision targeting, real-time analytics, and personalized content delivery. These capabilities are particularly beneficial for women entrepreneurs who often operate with constrained marketing budgets. Studies confirm that AI empowers small tourism businesses to achieve higher marketing efficiency and return on investment through content personalization and consumer behaviour modeling (e.g., Zhang et al., 2025). The transformative role of AI in customer engagement was also evident in the interviews. A Turkish entrepreneur highlighted how:

> AI chatbots in hospitality settings have transformed the way our businesses interact
>
> with customers, improving satisfaction and increasing bookings.

A tourism and hospitality consultant from Belgium elaborated on the automation of service agents as follows:

> There are examples of hotels that have started using robots as service agents.
>
> These examples are not always positive, as there is still a lot of development
>
> in this area and customers need time to get used to this new technological
>
> environment. However, using AI in customer interactions is much more usual
>
> nowadays when it comes to service hotlines. This can allow for business growth
>
> as it saves costs and allows businesses to shift the focus of their daily activities
>
> towards activities that are relevant in a competitive market.

A female Managing Partner, Market Entry Strategist from Switzerland, drew upon a specific case of chatbot adoption she was familiar with, as an example 'good practice':

> Their chatbot provides personalized product recommendations, answers
>
> customer inquiries, and assists with bookings. This has enhanced customer
>
> engagement, leading to increased sales and improved customer satisfaction.
>
> The ability to provide 24/7 support and tailored interactions has contributed significantly to business growth, demonstrating how AI can streamline
>
> customer service and drive revenue.

These accounts align with empirical research showing that AI-enabled customer service, via chatbots and recommender systems, enhances the overall tourist experience and supports operational scalability (Chan, 2025; Zhang et al., 2025). Especially in tourism's service-intensive settings, AI systems capable of delivering multilingual, real-time support can improve guest satisfaction while freeing up entrepreneurs to focus on strategic tasks. For women, who often juggle multiple roles, this flexibility is crucial (Della Corte et al., 2025).

Overall, the findings show that AI helps with women's entrepreneurial and business development activities in many respects while

saving costs, including assisting decision making through more efficient and effective strategic and financial planning, accessing finance, identifying new tourism markets, analyzing market trends, developing new products, facilitating marketing, and enhancing visitors' experience by offering personalized services. Furthermore, AI technologies enable the development of tailored, niche offerings such as eco-tourism and cultural tourism products that align with consumer preferences, fostering both competitiveness and sustainability in women-led tourism ventures. The role of AI in promoting women entrepreneurship in tourism further aligns with Rawls' theory on the need for technology regulation to be conducive to a more inclusive entrepreneurial environment (Malhotra et al., 2024), allowing women to prosper whilst lowering the barriers highlighted in the earlier sections.

The existing women entrepreneurship literature addresses how AI helps with entrepreneurial activities in general (e.g., Khoo et al., 2024). However, the literature reports only limited empirical evidence about how AI supports entrepreneurial activities. Our findings expand the discussion and the available evidence base and highlight AI's broader utility in entrepreneurship, incorporating lessons from the tourism sector that resonate with experiences in other industries. For example, AI-driven tools in the financial technology sector have demonstrated significant potential in extending access to credit for underbanked populations (Tigges et al., 2024). Similarly, AI applications in green technology have showcased their ability to support sustainable entrepreneurship by driving innovation and enhancing market competitiveness (Jorzik et al., 2024). These cross-industry insights highlight transferable strategies that can empower women entrepreneurs in tourism as well, to harness AI for business development, market analysis, and strategic decision making.

The evidence underscores that AI's potential in tourism is not confined to operational efficiency; it extends to enabling women entrepreneurs to enter new markets, develop innovative products, and implement sustainable business models. This broadens our understanding of AI's role as a transformative enabler, offering practical implications for fostering inclusivity in women entrepreneurship both within and beyond the tourism sector.

Our study is one of the first offering evidence demonstrating how AI helps—or could help—women entrepreneurship in tourism. This knowledge is of significant value even if some of the identified advantages brought by AI are not exclusively confined or unique to the field of tourism. Participants' voices are loud and clear in telling us that AI could help not only with the identification of niche markets but also with the adaptation of new business models, including a business approach or orientation more conducive to sustainable tourism development. As amply corroborated by our qualitative data, these findings suggest that responsible AI tools, if governed by ethical standards and responsible use, can empower women entrepreneurs to harness advanced analytics, automate repetitive tasks, and engage consumers more effectively, further leveling the entrepreneurial playing field in the tourism sector.

