

A Conceptual Framework of AI Adoption in Women's Entrepreneurial Decision-Making: Integrating Technology Acceptance Model and Effectuation Theory

Yanxi Zhu^{a,b*} and Sathiswaran Uthamaputhran^{a*}

^aAzman Hashim International Business School, Universiti Teknologi Malaysia, Kuala Lumpur Campus, Kuala Lumpur, Malaysia, ^bSchool of Economics and Business Administration, Yibin University, Yibin, Sichuan, China

*Corresponding Authors Email: yanxi@graduate.utm.my
Email: sathiswaran@utm.my

DOI Link: <http://dx.doi.org/10.6007/IJARBSS/v16-i6/28368>

Published Date: 20 June 2026

Abstract

Artificial intelligence (AI) is increasingly used by entrepreneurs to support opportunity recognition, information search, customer analysis, content generation, and decision-making under uncertainty. However, the phenomenon of how women entrepreneurs perceive, adopt, and use AI in entrepreneurial decision-making remains insufficiently explained, particularly in relation to gendered constraints and uncertain entrepreneurial conditions. This conceptual paper develops an integrated framework to explain AI adoption in women's entrepreneurial decision-making by combining the Technology Acceptance Model (TAM) and Effectuation Theory. TAM explains how perceived usefulness and perceived ease of use shape women entrepreneurs' intention to adopt AI, while Effectuation Theory explains how AI is used in uncertain entrepreneurial contexts through means-driven action, affordable-loss experimentation, partnership building, and adaptive decision-making. The proposed framework suggests that AI anxiety, digital literacy, AI self-efficacy, training support, peer influence, resource constraints, and gendered entrepreneurial context influence AI adoption through TAM-based mechanisms and effectual use processes. This paper contributes to AI entrepreneurship and women entrepreneurship literature by linking technology acceptance with entrepreneurial action under uncertainty. It also provides propositions for future empirical testing.

Keywords: Artificial Intelligence, Women Entrepreneurs, Technology Acceptance Model, Effectuation Theory, Entrepreneurial Decision-Making

Introduction

Artificial intelligence (AI) has become increasingly relevant to entrepreneurship because it can support information search, opportunity recognition, strategic analysis, customer understanding, content generation, and decision-making under uncertainty. Entrepreneurial decision-making is often constrained by incomplete information, scarce resources, time pressure, and uncertain market responses. AI tools, especially generative AI and data-driven decision-support systems, can help entrepreneurs process information, generate alternatives, evaluate market directions, and support more informed judgments. Prior studies have suggested that AI may augment entrepreneurial action by extending entrepreneurs' cognitive capacity and improving decision support in opportunity development and strategic decision-making (Amoako et al., 2021; Cszaszar et al., 2024; Shepherd & Majchrzak, 2022). However, AI does not replace human judgment, contextual knowledge, or entrepreneurial agency, particularly when entrepreneurs face uncertainty and ambiguous decision conditions (Joussen et al., 2025; Ramoglou et al., 2026; Townsend et al., 2025).

Despite growing attention to AI and entrepreneurship, AI adoption among women entrepreneurs remains insufficiently theorised. The phenomenon under study in this paper is the process through which women entrepreneurs perceive, adopt, and use AI tools in entrepreneurial decision-making. This phenomenon is significant because AI adoption is not a neutral or uniform process. Rather, it is shaped by the specific conditions, constraints, and contextual factors that women entrepreneurs face in their entrepreneurial activities. Understanding this phenomenon therefore requires examining both why women entrepreneurs develop the intention to adopt AI and how they use AI in actual decision-making under uncertainty. Women entrepreneurs are not a homogeneous group, and their entrepreneurial experiences are often shaped by gendered access to resources, social expectations, digital skills, financing barriers, and institutional support. Women entrepreneurship studies have long argued that gender should not be treated merely as a demographic variable, but as a contextual condition that shapes entrepreneurial processes, opportunities, and constraints (Ahl & Marlow, 2021; de Bruin et al., 2007, 2009). Women entrepreneurs may also face challenges related to venture financing, business networks, legitimacy, and work-family responsibilities, which influence how they evaluate and use digital technologies in their businesses (Brush et al., 2018; Cardella et al., 2020; Cooke & Xiao, 2021). In the Chinese context, women entrepreneurship is further shaped by changing institutional conditions, digital platforms, and evolving gender norms, suggesting the need for more context-sensitive theoretical explanations (Cooke & Xiao, 2021; Jiang et al., 2024). AI may create new opportunities for women entrepreneurs, but it may also reproduce existing inequalities if adoption is shaped by uneven access to skills, confidence, data, and support systems. Recent studies suggest that AI can enhance operational efficiency, evidence-based decision-making, market analytics, learning opportunities, and entrepreneurial agility among women entrepreneurs (Almheiri et al., 2025; Iram et al., 2025). At the same time, women entrepreneurs may face barriers such as limited AI proficiency, uncertainty about technological reliability, lack of training, data privacy concerns, and possible gender bias in AI-generated evaluations (Cao et al., 2025; Gang et al., 2025). These studies indicate that AI adoption among women entrepreneurs is not simply a matter of access to tools. It is shaped by perceptions of usefulness, ease of use, self-efficacy, anxiety, peer influence, training support, and resource constraints.

The Technology Acceptance Model (TAM) provides a useful starting point for explaining why women entrepreneurs may accept or reject AI tools. TAM proposes that perceived usefulness and perceived ease of use are central determinants of users' intention to adopt a technology (Davis, 1989). In this paper, perceived usefulness refers to the extent to which women entrepreneurs believe that AI can improve market analysis, customer communication, content creation, business planning, or decision efficiency. Perceived ease of use refers to the extent to which AI tools are perceived as understandable, accessible, and manageable within daily entrepreneurial practices. Extensions of TAM also show that technology acceptance can be influenced by social influence, job relevance, output quality, and facilitating conditions (Venkatesh & Davis, 2000). These extensions are relevant because women entrepreneurs' AI adoption may depend not only on individual perceptions, but also on training availability, peer support, resource access, and the perceived fit between AI tools and entrepreneurial tasks.

However, TAM alone is insufficient to explain AI adoption in women's entrepreneurial decision-making. TAM mainly explains technology acceptance intention, whereas entrepreneurial decision-making involves action under uncertainty, experimentation, resource mobilisation, and adaptation. Entrepreneurs do not adopt AI only because they perceive it as useful or easy to use; they also use AI within uncertain business situations where goals may be unclear, available resources may be limited, and outcomes may be difficult to predict. Recent AI entrepreneurship research has emphasised that AI can enhance opportunity search, reduce information asymmetry, and support decision-making, but human judgment remains essential when entrepreneurs face uncertain, ambiguous, or novel situations (Joussen et al., 2025; Li et al., 2025; Ramoglou et al., 2026). Therefore, a theoretical framework focused only on adoption intention may overlook how entrepreneurs actually use AI after adoption.

