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Conforming or rejecting gender stereotypes among women entrepreneurs

Se conformer ou rejeter les stéréotypes de genre chez les femmes entrepreneures

Thèse de Doctorat présentée en vue de l'obtention
du grade de docteur en sciences de gestion et du Management
par

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Conforming or rejecting gender stereotypes among women entrepreneurs

To my family and friends

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Executive Summary

Scholars argue that women entrepreneurs face structural barriers, from personal to institutional levels, hindering women entrepreneurs' endeavors (Brush et al., 2009; Cliff, 1998; Gupta & Bhawe, 2007; Guzman & Kacperczyk, 2019; Hughes et al., 2012; Zhao & Yang, 2021). Despite decades of entrepreneurial programs supporting women entrepreneurs, fewer businesses are owned and managed by women than men and women-led businesses often lag behind in size and revenue. The Global Entrepreneurship Monitor (GEM) has constantly reported this gap. Figure 1 shows the last report on TEA (Total early-stage Entrepreneurial Activity) across the 49 GEM Adult Population Survey (APS) participating economies in 2022 (Hill et al., 2023). As shown in Figure 1, male's TEA continues to be higher than female's TEA across most economies. This discrepancy has led researchers to explore the unique characteristics, motivations, and success rates of women entrepreneurs.

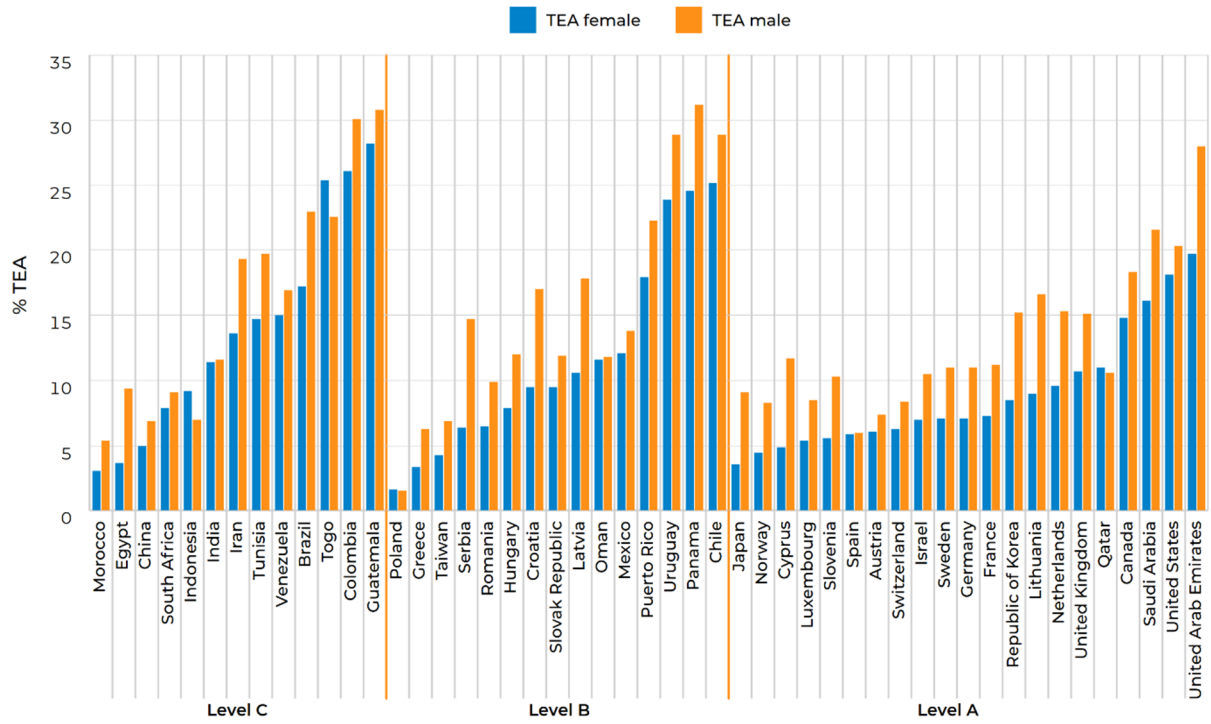

Figure 1Levels of TEA by gender (Hill et al., 2023)