4.4. Ethics and AI across five dimensions

When informants were asked what ethical concerns they had about the use of AI, the major issues raised were lack of transparency, lack of fairness, bias (including gender bias), and lack of privacy and accountability. Informants, especially women, stressed that future business models should maintain the 'human-centered' approach that is part of the DNA of the industry rather than replace humans with an AI-driven system, also to ensure accountability.

4.4.1. Transparency

The informants conveyed that AI systems should be transparent, and businesses need to be *'straightforward'* about explaining how their AI systems work and how they are used to make decisions. One group of informants went further, arguing that tourism businesses need to share the limitations and drawbacks of their AI systems. As succinctly stated by an IT consultant from Turkey:

> We also need to be open and transparent about what does not work!

Confirming the point, a Tour Operator consultant emphasized that transparency is also a *conditio* sine *qua non* for building trust with tour operators' AI systems. As he put it:

> Transparency in AI is a significant issue in building trust in the tourism industry,
>
> with over half of non-users reporting lack of trust as the main reason for not using
>
> AI in travel planning.

A consultant from Switzerland also referred to 'transparency' in terms of ensuring trust in the use of AI by service providers:

> We need to build a trustworthy and transparent system to be able to effectively
>
> use AI and also train women entrepreneurs in using AI for good causes and for the
>
> benefit of their businesses and society.

In tourism, where consumer decision-making is based on intangible and trust-dependent factors such as authenticity, safety, and service quality, the transparency of AI systems becomes a critical determinant of perceived reliability. Customers are increasingly aware when chatbots, automated recommendations, or personalized itineraries are AI-generated, and their confidence may be compromised if the logic behind these outputs is unclear or opaque, especially when errors or inconsistencies arise (see, e.g., Law et al., 2025). Some informants also stressed the guidance and support needed, especially by women in the tourism industry, to comply with the somewhat nebulous and constantly evolving AI regulatory and legal frameworks that could promote greater transparency as well as trust in the sector's use of AI applications.

> As a woman tourism entrepreneur from a developing country, I must confess
>
> I am overwhelmed by the complexities and ever shifting goalposts of compliance
>
> expectations not just for AI developers but for us as user tourism operators. AI skills risk creating another entry barrier for women entrepreneurs in our industry.

The above comment attests to the absolute necessity for existing regulatory/legal and ethical frameworks to foster responsible and transparent AI use also through clear and easy-to-access guidelines as well as training to facilitate the safe and responsible integration of AI technologies in the tourism industry. This would help close the AI skills gap for women entrepreneurs that currently operate in the tourism sector. In essence, tourism, as a culturally sensitive and highly relational sector, requires more than efficiency from AI tools. Misuse or misunderstanding, particularly in customer-facing services, can undermine the very trust that tourism enterprises depend on (Hsu et al., 2024; Law et al., 2025; Vatankhah et al., 2024). Supporting women entrepreneurs with transparent AI practices, easy-to-access compliance guidelines, and ethical training is therefore essential to ensure inclusive participation in the AI-driven future of tourism.

4.4.2. Fairness and bias (including gender bias)

When discussing fairness and bias as ethical dimensions of AI, consistent with the literature we reviewed earlier in the paper (see, e.g., Jørgensen & Søgaard, 2023; Resseguier, 2023), informants underlined that AI systems must be designed to avoid biases that can lead to unfair treatment of individuals and groups. One of the informants illustrated the point in relation to a tour operator in Cyprus:

There are lots of AI-based marketing systems around. Without proper knowledge,

the system could disproportionately target adverts based on gender stereotypes.

So it is important to be mindful of such biases to ensure ethical AI usage.

The female entrepreneur from United Arab Emirates reiterated the point whilst alerting us to the dangerous decision-making implications of AI-driven bias:

We need to make sure that the system is fair and free from biases. If not, we might end up making wrong decisions; decisions that could result in financial, reputational damage, and loss of societal trust. Ultimately, any AI-aided or powered decisions are influenced by who develops AI, usually men, and the sort of data AI is trained on. This inevitably has gender implications.

The point here is that if the underlying training data reflects traditional gender roles, such as women being associated with wellness or family holidays, and men with adventure or business travel, the resulting outputs may reinforce exclusionary norms. A tourism and hospitality consultant from Belgium underscored this point while emphasizing how such AI-powered solutions not only pose an ethical challenge but could also perpetuate the gender-bias present in the industry:

AI reflects the biases prevalent in our society, including, in our industry, gender biases. For example, if our machine learning systems are trained on data linking women and men with different skills, interests, or travel preferences, the generated AI outcomes will reflect or even accentuate gender biases.