Effectuation Theory offers a complementary lens for explaining entrepreneurial action under uncertainty. Sarasvathy (2001) distinguishes effectuation from causation by arguing that expert entrepreneurs often begin with available means rather than predetermined goals when facing uncertain environments. The core principles of effectuation include bird-in-hand, affordable loss, crazy quilt, lemonade, and pilot-in-the-plane, which explain how entrepreneurs act, experiment, collaborate, and exercise control when future outcomes cannot be fully predicted (Sarasvathy, 2001, 2008). Effectuation has been widely discussed as a theory of entrepreneurial expertise and decision-making under uncertainty (Matalamäki, 2017; Perry et al., 2012; Read & Sarasvathy, 2005). In relation to AI, Lupp (2023) further argues that machine learning may reshape entrepreneurial opportunity co-creation and interact differently with causation and effectuation logics. This suggests that AI should not only be examined as a technology to be accepted, but also as a tool that may support effectual experimentation, opportunity development, and adaptive action.

Integrating TAM and Effectuation Theory therefore provides a more suitable conceptual explanation of AI adoption in women's entrepreneurial decision-making. TAM explains why women entrepreneurs may intend to adopt AI by focusing on perceived usefulness, perceived ease of use, and AI adoption intention. Effectuation Theory explains how women entrepreneurs may use AI after adoption through means-driven action, affordable-loss experimentation, stakeholder collaboration, leveraging contingencies, and control-oriented

decision-making under uncertainty. This integration is particularly relevant because women entrepreneurs' AI adoption may be shaped by gendered entrepreneurial contexts and external conditions, including AI anxiety, digital literacy, AI self-efficacy, training support, peer influence, and resource constraints. These conditions may influence both the acceptance of AI and the ways in which AI is applied in opportunity, resource, and strategic decisions.

Accordingly, this paper develops a conceptual framework of AI adoption in women's entrepreneurial decision-making by integrating TAM and Effectuation Theory. The framework proposes that gendered entrepreneurial context and external conditions shape women entrepreneurs' perceptions of AI usefulness and ease of use, which in turn influence their intention to adopt AI. It further proposes that AI adoption intention does not automatically lead to effective entrepreneurial decision-making; rather, AI must be interpreted and used through effectual principles under uncertainty. The expected outcome is AI-enabled entrepreneurial decision-making under uncertainty, covering opportunity, resource, and strategic decisions. By developing this framework, this paper contributes to three areas of literature. First, it extends AI entrepreneurship research by focusing on women entrepreneurs as a meaningful theoretical context. Second, it contributes to technology adoption research by linking TAM with entrepreneurial action rather than treating AI adoption only as user acceptance. Third, it contributes to women entrepreneurship research by explaining how AI adoption is shaped by gendered conditions and how AI may support effectual decision-making under uncertainty.

Against this background, this paper addresses the following research question: How can AI adoption in women's entrepreneurial decision-making be theoretically explained by integrating the Technology Acceptance Model and Effectuation Theory?

This question is motivated by three interconnected gaps in the existing literature. First, despite growing interest in AI and entrepreneurship, the AI adoption process among women entrepreneurs remains insufficiently theorised. Existing studies have examined AI adoption in general organisational, user, or entrepreneurial contexts, but they have not adequately addressed the gendered conditions that shape how women entrepreneurs perceive, accept, and use AI in their businesses. Second, although TAM provides a well-established explanation of technology acceptance intention, it does not explain how entrepreneurs actually use AI in practice after adoption, particularly when decision environments are uncertain, goals are ambiguous, and resources are constrained. Third, while Effectuation Theory is well suited to explaining entrepreneurial action under uncertainty, it has not been systematically connected to AI adoption among women entrepreneurs. Addressing these gaps requires a framework that bridges technology acceptance and entrepreneurial action within a gendered entrepreneurial context. This paper therefore develops such a framework and offers seven propositions for future empirical testing.

Literature Review

Artificial Intelligence in Entrepreneurial Decision-Making

Entrepreneurial decision-making is often made under uncertainty, incomplete information, resource constraints, and rapidly changing market conditions. In such contexts, entrepreneurs need to identify opportunities, assess alternatives, allocate limited resources, and respond to unexpected changes. Artificial intelligence (AI) has increasingly been

discussed as a tool that can support these processes by improving information processing, market analysis, opportunity evaluation, and strategic decision-making. Rather than replacing entrepreneurs, AI is better understood as an augmenting tool that extends entrepreneurs' cognitive and analytical capacity.

Amoako et al. (2021) proposed that AI systems can enhance entrepreneurial decision-making by incorporating customer preferences, industry benchmarks, and employee involvement into decision processes. Their conceptual framework suggests that AI can improve access to relevant market information and strengthen the quality of decision inputs. Similarly, Shepherd and Majchrzak (2022) argued that AI and entrepreneurship together can form a "super tool" that allows entrepreneurs to augment decision-making, opportunity development, and entrepreneurial action. This view positions AI not as an autonomous decision-maker, but as a tool that interacts with human entrepreneurial judgment.

Recent studies further support the importance of AI in entrepreneurial decision-making. Csaszar et al. (2024) found that large language models can generate and evaluate strategic options in ways comparable to entrepreneurs and investors, suggesting that AI can support search, representation, and aggregation in strategic decision-making. Jousset et al. (2025) also examined AI in entrepreneurial decision-making under uncertainty and found that AI may improve transparency and support decision-making in complex conditions, although it may also introduce new uncertainties in less complex tasks. These findings suggest that AI can enhance decision-making, but its value depends on how entrepreneurs interpret, evaluate, and use AI outputs.

The relationship between AI and uncertainty is especially relevant to entrepreneurship. Townsend et al. (2025) argued that AI may offer performance advantages in addressing some forms of uncertainty, but its capacity to deal with Knightian uncertainty remains limited. Ramoglou et al. (2026) similarly suggested that generative AI expands the space of imaginable opportunities, but human judgment remains necessary to evaluate whether AI-generated possibilities are actualizable. Therefore, AI may increase the number of potential entrepreneurial options, but entrepreneurs still need to assess feasibility, relevance, and contextual fit. For this reason, AI-enabled entrepreneurial decision-making should be understood as a human-AI process rather than a fully automated process.

Overall, the literature indicates that AI can support entrepreneurial decision-making through information search, opportunity recognition, idea generation, market analysis, strategic evaluation, and uncertainty reduction. However, these studies also show that AI cannot fully replace entrepreneurial judgment, sector knowledge, experience, or contextual understanding. This is particularly important for women entrepreneurs, whose decision-making may be shaped by both technological perceptions and gendered entrepreneurial conditions.

Women Entrepreneurs and AI Adoption

Women entrepreneurs have received growing academic and policy attention, but their experiences cannot be fully understood through gender-neutral entrepreneurship models. Earlier studies emphasised the need for a gender-aware framework because entrepreneurial opportunities, resources, networks, and institutional conditions are often shaped by

gendered social structures (de Bruin et al., 2007, 2009). Ahl and Marlow (2021) further warned against treating entrepreneurship as an automatically empowering solution without critically examining the gendered assumptions embedded in enterprise policy and entrepreneurial discourse. These arguments suggest that research on women entrepreneurs should not simply add gender as a demographic variable, but should examine how gendered conditions shape entrepreneurial action.