Scholars assert that entrepreneurship is a gendered field (Ahl, 2006; Jennings & Brush, 2013) where gender beliefs are pervasive. Successful entrepreneurs are often described in masculine terms (Byrne et al., 2019; Lewis, 2006). Therefore, women entrepreneurs face both the difficulties of venture creation and gendered expectations. It has been established that gender norms and stereotypes play a significant role in shaping women's entrepreneurial intentions and actions (Davis et al., 2021; Gupta et al., 2009; Gupta & Bhawe, 2007; Gupta & Turban, 2012), thus creating personal and institutional barriers to venture creation (Balachandra et al., 2019; Javadian et al., 2021; Swail & Marlow, 2018). However, most of these studies on gender stereotypes focus on comparison between women and men, disregarding women's capabilities to overcome and adapt to these gendered beliefs (Ahl & Marlow, 2012; Marlow & McAdam, 2013). Furthermore, most of the studies analyze gender from a binary perspective, looking at men versus women, disregarding the intra-subject variations.

Recognizing these critics, some scholars advocate for a more nuanced understanding of gender beyond the traditional binary of ' male' and 'female,' acknowledging gender fluidity (Branicki et al., 2023; Byrne et al., 2021; García & Welter, 2013; Smith, 2022). This research aligns with this perspective, aiming to illuminate how women entrepreneurs navigate gender norms and stereotypes. Going beyond what we already know about the pervasive effect of gender norms and stereotypes and its potential variability according to context (Mattner & Sundermeier, 2023; Zhao & Yang, 2021), this dissertation explores the subtle experiences of women entrepreneurs.

Moreover, studies have shown that women entrepreneurs can express different forms of masculinities and femininities (Branicki et al., 2023; Byrne et al., 2021; Lewis, 2014). Therefore, by considering their capacity to enact different forms of masculinity and femininity, challenging or reinforcing these beliefs, this research explores how women shape gender norms and stereotypes in entrepreneurship. This dissertation thus answers the following research question: How do women entrepreneurs, throughout their entrepreneurial action, shape gender norms and stereotypes in entrepreneurship? And the following sub-questions: How do growth-oriented and environmental-oriented women entrepreneurs navigate these norms and stereotypes? Do they challenge them? Do they conform to or reject them?

This dissertation analyzes two distinct cohorts: growth-oriented and environmental-oriented women entrepreneurs. These cohorts were selected due to their divergent adherence to gender norms and stereotypes in entrepreneurship. The growth-oriented cohort aligns closely with the traditionally masculine description of successful entrepreneurs, characterized by a strong drive for business growth. This alignment represents a deviation from the gendered expectations typically associated with women. Conversely, the environmental-oriented cohort attempts to reconcile these gendered expectations by adopting feminine traits as guardians of the planet while maintaining a commercial orientation.

Studying gender recognizing its fluidity presents methodological challenges, as it requires capturing a diverse array of gendered practices that collectively constitute gender. This involves recording multiple instances in which gender is enacted or performed and investigating a variety of contexts or settings to encompass the spectrum of performances fully. To capture the fluid and nuanced nature of gender effectively, the author proposes an innovative methodology to efficiently incorporate large online datasets into a qualitative analysis.

The findings suggest that gender norms and stereotypes negatively impact women entrepreneurs, affecting various aspects of a venture environment and influencing women's behaviors and decisions. However, these norms and stereotypes are constantly challenged by women entrepreneurs through their gender performances. This study introduces the concept of 'Green femininities,' which are gender performances that blend femininity and masculinity according to contexts, goals, and values embedded in personal and professional experiences. This research also proposes an innovative approach that enhances the researcher's analytical capabilities while preserving an interpretive approach toward theorization. It leverages the new advancements in Artificial Intelligence (AI) for Natural Language Processing (NLP) techniques to increase the researcher's analytical scope.

This research makes several significant contributions. By proposing that women entrepreneurs simultaneously reinforce and subvert these beliefs, this dissertation proposes a nuanced way to study gender stereotypes, challenging their supposed stability. Furthermore, it proposes that women entrepreneurs enact a variety of femininities and masculinities, adapting their performances to the audience

highlighting the flexibility of gender. Moreover, by combining two different datasets, this research suggests an innovative way to study gender performances according to contexts. This dissertation also introduces an innovative methodology to enhance theorization within management research, allowing researchers to explore and analyze online data efficiently.