When discussed further during the focus group conversations among participants in terms of what could be done to avoid such potential biases and to ensure fairness, the collectively shared opinion, consistent with much of existing literature (see, *inter alia*, Obschonka & Audretsch, 2020), was that businesses should carefully select and monitor data to ensure that they are representative and bias-free. A group of informants also highlighted the importance of who develops AI systems, that AI training data and associated algorithms do not remain a 'black box' and are open to inspection, alongside having strict guidelines in place to mitigate biases, including gender bias, in AI systems. Tourism entrepreneurs noted that these biases, if left unaddressed, could marginalise women-led businesses, particularly those operating in niche or male-dominated markets, by limiting their visibility and misaligning their offers with consumer preferences. During focus group discussions, informants agreed that to ensure fairness, tourism businesses must not only use representative data but also scrutinise the development process of AI systems. These concerns align with findings from Khoo et al. (2024), who highlight the need for ethical oversight and inclusive design when using AI to support innovation and customer engagement in tourism.

4.4.3. Data privacy and data security concerns

The other important issue raised by informants is protecting user privacy, typically defined as the right of a user to control the access to, use, and dissemination of their personal data (Quach et al., 2022). They stated that AI systems need large amounts of data to function effectively. However, data need to be kept strictly confidential and protected. The woman consultant from Belgium commented on the issue of privacy as follows:

We collect data from tourists, visitors and consumers for research. We have access to large datasets. However, we need to treat data carefully and diligently. I am not sure if we should let AI have access to the confidential data of individuals.

Confirming this, a Managing Partner, Market Entry Strategist from Switzerland hotel, leisure, travel sectors, added:

If tourists and hospitality consumers had ever written a blog post or service review, or commented on any tourism destination online, there's a good chance this information was consumed by ChatGPT. None of these people were asked whether OpenAI could use their data. This is a clear violation of privacy, especially when data are sensitive and can be used to identify them, family members, or their location.

There was a shared view that, if data—including visitors and consumers' data—are not protected properly, this could lead to reputational damage. As one of the women entrepreneurs from Turkmenistan put it:

If customer data is not adequately protected, sensitive information could be compromised, leading to trust issues in the eyes of tourists, visitors, and the business community.

One of the women entrepreneurs from Kazakhstan described the extent of the risk, as follows:

The more technologies we use, the more accessible and manipulatable we are. So, with the increasing usage of AI, we can never be 100 % sure that our data or devices are safe.

Focus group discussions confirmed that there is a strong need for businesses to ensure that data are collected and used in compliance with privacy laws and regulations, which should be strictly adhered to in order to safeguard user/customer data. Participants also acknowledged that personalization of services and customization of the tourism experience, by relying on large amounts of personal data (e.g., location data, booking details, payment information, biometric data, etc.), raise concerns about how such data are collected, stored, and used, with clear potential impacts on individuals/customers' privacy. This inevitably entails a trade-off with increased risk in some loss of data privacy and data security. These views reflect growing concern in the literature over the ethical use of AI, particularly regarding user consent, transparency, and data security in tourism (Law et al., 2025). While personalization enhances tourism experiences, it also raises the stakes when it comes to storing and processing personal data, including biometric details, geolocation, and payment information (Law et al., 2025; Tuomi, Tussyadiah, & Ascenção, 2024). These are crucial considerations when implementing AI in the tourism industry also according to our participants, as per the above quotes. The question is, in their words, "*getting the balance right*", especially considering the fact that increasing reliance on things such as cloud storage and IoT (Internet of Things) technologies in tourism make such data, *de facto*, vulnerable to cyberattacks and data breaches.

4.4.4. Human centricity and accountability

A key ethical concern voiced by informants was the imperative of human-centricity in AI design and deployment. This theme emerged strongly in discussions about preserving the human touch in tourism and hospitality, industries inherently reliant on personal interaction, emotional labour, and intercultural communication. As a senior consultant from Switzerland noted:

Tourism and hospitality are, at heart, a labor-intensive, people business and, because of this, AI-driven systems should enhance but not replace the person-to-person, human touch of our industry.

Supporting this view, another woman entrepreneur from Kazakhstan stated:

We cannot pretend that we are dealing with a human whilst we are actually

dealing with something not real, a robot.

There was a consensus that AI systems should be designed to augment human capabilities and enhance societal well-being rather

than replace (let alone harm) humans. This argument was well captured in the words of a senior consultant from Switzerland:

> To avoid displacing the employees, the business owners should focus on
>
> training their staff and integrating AI tools to complement human roles.