Women entrepreneurs often face specific challenges related to finance, business networks, legitimacy, and social expectations. Brush et al. (2018) highlighted the persistent gender gap in venture capital, showing that women entrepreneurs continue to face structural barriers in accessing entrepreneurial finance. Cardella et al. (2020) also showed that women entrepreneurs' experiences are shaped by psychological, social, economic, and institutional factors. In the Chinese context, Cooke and Xiao (2021) emphasised that women entrepreneurs operate within changing institutional, social, and labour-market conditions. Jiang et al. (2024) further called for more context-sensitive studies that consider local institutional and cultural factors in Chinese women entrepreneurship research.

With the development of digital technologies, AI may provide women entrepreneurs with new opportunities to improve business operations, customer analysis, market expansion, and decision-making. Almheiri et al. (2025) found that AI can support women entrepreneurs by improving operational effectiveness, reducing bureaucracy, enabling evidence-based decisions, supporting access to funding, and strengthening market analytics. Iram et al. (2025) also found that AI assimilation can enhance entrepreneurial performance among women entrepreneurs through entrepreneurial agility, while AI proficiency plays an important role in strengthening this relationship. These studies suggest that AI can serve as an enabling tool for women entrepreneurs, especially when they have sufficient skills and support to use it effectively.

However, AI adoption may also create new challenges. Gang et al. (2025) showed that AI can empower women entrepreneurs and contribute to social sustainability, but they also noted gaps in theoretical development, empirical testing, and representation from developing economies. Cao et al. (2025) examined gender stereotype biases against women entrepreneurs in large language models and found that AI systems may still reflect certain gendered patterns in investment-related scenarios. These findings are important because women entrepreneurs' AI adoption may be affected not only by perceived usefulness and ease of use, but also by trust, anxiety, fairness, and confidence in AI-generated outputs.

Therefore, AI adoption among women entrepreneurs should be examined through a gendered and contextual lens. Women entrepreneurs may perceive AI as useful for decision support, market analysis, and business growth, but they may also experience anxiety, limited digital literacy, resource constraints, and concerns about AI reliability or bias. These conditions justify the need for a conceptual framework that links AI adoption mechanisms with women entrepreneurs' specific decision-making contexts.

Technology Acceptance Model

The Technology Acceptance Model (TAM), developed by Davis (1989), is one of the most widely used theories for explaining technology acceptance. TAM proposes that users'

intention to adopt a technology is mainly shaped by two beliefs: perceived usefulness and perceived ease of use. Perceived usefulness refers to the degree to which a user believes that using a technology will improve performance, while perceived ease of use refers to the degree to which using the technology is perceived as free of effort. These two constructs influence users' behavioural intention to use a technology and, subsequently, actual use.

In the context of AI adoption among women entrepreneurs, perceived usefulness can be understood as the extent to which women entrepreneurs believe that AI can improve entrepreneurial tasks, such as identifying opportunities, analysing customer needs, generating marketing content, comparing strategic options, or improving decision efficiency. Perceived ease of use refers to whether AI tools are understandable, accessible, and manageable within daily entrepreneurial practices. For women entrepreneurs with limited time, limited technical support, or limited resources, ease of use may be especially important because complex AI tools can increase psychological burden and adoption resistance.

TAM has also been extended to include additional social and contextual factors. Venkatesh and Davis (2000) incorporated social influence processes and cognitive instrumental processes, including subjective norm, image, job relevance, output quality, and result demonstrability. This extension is relevant because women entrepreneurs' adoption decisions may be influenced by peer entrepreneurs, family members, business networks, platform communities, training institutions, and the perceived relevance of AI to business tasks. In other words, AI adoption is not only an individual cognitive decision; it is also shaped by social support and contextual conditions.

Recent AI adoption studies further suggest that TAM needs to be adapted for intelligent technologies. AI differs from traditional information systems because it can generate content, provide recommendations, and participate in decision support. Therefore, users' acceptance of AI may depend not only on usefulness and ease of use, but also on trust, transparency, explainability, and perceived control. Hoff and Bashir (2015) highlighted the importance of trust in automation, showing that trust affects how users rely on automated systems. Qu and Kim (2025), using an extended TAM-TOE model in Chinese apparel MSMEs, also showed that AI adoption is linked to organisational and technological conditions, suggesting that AI acceptance should be understood within broader business contexts.

Although TAM is useful for explaining why women entrepreneurs may intend to adopt AI, it does not fully explain how they use AI in entrepreneurial decision-making after adoption. TAM focuses mainly on acceptance intention, while entrepreneurship involves opportunity development, experimentation, collaboration, and action under uncertainty. Therefore, TAM needs to be complemented by a theory that can explain entrepreneurial action, rather than only technological acceptance.

Effectuation Theory

Effectuation Theory provides a useful theoretical lens for understanding entrepreneurial action under uncertainty. Sarasvathy (2001) distinguished effectuation from causation by arguing that entrepreneurs do not always begin with predetermined goals and predictive planning. Instead, under conditions of uncertainty, entrepreneurs may begin with available means, take affordable risks, form partnerships, leverage unexpected events, and seek to

control rather than predict the future. This logic is particularly relevant to entrepreneurship because entrepreneurial environments are often uncertain, dynamic, and difficult to predict. Sarasvathy (2008) further developed effectuation as a theory of entrepreneurial expertise and identified five core principles: bird-in-hand, affordable loss, crazy quilt, lemonade, and pilot-in-the-plane. The bird-in-hand principle suggests that entrepreneurs begin with who they are, what they know, and whom they know. The affordable loss principle emphasises limiting downside risk rather than maximising expected returns. The crazy quilt principle focuses on building partnerships with self-selected stakeholders. The lemonade principle encourages entrepreneurs to leverage contingencies and unexpected events. The pilot-in-the-plane principle emphasises control-oriented action, suggesting that entrepreneurs can shape the future through their own actions rather than merely predict it.

Effectuation has been widely discussed as a framework for understanding entrepreneurial expertise and decision-making. Read and Sarasvathy (2005) described effectuation as a form of entrepreneurial expertise, while Perry et al. (2012) reviewed effectuation research and highlighted its importance for future entrepreneurship studies. Matalamäki (2017) further argued that effectuation has developed into a mature theoretical perspective in entrepreneurship research. These studies suggest that effectuation is especially useful when entrepreneurs face uncertainty, limited resources, and emergent opportunities.