French Summary (Résume en Français)

Cette thèse, intitulée "Se conformer ou rejeter les stéréotypes de genre chez les femmes entrepreneures", examine comment les femmes entrepreneures gèrent et façonnent les normes de genre dans le contexte de leurs activités entrepreneuriales. Elle propose une conceptualisation évolutive des processus de construction du genre : partant des rôles sociaux stéréotypés, elle évolue vers la performativité du genre, en explorant diverses sources de données (entretiens avec les femmes entrepreneures à forte croissance, puis analyse de discours des femmes écopreneures en entretien et sur les réseaux sociaux). La thèse mobilise pour ce faire plusieurs méthodologies (analyse qualitative, analyse mixte).

La thèse initialement rédigée par articles est composée de la manière suivante.

Les chapitres 1 à 3 permettent de comprendre l'évolution du cadre théorique et méthodologique de la thèse. Cette évolution s'explique tout d'abord par le parcours personnel de l'auteure et par les aléas de l'accès au terrain (chapitre 1). Elle est justifiée également par les gaps de recherche identifiés progressivement à l'intersection des théories de l'entrepreneuriat féminin, des théories du genre et des théories de l'écopreneuriat (chapitre 2). Elle s'appuie enfin sur une réflexion ontologique et épistémologique justifiant la complémentarité entre approche qualitative et quantitative (chapitre 3).

Les chapitres 4 à 6 présentent les trois articles rédigés au cours de la thèse, lesquels constituent ses principaux résultats : une première étude empirique par entretiens qualitatifs auprès des femmes entrepreneures à forte croissance (chapitre 4), l'élaboration ensuite d'une technique de recherche mixte fondée sur les apports des algorithmes les plus récents issus de l'intelligence artificielle (LLM - large language models) assistant l'analyse qualitative manuelle afin d'extraire des données pertinentes sur les réseaux sociaux avant de les recouper avec des données d'entretien (chapitre 5), enfin la deuxième étude empirique appliquant cette technique mixte aux discours des femmes écopreneures (chapitre 6).

Le chapitre 7 propose une discussion générale de ces résultats et des méthodologies utilisées au regard de l'état de l'art sur la fluidité du genre des femmes entrepreneures d'une part et sur l'apport et les limites des techniques fondées sur l'intelligence

artificielles pour l'analyse qualitative d'autre part. Il présente aussi les perspectives de recherche que l'auteure dessine pour l'avenir.

Ces chapitres sont détaillés plus avant ci-dessous.

Chapitre 1 : Introduction

Le premier chapitre retrace le parcours doctoral de l'auteure. Celui-ci a débuté par une réflexion personnelle sur les défis auxquels sont confrontées les femmes entrepreneures, inspirée par ses expériences personnelles et professionnelles dans sa propre entreprise, puis dans l'entreprise de construction familiale et enfin à travers son travail de soutien à d'autres femmes entrepreneures. Cette introspection l'a amenée à explorer la recherche qualitative et des théories comme "Le genre performatif" et "La performativité de genre", cherchant à comprendre la complexité du comportement humain et du genre dans l'entrepreneuriat.

Par ailleurs, des circonstances imprévues ont conduit à la perte du terrain de recherche initialement prévu pour une observation participante. Ceci l'a obligée à s'adapter et à trouver de nouvelles sources de données sur internet, mettant à profit ses compétences initiales d'ingénieure. Cette expérience a alimenté une réflexion sur les prémisses ontologique et épistémologique de l'auteure, et à approfondir l'intérêt de combiner les approches subjectives et l'utilisation de l'Intelligence Artificielle (IA), notamment les grands modèles de langage (LLM) pour la recherche qualitative.

Ainsi, le parcours doctoral original de l'auteur est façonné par un faisceau de facteurs : son expérience personnelle en tant que femme entrepreneure, son désir de soutenir d'autres femmes entrepreneures, sa passion entrepreneuriale mais aussi le développement de nouvelles perspectives sur la construction des connaissances passant d'une approche d'ingénieur de nature objectiviste au développement d'un fort intérêt pour la recherche qualitative de nature plus constructiviste.