Echoing these sentiments many informants highlighted the importance of having mechanisms in place to address any negative impacts or harms and ensure that there is human oversight of AI decision-making processes.

Interestingly, in discussing the ethics of AI in tourism, many women entrepreneurs stated that, alongside the risk of gender bias discussed above, human-centricity and accountably, are not only the core ethical issues for promoting responsible AI adoption but also aspects inextricably linked to the role that women entrepreneurs play in the tourism industry. As eloquently epitomized by a statement by a female entrepreneur from Turkey:

> We also bring a special woman's touch to the tourism industry and an
>
> innate sense of accountability born out of the myriad of home and work
>
> responsibilities that, as women, we routinely have to contend with. This is why
>
> a human-centered approach and accountability are not only the most sensitive
>
> ethical parameters for AI adoption in tourism but also for inclusive and
>
> responsible entrepreneurship.

For these entrepreneurs, adopting AI is a moral decision that directly impacts guest experience, staff well-being, and the authenticity of their business models. This insight aligns with Scarpi's (2024) study, which found that replacing human interaction with chatbots can significantly reduce tourists' psychological ownership, diminishing their sense of self-efficacy, accountability, and relationship commitment. Ultimately, such practices risk eroding loyalty and reducing rebooking intentions, outcomes that particularly disadvantage small, values-driven tourism businesses. We also take the last reported quote as a synoptic caption of the ethical considerations across the five dimensions. Most importantly, this view was also validated by male participants' opinions in the discussion held during the focus group.

5. Discussion of AI governance and strategies for promoting women's inclusivity

As noted in the methodology section, discussions held during the focus group culminated into *collective* deliberations and recommendations for fostering ethically responsible AI and for promoting women's inclusivity in tourism entrepreneurship. The analysis that follows, therefore, can be taken as a critical synthesis of the strategies for AI implementation emerging organically from the key findings of the present study.

An unambiguous consensus quickly emerged in the focus group around the overarching ethical issue of AI adoption, also in tourism. In a nutshell, tourism businesses should ensure that AI implementation benefits society while minimizing the risk of harms. Indeed, many informants stated that '*protecting society at large*' should be the guiding principle. Important concerns raised with regards to the ethical and responsible use of AI were 'lack of transparency' and 'biased data' which could mislead society into making inscrutable decisions based on 'false data', thus building a society of 'wrongdoings' that would harm the generations of today and the future. This is the reason why 'human centricity' and 'accountability' are of paramount importance.

These considerations naturally tune in to Rawls' theory of justice, particularly to its principles aimed at fostering fairness, equity, and the protection of society (Rawls, 1971). They also echo our qualifications and reservations expressed earlier in the paper in blindly assuming that AI is always or necessarily neutral in its power to affect societal outcomes. Critically, our evidence, unveils an awareness of the informants of the warnings that should accompany the use of AI technologies, not only with respect to an irresponsible or unethical use of AI but also in terms of potential data errors and algorithms processing glitches (in addition to gender biases) and inherent trade-offs (e.g., personalization of services *vs.* loss of privacy) that such technology still presents. These ethical concerns, too, align with Rawls' principles in AI governance which advocate for transparency, inclusivity, and equitable access, and with previous literature highlighting the key dimensions of responsible AI (e.g., Du & Xie, 2021; Loi et al., 2021; Quach et al., 2022). Our study went further than previous work by highlighting 'human centricity' and 'accountability' alongside 'gender bias' as the key ethical AI risks associated with women's entrepreneurial activities in tourism. This is particularly important for women entrepreneurs in tourism because they often operate at the intersection of community, culture, and customer service (Figueroa-Domecq et al., 2020; Ribeiro et al., 2021), where trust, authenticity, and emotional labour are central to value creation. The reputational risk of unethical AI, such as biased recommendation engines, opaque pricing algorithms, or intrusive data use (Hsu et al., 2024; Law et al., 2025), can disproportionately affect small, women-led tourism ventures that depend heavily on personal relationships and word-of-mouth. Responsible AI governance, grounded in human centricity and accountability, is therefore essential not only to safeguard customer trust but also to ensure that women entrepreneurs can fully participate in and benefit from the digital transformation of the tourism sector.

There was unanimous agreement in the focus group that, in the tourism industry, AI should be used as an invaluable 'facilitator' or support mechanism in decision making, execution, and delivery rather than replace human leadership. This collectively generated insight extends existing knowledge from relevant literature by emphasizing the importance of designing AI models to augment rather than replace human endeavors, particularly in tourism, where human-centric interactions are crucial. By doing so, responsible AI can complement women's strategic and creative skills, allowing them to flourish and excel in entrepreneurial activities without facing the risk of disempowerment or exclusion. This argument is supported by research advocating for human-AI collaboration that enhances human creativity and decision making (Rai, 2020). It was a shared view within the focus group that such a fundamental ethical choice could be reinforced through targeted strategies aimed at accountability to be enacted through human oversight in AI decision-making in tourism.