In the context of AI adoption, effectuation offers an important complement to TAM. While TAM explains why entrepreneurs may intend to use AI, effectuation explains how entrepreneurs may use AI in practice. Lupp (2023) directly connected machine learning with effectuation and causation in entrepreneurial opportunity co-creation. The study argued that different machine learning paradigms may support different entrepreneurial decision logics, with some forms of machine learning being more aligned with effectual approaches in uncertain contexts. This is highly relevant to women entrepreneurs because AI may be used not only for prediction, but also for experimentation, learning, opportunity exploration, and resource recombination.

For example, women entrepreneurs may use AI to generate product ideas based on their existing knowledge and customer experience, which reflects the bird-in-hand principle. They may use AI to test low-cost marketing content or compare possible business options before making larger investments, which reflects affordable loss. They may use AI to identify partners, customer groups, or stakeholder needs, which reflects the crazy quilt principle. They may use unexpected AI-generated insights to adjust business direction, which reflects the lemonade principle. Finally, they may use AI as a tool to shape decisions under uncertainty rather than passively wait for market clarity, which reflects the pilot-in-the-plane principle. Therefore, integrating Effectuation Theory into the study of AI adoption shifts the focus from whether women entrepreneurs intend to use AI to how they use AI entrepreneurially. This is central to the present conceptual framework, which argues that AI adoption among women entrepreneurs should be understood as both a technology acceptance process and an entrepreneurial action process under uncertainty.

Theoretical Integration of TAM and Effectuation Theory*TAM as an Explanation of AI Adoption Intention*

The Technology Acceptance Model provides the first theoretical basis for explaining why women entrepreneurs may intend to adopt AI tools in entrepreneurial decision-making. According to TAM, technology adoption is mainly shaped by perceived usefulness and perceived ease of use (Davis, 1989). In this study, perceived usefulness refers to the extent to which women entrepreneurs believe that AI can improve entrepreneurial tasks, such as identifying market opportunities, analysing customer needs, generating business content, comparing strategic alternatives, and improving decision efficiency. Perceived ease of use refers to the extent to which AI tools are perceived as understandable, accessible, and manageable within daily business activities.

These two constructs are especially important because AI adoption is not only a matter of technological availability. Even when AI tools are accessible, women entrepreneurs may not adopt them if they do not perceive them as relevant to their business needs or if they believe the tools are too complex to use. The extended TAM perspective also suggests that technology adoption can be influenced by social and contextual factors, such as social influence, job relevance, output quality, and facilitating conditions (Venkatesh & Davis, 2000). This is relevant because women entrepreneurs' AI adoption may be shaped by peer influence, business networks, training support, resource access, and the perceived fit between AI tools and entrepreneurial tasks.

However, TAM mainly explains adoption intention. It is useful for explaining why users may accept or reject a technology, but it does not fully explain how entrepreneurs use that technology after adoption. In entrepreneurial contexts, adoption intention is only the beginning. Entrepreneurs need to transform AI from a technological tool into a practical resource for decision-making, experimentation, opportunity development, and adaptation. Therefore, TAM provides the first part of the explanation, but it needs to be complemented by a theory of entrepreneurial action.

Effectuation as an Explanation of Entrepreneurial Action under Uncertainty

Effectuation Theory provides the second theoretical basis by explaining how entrepreneurs act when the future is uncertain and outcomes cannot be fully predicted. Sarasvathy (2001) argues that entrepreneurs do not always begin with fixed goals and predictive planning. Instead, under uncertainty, they often begin with available means, take affordable risks, form partnerships, respond to contingencies, and seek to control aspects of the future through action. This logic differs from causation, where decision-makers begin with a predetermined goal and select the most efficient means to achieve it.

The five principles of effectuation are directly relevant to AI-enabled entrepreneurial decision-making. The bird-in-hand principle suggests that women entrepreneurs may use AI based on their existing business knowledge, customer experience, social networks, and digital skills. The affordable loss principle suggests that AI can support low-cost experimentation, such as testing marketing messages, comparing product ideas, or simulating customer responses before committing significant resources. The crazy quilt principle emphasises stakeholder collaboration, where AI may help identify potential partners, understand

stakeholder needs, or improve communication. The lemonade principle highlights the use of contingencies, suggesting that unexpected AI-generated insights may be reinterpreted as new opportunities. Finally, the pilot-in-the-plane principle emphasises control-oriented action, where AI supports more active and adaptive decision-making under uncertainty.

Effectuation has been widely used to explain entrepreneurial expertise, opportunity development, and decision-making under uncertainty (Matalamäki, 2017; Perry et al., 2012; Read & Sarasvathy, 2005; Sarasvathy, 2008). More recently, Lupp (2023) connected effectuation, causation, and machine learning in the co-creation of entrepreneurial opportunities, suggesting that machine learning can interact with entrepreneurial decision logics in different ways. This is important because AI should not only be understood as a technology that entrepreneurs accept. It should also be understood as a tool used in uncertain, iterative, and action-oriented decision processes.

Integrating TAM and Effectuation Theory

The integration of TAM and Effectuation Theory is necessary because AI adoption in women's entrepreneurial decision-making involves both technology acceptance and entrepreneurial action. TAM explains how women entrepreneurs form the intention to adopt AI through perceived usefulness and perceived ease of use. However, entrepreneurial decision-making does not end with adoption intention. Once women entrepreneurs decide to use AI, they still need to interpret AI-generated outputs, evaluate their relevance, adapt them to business contexts, and decide how much risk they are willing to take. These processes are better explained through Effectuation Theory.

The proposed integration follows a sequential and complementary logic. First, women entrepreneurs' AI adoption is shaped by gendered entrepreneurial context and external conditions, including AI anxiety, digital literacy, AI self-efficacy, training support, peer influence, and resource constraints. These conditions influence whether women entrepreneurs perceive AI as useful and easy to use. Second, perceived usefulness and perceived ease of use shape AI adoption intention. Third, once AI adoption intention is formed, AI may be used through effectual principles to support entrepreneurial decision-making under uncertainty. In this sense, AI adoption becomes meaningful when entrepreneurs convert technological acceptance into practical entrepreneurial action.

This integrated perspective is especially suitable for women entrepreneurs. Prior studies suggest that women entrepreneurs often operate within gendered constraints related to resources, networks, legitimacy, and institutional support (Ahl & Marlow, 2021; Brush et al., 2018; de Bruin et al., 2007, 2009). These constraints may influence not only whether women entrepreneurs adopt AI, but also how they use AI. For example, resource constraints may encourage affordable-loss experimentation, limited networks may increase the value of stakeholder-oriented AI use, AI anxiety may reduce adoption intention, and training support or peer influence may increase confidence and perceived ease of use.

The AI entrepreneurship literature also supports the need for such integration. AI can assist entrepreneurs by improving information search, opportunity evaluation, and strategic decision-making, but it does not eliminate uncertainty or replace human judgment (Csaszar et al., 2024; Jousen et al., 2025; Shepherd & Majchrzak, 2022). Generative AI may expand

the range of possible opportunities while making judgment and selection more important (Ramoglou et al., 2026). Therefore, women entrepreneurs need not only the intention to adopt AI, but also the ability to use AI outputs critically, experimentally, and contextually. Effectuation Theory helps explain this second stage.