Chapitre 2 : Cadre théorique

Les femmes entrepreneures sont confrontées à la fois aux difficultés de la création d'entreprise et aux attentes liées au genre. Il a été établi que les normes et les

stéréotypes de genre jouent un rôle important dans la formation des intentions et des actions des femmes entrepreneures (Davis et al., 2021 ; Gupta et al., 2009 ; Gupta & Bhawe, 2007 ; Gupta & Turban, 2012), créant ainsi des obstacles personnels et institutionnels à la création d'entreprise (Balachandra et al., 2019 ; Javadian et al., 2021 ; Swail & Marlow, 2018). Cependant, la plupart de ces études sur les stéréotypes de genre se concentrent sur la comparaison entre les femmes et les hommes, sans tenir compte de la capacité des femmes à surmonter et à s'adapter à ces croyances liées au genre (Ahl & Marlow, 2012 ; Marlow & McAdam, 2013). De plus, la plupart des études analysent le genre d'un point de vue binaire, en considérant les hommes par opposition aux femmes sans tenir compte des variations intra-sujets.

Reconnaissant ces critiques, certains chercheurs préconisent une compréhension plus nuancée du genre au-delà de la binarité traditionnelle "homme" et "femme", en reconnaissant la fluidité du genre (Branicki et al., 2023 ; Byrne et al., 2021 ; García & Welter, 2013 ; Smith, 2022). Cette recherche s'inscrit dans cette perspective, visant à éclairer comment les femmes entrepreneures gèrent les normes et les stéréotypes de genre.

Au-delà de ce que nous connaissons sur l'effet omniprésent des normes et des stéréotypes de genre dans l'entrepreneuriat et sa variabilité potentielle selon le contexte (Mattner & Sundermeier, 2023 ; Zhao & Yang, 2021), cette thèse explore les expériences subtiles des femmes entrepreneures. Elle examine leur capacité à remettre en question ou à renforcer leurs croyances concernant le genre à travers leurs discours sur leur activité entrepreneuriale, contribuant ainsi à façonner (renforcer ou déconstruire) les stéréotypes de genre associés aux pratiques entrepreneuriales.

Cette thèse répond ainsi à la question de recherche suivante : Comment les femmes entrepreneures, tout au long de leur action entrepreneuriale, façonnent-elles les normes et les stéréotypes de genre dans l'entrepreneuriat ? Elle étudie particulièrement deux échantillons spécifiques de femmes entrepreneures dont on peut faire l’hypothèse que les rapports au genre sont opposés : les femmes entrepreneures axées sur la croissance endossant à priori le stéréotype masculin de l’entrepreneur et celles orientées vers l'environnement qui sont à première vue plus proches du stéréotype féminin réputé moins favorable à l’entrepreneuriat. La recherche étudie donc comment ces deux groupes de femmes entrepreneures se

positionnent vis-à-vis des normes et stéréotypes de genre en entrepreneuriat à travers leurs discours concernant leur activité entrepreneuriale, en entretien et sur internet: Les remettent-elles en question ? S'y conforment-elles ou les rejettent-elles ?

La recherche s'appuie sur des théories féministes comme cadre d'analyse, reconnaissant le genre comme une construction sociale, en comprenant l'évolution des concepts de genre au sein de ces théories. Le chapitre 2 se concentre sur les théories du genre qui occupent une place importante dans la recherche entrepreneuriale, notamment la théorie des rôles sociaux, la théorie du genre performatif et la théorie de la performativité du genre.

La théorie des rôles sociaux (Eagly & Wood, 2012), souvent utilisée dans les études quantitatives, suggère que les différences physiques entre les hommes et les femmes conduisent à des rôles sociaux distincts, les hommes étant associés à des caractéristiques agentielles (orientées vers les tâches) et les femmes à des caractéristiques communautaires (socio-émotionnelles).

La théorie du genre performatif (West & Zimmerman, 1987), ancrée dans le constructivisme social, postule que le genre n'est pas inhérent aux personnes mais créé par les interactions, en mettant l'accent sur le rôle actif des individus dans la construction du genre.