The focus group also proposed strategies identifying entrepreneurs, businesses, and institutions (including governments) as the three levers of control to ensure ethical AI use. Within the proposed framework, female entrepreneurs have a pivotal role to play in ensuring responsible AI. This, in turn, requires training at the entrepreneur and business levels, with the support and assistance of institutions. As a focus group participant stated:

> Women entrepreneurs need training and privileged access to educational programs to acquire knowledge on the potential biases of AI and develop critical thinking skills in interpreting AI-generated content.

Evidently, tourism transition to ethical and responsible AI adoption critically depends on closing the AI skills gap, particularly for women entrepreneurs. Training and education for digital/technological/AI skills, were widely seen by participants as strategies of paramount importance. More and better tailored training and education would enable female entrepreneurs both to better navigate the complexities inherent in responsible AI integration, and to more easily make sense of,

and comply with guidelines and legislation for ethical AI implementation.

It was further stated that enabling women entrepreneurs to navigate the new legal requirements of AI adoption will also necessitate targeted policy attention and tailored assistance by regulators and institutions. This should include specific support strategies, also via incentives, for targeted AI education and training for women entrepreneurs as well as for developing industry-wide, collaborative AI training and development programs for helping women entrepreneurs navigate related challenges, including compliance with regulatory standards. This was seen as essential especially since AI focused legislation is constantly evolving and yet, persistently one step behind the developments and applications of AI in the tourism industry. This is particularly important in women entrepreneurship in the tourism industry because tourism is one of the most digitally disrupted service sectors, yet many women entrepreneurs operate in micro or informal enterprises with limited access to upskilling opportunities or formal AI training (Khoo et al., 2024). As tourism increasingly relies on AI for functions such as demand forecasting, pricing, personalized marketing, and customer experience management, the AI skills gap risks widening existing inequalities. Without targeted education and institutional support, women entrepreneurs may be excluded from the very innovations designed to improve efficiency and competitiveness. Tailored AI capacity-building in tourism, focusing on ethical use, regulatory compliance, and sector-specific applications, is therefore crucial to ensure that women can both adopt and shape responsible AI in tourism entrepreneurship (Khoo et al., 2024; Pécot et al., 2024).

The focus group also suggested a more proactive approach by female entrepreneurs themselves to develop dedicated, collaborative online platforms through their industry networks that could support mutual learning, increase their confidence in the use of tourism-specific AI applications, and thus lower AI-based entry barriers to future women entrepreneurs keen on entering the industry.

Another key strategic proposal put forward was that of co-creation of AI systems by women entrepreneurs in the industry. As suggested by one focus group female participant:

> Women entrepreneurs should collaborate with AI developers to ensure we remove gender bias and that the system generates fair and inclusive content.

Also focus group male participants agreed with the view that:

> Any strategy intended to remove gender bias in AI should start by prioritizing
>
> gender equality as the aim, at the stage of AI system design and construction.

The call above was qualified by other focus group members to include '*appraising data for misrepresentation*', '*providing AI training data representative of diverse gender experiences*', and '*reshaping the teams creating AI to be more diverse and inclusive*'.

At the business 'lever of control' level, the recommendation was that tourism businesses' strategic planning agenda should also include the development of clear guidelines and policies to support the ethical and responsible implementation of AI, with women entrepreneurs being given the opportunity to take a leadership role in co-ordinating these initiatives to ensure inclusivity is given priority. This could be best accomplished through pro-active collaborative strategies for AI self-regulation by industry operators, also to adequately deal with the risks of AI and compliance with legal and ethical standards, keeping in mind the AI gender bias aspects already highlighted. Such institutional frameworks are particularly important in tourism because of its transnational nature, where data-sharing and AI applications often cross borders, creating a complex landscape of ethical responsibility and accountability. International cooperation and alignment with global tourism standards (e.g., UNWTO recommendations) were also seen as essential to promote inclusive AI adoption that supports women-led tourism ventures in both emerging and mature destinations.

More generally, upholding the Rawlsian notion of justice, participants' collective view was that female entrepreneurship could benefit from the ethical and responsible use of AI through the governance of institutional systems that ensure transparency, the protection of privacy, no bias, human centrism, and accountability at the entrepreneur, business, and institution levels (through law and regulations).