Thus, the integrated framework contributes to technology adoption research by extending TAM beyond acceptance intention. It contributes to entrepreneurship research by linking AI adoption to effectual decision-making under uncertainty. It also contributes to women entrepreneurship research by positioning AI adoption within gendered entrepreneurial contexts rather than assuming that all entrepreneurs adopt and use AI in the same way.

Proposed Conceptual Framework

Based on the preceding theoretical discussion, this paper proposes a conceptual framework that integrates the Technology Acceptance Model and Effectuation Theory to explain AI adoption in women’s entrepreneurial decision-making. The framework positions AI adoption as both a technology acceptance process and an entrepreneurial action process under uncertainty. As shown in Figure 1, gendered entrepreneurial context and external conditions shape women entrepreneurs’ perceptions of AI adoption. The TAM-based mechanism explains why women entrepreneurs intend to adopt AI, while Effectuation Theory explains how AI is used in entrepreneurial decision-making under uncertainty.

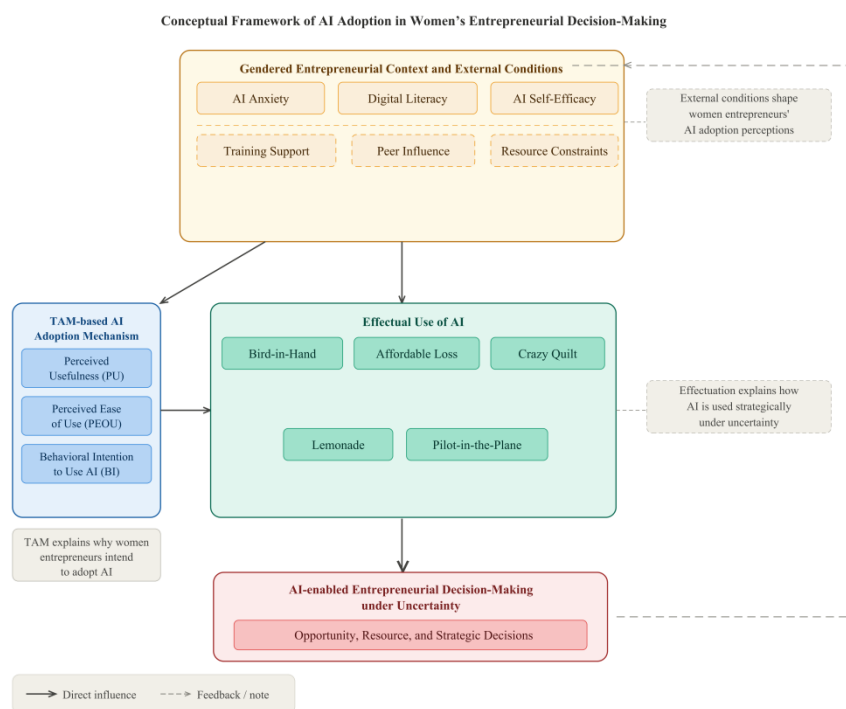


Figure 1. Conceptual Framework of AI Adoption in Women’s Entrepreneurial Decision-Making

The framework consists of four interrelated modules. The first module is gendered entrepreneurial context and external conditions, including AI anxiety, digital literacy, AI self-efficacy, training support, peer influence, and resource constraints. The second module is the

TAM-based AI adoption mechanism, including perceived usefulness, perceived ease of use, and behavioural intention to use AI. The third module is the effectual use of AI, represented by bird-in-hand, affordable loss, crazy quilt, lemonade, and pilot-in-the-plane. The final module is AI-enabled entrepreneurial decision-making under uncertainty, covering opportunity, resource, and strategic decisions. Together, these modules explain not only why women entrepreneurs may adopt AI, but also how they may use AI in uncertain entrepreneurial contexts.

Gendered Entrepreneurial Context and External Conditions

The first module refers to the gendered entrepreneurial context and external conditions that shape women entrepreneurs' AI adoption. This paper does not treat women entrepreneurs as a homogeneous group. Rather, it recognises that women's entrepreneurial experiences are shaped by social, institutional, financial, and digital conditions. Prior studies have emphasised that women entrepreneurship should be understood through a gender-aware framework, because access to resources, legitimacy, networks, and opportunities is often shaped by gendered structures rather than individual motivation alone (Ahl & Marlow, 2021; de Bruin et al., 2007, 2009). In technology-related entrepreneurship, these gendered conditions may influence whether women entrepreneurs perceive AI as accessible, useful, trustworthy, or difficult to use.

AI anxiety is positioned as an initial psychological condition in the framework. When women entrepreneurs first encounter AI tools, they may experience uncertainty, hesitation, or concern about whether AI is reliable, understandable, or suitable for their business tasks. Such anxiety may be related to limited technical knowledge, fear of incorrect AI outputs, data privacy concerns, or uncertainty about AI-generated recommendations. Therefore, AI anxiety may weaken perceived ease of use and reduce behavioural intention to use AI.

Digital literacy and AI self-efficacy are also important conditions. Digital literacy refers to the ability to understand, evaluate, and use digital technologies in business practices. AI self-efficacy refers to women entrepreneurs' confidence in their ability to use AI tools effectively. These two factors may reduce AI anxiety and increase willingness to experiment with AI. Women entrepreneurs with stronger digital literacy and AI self-efficacy are more likely to understand AI functions, evaluate AI-generated suggestions, and apply AI to entrepreneurial tasks such as customer analysis, content generation, product development, and market exploration.

Training support and peer influence further shape AI adoption. Training support may reduce learning barriers and improve confidence, while peer influence may encourage women entrepreneurs to try AI after observing its successful use by other entrepreneurs. In this sense, AI adoption is not only an individual cognitive process but also a socially embedded learning process. Resource constraints also play a dual role. They may limit access to advanced AI tools or professional digital services, but they may also motivate women entrepreneurs to use AI as a low-cost decision-support tool for marketing content, product comparison, customer feedback analysis, or business planning.

TAM-based AI Adoption Mechanism

The second module explains women entrepreneurs' AI adoption through the TAM-based mechanism. In this framework, perceived usefulness refers to the extent to which women entrepreneurs believe that AI can improve entrepreneurial decision-making, such as supporting opportunity recognition, enhancing customer understanding, generating business content, comparing alternative strategies, and reducing the time needed for decision preparation. Perceived ease of use refers to the extent to which AI tools are perceived as understandable and manageable in daily entrepreneurial activities.

Behavioural intention to use AI refers to women entrepreneurs' willingness to adopt AI tools in their entrepreneurial activities. This intention is influenced by perceived usefulness and perceived ease of use. However, these perceptions are shaped by the external conditions discussed above. AI anxiety may weaken perceived ease of use, while digital literacy, AI self-efficacy, training support, and peer influence may strengthen both perceived usefulness and perceived ease of use. Resource constraints may also shape perceived usefulness when women entrepreneurs view AI as an affordable alternative to more expensive professional services.