Despite the road ahead, the evidence of the present study shows that AI integration in the tourism industry is already assisting women's leadership in entrepreneurship to be a beacon of innovation and societal progress; thus also aiding the interconnectivity of the tourism ecosystem by virtue of greater inclusivity and diversity, to the benefit of all, including customers.

6. Conclusions

6.1. Theoretical contributions

This paper makes three distinct contributions to the women entrepreneurship literature in tourism. First, it bridges the gap in research at the intersection of AI and women entrepreneurship in tourism, offering new insights into how AI can support women in overcoming challenges (Khoo et al., 2024; Pécot et al., 2024). The study identifies both work–balance predicaments and entrepreneurial activities–related challenges and offers powerful, contemporary evidence with regards to the role of AI technologies in easing these challenges, with considerable time and efficiency benefits accruing particularly to women entrepreneurs. The big takeaway message is that AI can promote the inclusivity of women in entrepreneurial activities in tourism, and is already starting to do so. In particular, the study highlights how AI can be considered an opportunity to improve women's inclusion in the main three phases of entrepreneurship, namely, opportunity identification, decision making, and performance. As revealed by our evidence, AI can aid the analysis of market trends, the identification and development of new markets and products including niche tourism, and strategic decision making in terms of making predictions with regards to future possible scenarios that might impact particularly tourism startups and SMEs. AI can also support marketing and financing activities and, more importantly, help with the 'process innovation' that offers a personalized and enhanced experience for visitors, tourists, and customers.

Crucially, our qualitative data provides cogent evidence not only of the transformative potential of AI to achieve gender equity, but of its power. Specific information provided by participants highlights how AI technologies such as virtual assistants and AI-powered chatbots are already making a significant difference to, for example, women-owned tour operator businesses not only by granting revolutionary efficiency gains but also by gifting such women entrepreneurs time savings that offer them the opportunity to spend more time with family and to grow their business. Although such benefits of AI are not confined to women entrepreneurs, the marginal utility of such gains for women entrepreneurs—who tend to face greater work-life balance predicaments than men—is higher than men, thus helping level the playing field. Significantly, these novel findings also contribute to recent theoretical conceptualizations of the link between entrepreneurial resilience and the wellbeing of women entrepreneurs. While some recent literature suggests that dimensions of entrepreneurial resilience—such as hardiness, optimism, resourcefulness—can help foster the wellbeing of women entrepreneurs in the hospitality and tourism industry (Bagheri et al., 2024; Najjinda et al., 2025), our evidence paves the way for postulating that by improving the wellbeing of women entrepreneurs in this sector, AI integration could ultimately make such women entrepreneurs less stressed, anxious, and restless, thus also, in turn, potentially increasing their entrepreneurial resilience.

Second, this study advances the discourse on responsible AI by identifying and analyzing the ethical dimensions of AI usage and

implementation by women entrepreneurs. The five ethical dimensions identified by this study are transparency, data privacy, bias and discrimination, human centricity, and accountability. Among these, the extent of human centricity and accountability are seen as the 'most sensitive ethical parameters' of inclusive and responsible women entrepreneurship in the tourism industry alongside gender bias. The study also identifies entrepreneurs, businesses, and institutions (including governments) as three levers of control ensuring compliance with the implementation of ethics in AI usage.

Third, by integrating Rawls' theoretical perspective, this paper introduces a novel evaluative lens for understanding the role of responsible AI in creating a more equitable entrepreneurial ecosystem for women in tourism, contributing to sustainable and inclusive growth. Our application of Rawlsian philosophical principles offers a holistic perspective of AI's role across the many facets of the entrepreneurial process, including barriers and enablers, thus demonstrating how responsible AI could contribute to inclusive female entrepreneurship. These insights add to the current debate on responsible AI by calling for expanding its notion to incorporate gender equity and inclusivity to help promote the use of AI systems that prioritize societal wellbeing, ethical considerations and human rights.

We suggest an ecosystem approach to the governance of AI by showing how ethical compliance could be ensured through training women entrepreneurs, developing business-level compliance initiatives and, more importantly, taking a more institutional approach in introducing laws and regulations at the macro level (governments, international institutions) while ensuring tailored support across the 'three levers of control' (entrepreneurs, businesses, and institutions) of the ecosystem to assist with the process of adhering to ethical and legal AI standards.

6.2. Practical implications

Several actionable insights emerge from our study for women entrepreneurs, tourism businesses, and institutions.