The TAM-based mechanism is useful because it explains why women entrepreneurs may form the intention to adopt AI. Nevertheless, intention does not automatically lead to meaningful entrepreneurial decision-making. Women entrepreneurs still need to interpret AI outputs, judge their relevance, and decide how to act on them under uncertainty. Therefore, the framework moves beyond TAM by linking AI adoption intention to the effectual use of AI.

Effectual Use of AI

The third module explains how women entrepreneurs may use AI through effectual principles. While TAM focuses on whether women entrepreneurs intend to adopt AI, effectuation explains how they may use AI in uncertain entrepreneurial contexts. Effectuation Theory argues that entrepreneurs often begin with available means, take affordable risks, form partnerships, leverage contingencies, and seek to control rather than predict the future (Sarasvathy, 2001, 2008). These principles are relevant because AI is not only a technology to be accepted; it can also become a tool for entrepreneurial experimentation and adaptation. Through the bird-in-hand principle, women entrepreneurs may use AI based on their existing industry knowledge, customer experience, personal skills, and social networks. Through affordable loss, they may use AI to test ideas at relatively low cost, such as creating alternative product descriptions, simulating customer responses, comparing pricing options, or exploring business scenarios before committing substantial resources. Through crazy quilt, AI may support stakeholder collaboration by helping women entrepreneurs identify potential partners, prepare communication materials, analyse stakeholder needs, or manage customer relationships.

The lemonade principle suggests that unexpected AI-generated outputs may be reinterpreted as useful insights, alternative customer segments, or new product ideas. In this way, AI can support entrepreneurial learning and adaptive decision-making. The pilot-in-the-plane principle emphasises control-oriented action. Rather than relying only on prediction, women entrepreneurs may use AI to make faster, more informed, and more flexible decisions under

uncertainty. However, AI does not remove the need for human judgment. Entrepreneurs must still evaluate AI outputs, consider contextual fit, and decide how to act.

Recent research linking machine learning and effectuation suggests that AI may interact with entrepreneurial decision logics in different ways. Lupp (2023) argues that machine learning can support both causation and effectuation depending on uncertainty conditions and the type of machine learning involved. This supports the argument that AI should be understood not only as a technological input, but also as part of the entrepreneurial decision-making process.

AI-enabled Entrepreneurial Decision-Making under Uncertainty

The final module is AI-enabled entrepreneurial decision-making under uncertainty. This paper does not assume that AI adoption directly produces business success or firm performance. Instead, it argues that AI adoption may support women entrepreneurs' decision-making in opportunity, resource, and strategic domains. This focus is appropriate because the present paper is conceptual and aims to explain the mechanism of AI adoption and use rather than test performance outcomes.

Opportunity decisions refer to decisions related to identifying, evaluating, and developing entrepreneurial opportunities. AI may support these decisions by helping women entrepreneurs search for market trends, analyse customer needs, generate new ideas, and compare possible opportunity directions. However, AI-generated opportunities still require human evaluation because entrepreneurs must assess whether these opportunities are feasible, desirable, and consistent with their business context.

Resource decisions refer to decisions about how women entrepreneurs use available resources, including time, finance, skills, knowledge, technology, and networks. AI may support resource-related decisions by helping entrepreneurs prioritise tasks, identify low-cost alternatives, prepare business documents, or improve operational efficiency. Strategic decisions refer to business positioning, market entry, business model design, partnership choices, and long-term direction. AI can support strategic decisions by generating alternative scenarios, comparing market information, and providing analytical input. However, strategic decisions remain dependent on human judgment, sector knowledge, and contextual interpretation. Studies on AI and entrepreneurial decision-making show that AI can enhance strategic analysis, but its value depends on how entrepreneurs combine AI outputs with their own knowledge and judgment (Cristofaro et al., 2026; Cszaszar et al., 2024).

Therefore, the proposed framework conceptualises AI-enabled entrepreneurial decision-making as a human-AI process. AI may expand information access, generate alternatives, and support analysis, but women entrepreneurs remain responsible for interpreting, selecting, and acting on AI-generated suggestions. This perspective avoids technological determinism and highlights the continued importance of entrepreneurial agency under uncertainty.

Propositions Development

Based on the proposed conceptual framework, this paper develops seven propositions for future empirical testing. These propositions explain the relationships among gendered

entrepreneurial context and external conditions, TAM-based AI adoption mechanisms, effectual use of AI, and AI-enabled entrepreneurial decision-making under uncertainty.

Proposition 1: AI anxiety negatively influences women entrepreneurs' perceived ease of use and behavioural intention to use AI.

AI anxiety may reduce women entrepreneurs' willingness to adopt AI because it increases perceived complexity and uncertainty. Concerns about AI reliability, privacy, errors, or one's own ability to use AI may make AI tools appear difficult to use and reduce behavioural intention.

Proposition 2: Digital literacy and AI self-efficacy positively influence women entrepreneurs' perceived usefulness and perceived ease of use of AI.

Women entrepreneurs with stronger digital literacy and AI self-efficacy are more likely to understand how AI tools work and how they can be applied to business tasks. They may also feel more confident in interpreting AI-generated outputs and integrating them into entrepreneurial decisions.

Proposition 3: Training support and peer influence positively influence women entrepreneurs' behavioural intention to use AI through perceived usefulness and perceived ease of use.

Training support can reduce learning barriers and improve women entrepreneurs' understanding of AI functions. Peer influence can also increase adoption intention when women entrepreneurs observe other entrepreneurs using AI successfully.

Proposition 4: Resource constraints encourage women entrepreneurs to use AI as a low-cost decision-support tool through affordable-loss experimentation.

Resource constraints may limit access to professional consulting, marketing services, or data analysis support. However, accessible AI tools may provide low-cost alternatives for testing ideas, generating content, comparing options, and preparing decisions.

Proposition 5: Women entrepreneurs' behavioural intention to use AI positively influences the effectual use of AI in entrepreneurial decision-making.

When women entrepreneurs intend to adopt AI, they are more likely to experiment with AI tools, apply AI to real business problems, and use AI outputs in decision-making. This intention may support the use of AI through effectual principles such as bird-in-hand, affordable loss, crazy quilt, lemonade, and pilot-in-the-plane.

Proposition 6: Effectual use of AI supports women entrepreneurs' opportunity, resource, and strategic decisions under uncertainty.

Effectual use of AI may support opportunity decisions by helping women entrepreneurs explore and evaluate business ideas. It may support resource decisions by enabling low-cost experimentation and resource recombination. It may also support strategic decisions by helping entrepreneurs compare alternatives and respond adaptively to changing conditions.

Proposition 7: The integration of TAM and Effectuation Theory provides a more context-sensitive explanation of AI adoption in women's entrepreneurial decision-making than TAM alone.

TAM explains why women entrepreneurs may intend to adopt AI through perceived usefulness and perceived ease of use. Effectuation Theory complements TAM by explaining how women entrepreneurs use AI after adoption through experimentation, available means, stakeholder collaboration, contingency leveraging, and control-oriented action.

Discussion*Theoretical Contributions*

This paper makes three main theoretical contributions to the literature on AI adoption, women entrepreneurship, and entrepreneurial decision-making. First, it extends AI entrepreneurship research by positioning women entrepreneurs as a theoretically meaningful context rather than treating entrepreneurs as a homogeneous group. Existing studies have shown that AI can support entrepreneurial decision-making, opportunity recognition, strategic analysis, and uncertainty management (Amoako et al., 2021; Cszaszar et al., 2024; Jousen et al., 2025; Shepherd & Majchrzak, 2022). However, much of this literature still discusses entrepreneurs in general terms. By focusing on women entrepreneurs, this paper highlights how AI adoption may be shaped by gendered entrepreneurial conditions, including resource constraints, digital literacy, AI anxiety, training support, peer influence, and self-efficacy.

Second, this paper contributes to technology adoption literature by extending the Technology Acceptance Model (TAM) to AI-enabled entrepreneurial decision-making. TAM explains how perceived usefulness and perceived ease of use influence users' behavioural intention to adopt a technology (Davis, 1989; Venkatesh & Davis, 2000). In the present framework, these constructs explain why women entrepreneurs may develop the intention to use AI in entrepreneurial activities. However, this paper also argues that TAM alone is insufficient because it mainly explains adoption intention, while entrepreneurial decision-making requires further explanation of action, experimentation, and adaptation under uncertainty.

Third, this paper contributes by integrating TAM with Effectuation Theory. Effectuation explains how entrepreneurs act when the future is uncertain, goals are emergent, and available resources are limited (Sarasvathy, 2001, 2008). By combining TAM and Effectuation Theory, this paper develops a framework that explains both why women entrepreneurs adopt AI and how they may use AI in entrepreneurial decision-making. This integration moves the discussion from technology acceptance to entrepreneurial use and responds to recent calls to understand AI as a tool that augments, but does not replace, entrepreneurial judgment and agency (Lupp, 2023; Ramoglou et al., 2026).

Finally, the framework contributes to women entrepreneurship research by linking AI adoption to gendered entrepreneurial contexts. Women entrepreneurs' adoption of AI is not merely a matter of individual willingness or technological access. It is also influenced by social, institutional, financial, and learning conditions. By incorporating AI anxiety, digital literacy, AI self-efficacy, training support, peer influence, and resource constraints, this paper provides a more context-sensitive understanding of AI adoption among women entrepreneurs.

Practical Implications

The proposed framework has practical implications for women entrepreneurs, entrepreneurship educators, AI tool developers, and support institutions. For women entrepreneurs, AI should not be understood as a substitute for entrepreneurial judgment. Instead, it can be used as a low-cost decision-support tool for information search, customer analysis, content generation, opportunity evaluation, and strategic comparison. This is particularly useful for entrepreneurs who face limited time, limited financial resources, or

limited access to professional consulting services. However, women entrepreneurs still need to critically evaluate AI-generated outputs and combine them with their own experience, industry knowledge, and business judgment.

For entrepreneurship educators and training providers, the framework suggests that AI training should not focus only on technical operation. It should also help women entrepreneurs understand how AI can be used in real entrepreneurial tasks. Training programs may include practical modules on prompt design, AI-supported market analysis, content generation, customer profiling, business planning, and decision evaluation. More importantly, training should reduce AI anxiety and strengthen AI self-efficacy. When women entrepreneurs feel more confident in using AI, they are more likely to perceive AI as useful and easy to use.

For AI tool developers, the framework implies that AI tools for entrepreneurs should be simple, transparent, affordable, and task-oriented. Women entrepreneurs operating small or early-stage businesses may not have the time or resources to use highly complex systems. Therefore, AI tools should be designed with clear interfaces, understandable outputs, and practical business templates. Developers should also consider concerns related to data privacy, trust, and possible bias in AI-generated recommendations, especially when AI is used in areas such as funding, market evaluation, or business planning.

Implications for Women Entrepreneurship Support

The proposed framework also suggests that women entrepreneurship support should move beyond providing access to technology. Support programs should recognise that women entrepreneurs may experience AI adoption differently due to gendered resource conditions, confidence gaps, social expectations, and uneven access to networks. Therefore, AI-related support should be gender-sensitive rather than assuming that all entrepreneurs face the same adoption barriers.

Women entrepreneurship support should also connect AI adoption with effectual action. Many women entrepreneurs may use AI gradually, experimentally, and pragmatically rather than through formal strategic planning at the beginning. For example, they may first use AI to test product ideas, generate marketing content, understand customer needs, or prepare business documents. These forms of use correspond closely to affordable-loss experimentation and means-driven action. Support programs should therefore encourage women entrepreneurs to start with low-risk AI applications that match their existing resources and business needs.

Peer influence and mentoring should also be strengthened. Women entrepreneurs may be more willing to try AI when they observe peers using it successfully in similar contexts. Peer learning groups, case-sharing workshops, and mentoring networks can reduce uncertainty and make AI adoption more practical. These support mechanisms can also help women entrepreneurs exchange prompts, tools, experiences, and decision-making strategies. Finally, support programs should include awareness of AI bias and responsible AI use. Women entrepreneurs need not only to know how to use AI, but also when to question AI, how to verify its outputs, and how to protect business and customer data.

Future Research

This paper develops a conceptual framework, and future research is needed to test and refine the proposed relationships. First, quantitative studies can use survey methods to examine how AI anxiety, digital literacy, AI self-efficacy, training support, peer influence, and resource constraints influence perceived usefulness, perceived ease of use, and behavioural intention to use AI. Structural equation modelling, especially PLS-SEM, can be used to test the proposed relationships among external conditions, TAM-based adoption mechanisms, effectual use of AI, and AI-enabled entrepreneurial decision-making.

Second, qualitative research can provide deeper insights into how women entrepreneurs actually use AI in entrepreneurial decision-making. Semi-structured interviews, case studies, or digital trace analysis can be used to explore how women entrepreneurs interpret AI-generated outputs, manage uncertainty, conduct low-cost experiments, and combine AI suggestions with their own judgment. This approach would be useful for understanding the processual and contextual aspects of AI adoption that may not be fully captured through survey methods.

Third, future studies can adopt mixed methods to combine the strengths of quantitative and qualitative approaches. For example, a survey could first test the general relationships in the proposed framework, followed by interviews to explain why some women entrepreneurs adopt AI more confidently while others remain hesitant. Mixed methods would also help examine how AI anxiety, self-efficacy, and effectual use change over time.

Fourth, comparative research can examine differences across countries, industries, business stages, and types of AI tools. Women entrepreneurs in technology-based ventures may use AI differently from those in retail, education, agriculture, tourism, or service industries. Finally, future research should further examine trust, explainability, and gender bias in AI adoption, especially when AI systems are used in high-stakes entrepreneurial decisions such as funding, market evaluation, or strategic planning.