Women entrepreneurs should aim to collaborate with AI developers in the spirit of co-creation in order to remove or at least mitigate gender bias at the design stage of AI applications for use in the tourism sector. This is because AI-driven gender bias eradication starts by prioritizing gender equality at the AI system development stage. Additionally, to close the AI skills gap, female entrepreneurs in tourism should aim to enhance their AI literacy by proactively developing dedicated online platforms through their industry networks to encourage collaborative learning. This would increase female entrepreneurs' confidence in the use of tourism-specific AI applications (for customer engagement automation and personalization, market analysis, etc.), especially those which yield the greatest time savings and hence help women achieve a better work-life balance. This, in turn, would also help lower AI-literacy-induced entry barriers to future women entrepreneurs keen on investing in tourism ventures.

Along the lines of the collaborative, mutual learning digital platforms at the level of the entrepreneur, tourism businesses should co-operate across their ecosystem to initiate strategies for tailored training and development on AI literacy, sector-specific AI risks, and compliance with legal and ethical AI standards. Such proactive, industry-wide collaborative approach could be extended to initiatives for industry self-regulation in AI standards, monitoring and supervision. In the name of inclusivity, the co-ordination of these AI governance initiatives should be women led and involve a wider network of industry stakeholders for review and feedback, including female customers/tourists.

Institutions (including governments and regulators) too, have a crucial role to play in fostering responsible as well as inclusive AI governance. They should develop robust frameworks (emphasizing transparency, data privacy and security, human centricity, and accountability) and develop policies mandating bias-free AI applications—also devoid of gender bias—conducive to a more equitable ecosystem for women entrepreneurs. Offering incentives, grants and loans, to contribute to women-led ventures in training and development for the responsible use of AI in tourism would also go a long way in promoting gender equality and inclusivity. We view the creation of a more inclusive and gender-responsive policy framework as a critical implication of the evidence presented in this paper to better ensure women entrepreneurs' sustained participation in the tourism industry. For example, governments could mandate gender quotas in leadership roles within tourism organizations (see, e.g., Silalahi et al., 2025) and in policy committees developing national tourism strategies in an increasingly AI-driven environment, and ensure enforcement through routine gender surveys/audits to ascertain policy compliance.

6.3. Limitations and future research directions

Notwithstanding the significant contributions of the present study, several final caveats are in order. First, although this study draws data from participants in various geographical regions, the sample size may not fully capture the diversity of women entrepreneurs in different cultural, economic, and legal environments across the globe. Women entrepreneurs in other regions, especially in countries with different socio-cultural norms and economic conditions, may experience varying degrees of challenges and benefits related to AI adoption (Jiang et al., 2024). The perspectives of participants in regions with less-developed AI ecosystems or differing regulatory structures also deserve further investigation in future research. Hence, future studies should focus on conducting cross-regional studies to better understand how different economic, cultural, and legal environments shape the adoption of AI and its impact on women entrepreneurs, also beyond the tourism industry which provided the context of our investigation.

Second, this research calls for a more inclusive ecosystem approach, considering the role of governments, institutions, and tourism stakeholders in creating environments that foster women's participation in responsible, AI-driven entrepreneurship. Multidisciplinary collaboration among fields such as technology, gender studies, and business management can further deepen our understanding of how AI and women entrepreneurship intersect, particularly in tourism.

Third, our exclusive focus on tourism as the context of this study, though significant, limits the transferability of the findings to other sectors. Women entrepreneurs in non-tourism industries may face different, idiosyncratic challenges and opportunities with AI integration, requiring broader, cross-disciplinary research to provide a more comprehensive view of AI's role in women's entrepreneurship. Expanding research beyond tourism to include other sectors where women entrepreneurs are active, such as technology and retail, would provide a more holistic understanding of how AI impacts women-led businesses in different industries.

Fourth, this study conducted a single focus group discussion to validate and explore in more depth themes identified at the interview stage through collective deliberation. Exploratory research employing a single focus group to identify broad thematic areas could, therefore, be expanded upon in future studies for further validation through multiple focus groups across diverse demographic and cultural contexts (Du and Xie, 2021). Future research might also expand on the socio-technical dimensions of AI ethics to address systemic challenges in tourism entrepreneurship, and enrich our findings by providing a more comprehensive understanding of diverse stakeholder perspectives, including customers/tourists.

Finally, although a full exploration of the potential downsides of AI technologies was beyond the scope of our analysis, we encourage future research to consider taking a critical theory perspective to examine the dark side of AI in forming any such barriers or in provoking any potential disadvantages that our circumscribed attention in this study did not account for.

CRediT authorship contribution statement

Levent Altinay: Writing – review & editing, Writing – original draft, Visualization, Supervision, Investigation, Conceptualization. **Sanaz Vatankhah:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Conceptualization. **Glauco De Vita:** Writing – review & editing, Visualization. **Hasan Evrim Arici:** Writing – original draft, Investigation.