Conclusion

This paper proposed a conceptual framework of AI adoption in women's entrepreneurial decision-making by integrating the Technology Acceptance Model and Effectuation Theory. The framework argues that women entrepreneurs' AI adoption is shaped by gendered entrepreneurial context and external conditions, including AI anxiety, digital literacy, AI self-efficacy, training support, peer influence, and resource constraints. Through the TAM-based mechanism, these conditions influence perceived usefulness, perceived ease of use, and behavioural intention to use AI.

However, AI adoption intention alone does not fully explain entrepreneurial decision-making under uncertainty. Therefore, this paper incorporated Effectuation Theory to explain how women entrepreneurs may use AI through bird-in-hand, affordable loss, crazy quilt, lemonade, and pilot-in-the-plane principles. The proposed framework suggests that AI can support opportunity, resource, and strategic decisions when women entrepreneurs use it as a decision-support and experimentation tool rather than as a substitute for human judgment. By integrating TAM and Effectuation Theory, this paper contributes to AI entrepreneurship, technology adoption, and women entrepreneurship literature. It provides a theoretical

foundation for future empirical research and offers practical insights for designing gender-sensitive AI training, support systems, and entrepreneurial development programs.

References

- Ahl, H., & Marlow, S. (2021). Exploring the false promise of entrepreneurship through a postfeminist critique of the enterprise policy discourse in Sweden and the UK. *Human Relations, 74*(1), 41–68.
- Almheiri, A., Chopra, A., & Haddad, A. (2025). The role of artificial intelligence in empowering women entrepreneurs in the United Arab Emirates. *Journal of Women's Entrepreneurship and Education, (3–4)*, 19–39.
- Amoako, G., Omari, P., Kumi, D. K., Agbemabiase, G. C., & Asamoah, G. (2021). Artificial intelligence and better entrepreneurial decision-making: The influence of customer preference, industry benchmark, and employee involvement in an emerging market. *Journal of Risk and Financial Management, 14*(12), 604.
- Brush, C. G., Greene, P. G., Balachandra, L., & Davis, A. E. (2018). The gender gap in venture capital: Progress, problems, and perspectives. *Venture Capital, 20*(2), 115–136.
- Cao, X., Li, H., Xu, Q., & Zhu, R. (2025). Detecting gender stereotype biases against women entrepreneurs in large language models. *Journal of Business Ethics.*
- Cardella, G. M., Hernández-Sánchez, B. R., & Sánchez-García, J. C. (2020). Women entrepreneurship: A systematic review to outline the boundaries of scientific literature. *Frontiers in Psychology, 11*, 1557.
- Cooke, F. L., & Xiao, M. (2021). Women entrepreneurship in China: Where are we now and where are we heading. *Human Resource Development International, 24*(1), 104–121.
- Cristofaro, M., Giardino, P. L., & Muldoon, J. (2026). Entrepreneurial decision-making in the age of AI: Sector knowledge at the balance of intuition and analysis. *Technology in Society, 85*, 103200.
- Csaszar, F. A., Ketkar, H., & Kim, H. (2024). Artificial intelligence and strategic decision-making: Evidence from entrepreneurs and investors. *Strategy Science, 9*(4), 322–345.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340.
- de Bruin, A., Brush, C. G., & Welter, F. (2007). Advancing a framework for coherent research on women's entrepreneurship. *Entrepreneurship Theory and Practice, 31*(3), 323–339.
- de Bruin, A., Brush, C. G., & Welter, F. (2009). A gender-aware framework for women's entrepreneurship. *International Journal of Gender and Entrepreneurship, 1*(1), 8–24.
- Gang, W. Y., Salim, F. A. A., Hashim, H. I. C., Setiawan, B., & Ramli, M. F. (2025). Empowering women entrepreneurs with artificial intelligence (AI) for social sustainability: Systematic literature review. *Malaysian Journal of Consumer and Family Economics, 35*, 1–27.
- Hoff, K. A., & Bashir, M. (2015). Trust in automation: Integrating empirical evidence on factors that influence trust. *Human Factors, 57*(3), 407–434.
- Iram, T., Albadry, O., Mehmood, S., & Ahmad, Z. (2025). Driving success for women entrepreneurs in KSA by leveraging AI and agility: Insights from the theory of technology dominance (TTD). *Management and Sustainability.*
- Jiang, Y., Jiang, Z., & Chen, Z. (2024). Women entrepreneurship in China: A bibliometric literature review and future research agenda. *Journal of Business Research, 179*, 114688.
- Joussen, T. P., Quiel, J., Schwaewe, J., Kanbach, D. K., & Kraus, S. (2025). The role of artificial intelligence in entrepreneurial decision-making under uncertainty: A corporate

- entrepreneurship perspective. *International Journal of Entrepreneurial Behavior & Research*.
- Li, Y., Ring, J. K., Jin, D., & Bajaba, S. (2025). Elevating entrepreneurship with generative artificial intelligence. *Journal of Innovation and Knowledge*, 10(6).
- Lupp, D. (2023). Effectuation, causation, and machine learning in co-creating entrepreneurial opportunities. *Journal of Business Venturing Insights*, 19, e00355.
- Matalamäki, M. J. (2017). Effectuation, an emerging theory of entrepreneurship: Towards a mature stage of development. *Journal of Small Business and Enterprise Development*, 24(4), 928–949.
- Perry, J. T., Chandler, G. N., & Markova, G. (2012). Entrepreneurial effectuation: A review and suggestions for future research. *Entrepreneurship Theory and Practice*, 36(4), 837–861.
- Qu, C., & Kim, E. (2025). Investigating AI adoption, knowledge absorptive capacity, and open innovation in Chinese apparel MSMEs: An extended TAM-TOE model with PLS-SEM analysis. *Sustainability*, 17(5), 1873.
- Ramoglou, S., Chandra, Y., & Jin, Q. (2026). Opportunity search in the era of GenAI: Navigating uncertainty in an expanding universe of imaginable but unknowable futures. *Journal of Management Studies*, 63(2), 695–721.
- Read, S., & Sarasvathy, S. D. (2005). Knowing what to do and doing what you know: Effectuation as a form of entrepreneurial expertise. *The Journal of Private Equity*, 9(1), 45–62.
- Sarasvathy, S. D. (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review*, 26(2), 243–263.
- Sarasvathy, S. D. (2008). *Effectuation: Elements of entrepreneurial expertise*. Edward Elgar.
- Shepherd, D. A., & Majchrzak, A. (2022). Machines augmenting entrepreneurs: Opportunities and threats at the nexus of artificial intelligence and entrepreneurship. *Journal of Business Venturing*, 37(4), 106227.
- Townsend, D. M., Hunt, R. A., Rady, J., Manocha, P., & Jin, J. H. (2025). Are the futures computable? Knightian uncertainty and artificial intelligence. *Academy of Management Review*.
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186–204.