Final impact statement

The study sheds light on how AI can be harnessed to promote inclusivity for women entrepreneurs in tourism. AI helps them overcome structural work-life balance predicaments, but AI-driven gender bias still constitutes a significant barrier. Its removal should start by prioritizing gender equality at the AI design stage through women's co-creation with AI developers. Transition to inclusive AI also hinges on closing the AI skills gap. Tourism businesses' collaborative provision of education/training would enable female entrepreneurs better navigate the complexities of responsible AI and more easily adhere to ethical standards/regulations. Female entrepreneurs could pro-actively support mutual learning via dedicated (AI-related) online platforms. Policies mandating bias-free AI applications (also devoid of gender bias) as well as government incentives and assistance by regulators/institutions would also help women navigate AI legal and ethical requirements thereby contributing to promoting gender justice and equality for women entrepreneurs in tourism amidst the transformative power of AI.

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Conflicts of interest

The authors have no conflicts of interest.

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Appendix

Interview Questions

How do/could technology in general and artificial intelligence in particular support businesses ?

How do entrepreneurs benefit from the use of technology (mobile applications, social media, Artificial Intelligence (ChatGPT) in their entrepreneurial activities (business idea generation, opportunity identification, start up and growth of business)?

What are the challenges/constraints of women (mothers, with dependents) running a business ?

How could women be supported with their entrepreneurial activities (training (what areas of training), finance, use of both formal and informal networks, technology)?

If you were a woman working at home remotely, or you have dependents, how could technology help you with your business ?

How do women entrepreneurs use technology for their entrepreneurial activities ((business idea generation, opportunity identification, start up and growth of business)?

What are the training needs of women entrepreneurs in today's business environment ?

How could women entrepreneurs businesses offer artificial intelligence (AI) based services, products, or solutions? How could they be supported?

How could women entrepreneurs' businesses use artificial intelligence (AI) in their marketing processes?

What are the ethical and responsible dimensions of using technology/artificial intelligence for businesses ? Can you think of an example?

How do you foresee the integration of GAI in traditional tourism/hospitality sectors? How can this create opportunities for women entrepreneurs?

How do you think GAI could assist women entrepreneurs in accessing new or underserved markets within tourism and hospitality?

Could GAI-driven tools be designed to cater specifically to the needs of women entrepreneurs in targeting niche tourism sectors (e.g., ecotourism, cultural tourism)?

How can GAI-driven decision-making tools assist women entrepreneurs in making more informed and strategic business decisions, especially in high-risk environments?

How can GAI help businesses improve customer service and engagement, especially in tourism? How might this be particularly beneficial for women entrepreneurs?

Can you provide an example of how GAI has transformed customer interactions within the tourism or hospitality industry, and what impact this had on business growth?

How can AI and digital learning platforms be designed to upskill women entrepreneurs? What kinds of skills would be most beneficial for women entering the tourism/hospitality sector?

Focus Group Discussion Questions

- What are the risks associated with GAI's increasing presence in tourism and hospitality, particularly from the perspective of data privacy, bias, and discrimination? How might these risks disproportionately affect women entrepreneurs?
- How can women entrepreneurs ensure that the GAI-generated content (e.g., reviews, marketing materials) is transparent, truthful, and free from manipulation or misinformation?
- How can businesses ensure that the use of GAI remains ethical, and how might this affect the reputation of women entrepreneurs in the industry?
- How can GAI be designed and used responsibly to avoid reinforcing gender stereotypes or biases in the tourism sector, particularly for women entrepreneurs?
- What steps can be taken to ensure that GAI promotes diversity, equity, and inclusion in tourism services, especially for businesses led by women?
- How can women entrepreneurs in tourism use GAI to combat fake reviews, misleading information, or disinformation that may harm their businesses or the tourism industry as a whole?
- What role can responsible GAI play in ensuring that tourism-related content remains accurate and trustworthy, and how might this benefit women entrepreneurs?
- In what ways can AI be used to prospect new markets and improve the scalability of women-led tourism businesses? How can responsible AI ensure that performance metrics are accurately projected without causing unintended bias?
- How can AI-driven decision-making tools assist women entrepreneurs in prospecting new opportunities in the tourism sector? What responsible AI practices can ensure unbiased and accurate identification of these opportunities?
- How can AI-driven educational tools be leveraged to help women entrepreneurs effectively exploit business opportunities in tourism? What responsible AI practices should guide the use of AI in training and skill development for this purpose?

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