La théorie de la performativité du genre (Butler, 1990) remet en question la stabilité du genre, suggérant qu'il est fluide et performé en fonction du contexte, sans essence fixe de "masculin" ou de "féminin".

Chapitre 3 : Cadre méthodologique

Le chapitre 3 explore le parcours ontologique et épistémologique de l'auteure, en mettant l'accent sur la compréhension évolutive de la nature humaine et l'intégration de méthodologies diverses dans la thèse. L'auteure navigue sur le "continuum subjectif-objectif" proposé par Morgan et Smircich (1980), passant d'une perspective positiviste, où le chercheur est un observateur passif d'une réalité fixe, à une approche plus interprétativiste qui reconnaît l'influence du chercheur sur la création de connaissances.

Le chapitre souligne comment ce changement ontologique et épistémologique a influencé le choix des méthodes pour chacun des trois articles composant la thèse. Le chapitre 4, ancré dans un paradigme fonctionnaliste, utilise des entretiens semi-dirigés en suivant la méthodologie de Gioia (Gioia et al., 2013) pour examiner l'impact des stéréotypes de genre sur les femmes entrepreneures axées sur la croissance. En revanche, le chapitre 5, né des contraintes liées à la perte d'accès au champ de recherche initial, relie deux paradigmes apparemment opposés, en fusionnant une approche fonctionnaliste et une approche interprétativiste.

L'auteure souligne le défi que représente l'utilisation des grands modèles de langage (LLM), intrinsèquement probabilistes et objectivistes, pour l'interprétation subjective. Elle postule que les LLM peuvent être utilisés comme des "assistants loyaux", fournissant des outils précieux pour la sélection des données sans diminuer le rôle du chercheur dans l'interprétation. Cette approche permet au chercheur de tirer parti des nouvelles technologies comme moyen d'augmenter ses capacités, en élargissant le champ de l'analyse qualitative sans effacer l'importance de la subjectivité.

Le chapitre 6 illustre l'aboutissement de ce parcours épistémologique, en combinant des entretiens approfondis avec des données issues des réseaux sociaux pour examiner la performativité du genre chez les éco-entrepreneures. Le chapitre utilise les LLM comme outils de sélection des données, en faisant une distinction claire entre cette phase objectiviste et l'interprétation subjective ultérieure des données sélectionnées. La méthode de Gioia guide l'analyse interprétative, en tenant compte des différences contextuelles entre les entretiens, riches en interactions personnelles, et les messages sur les réseaux sociaux, caractérisés par leur nature publique et leurs objectifs potentiellement ambigus.

De plus, l'auteure développe la tension entre les approches objectiviste et subjectiviste en décrivant les cinq étapes entreprises pour concilier ces méthodologies apparemment contrastées. Ces étapes vont du domaine purement fonctionnaliste de la programmation et de la validation des données aux étapes fonctionnalistes-interprétativistes de l'analyse de sentiment, de la modélisation thématique et de la récupération d'informations. L'étape finale met l'accent sur l'interprétation subjective du chercheur, marquant la transition complète vers une épistémologie interprétativiste.

Enfin, le chapitre 3 présente les pratiques éthiques de l'auteure, son engagement envers une gestion responsable des données et les considérations éthiques qui entrent en jeu lors de la conduite de la recherche. Ces considérations éthiques sont cruciales pour préserver la vie privée des participants et respecter les normes d'éthique de la recherche.

Chapitre 4 : Comment les Normes de Genre Impactent les Femmes Entrepreneures Axées sur la Croissance

Ce chapitre examine l'impact des normes et stéréotypes de genre sur les femmes entrepreneures orientées vers la croissance, en s'appuyant sur des entretiens semi-structurés avec des anciennes élèves d'un programme entrepreneurial. Il révèle les défis persistants de ces femmes, même avec les avantages de l'éducation, des réseaux et de la compétence perçue.

Malgré les progrès des dernières années dans l'entrepreneuriat féminin, les femmes continuent à faire face à un nombre important de difficultés et d'obstacles pour démarrer et gérer des entreprises, ce qui se traduit par un nombre moins élevé d'entreprises détenues et dirigées par des femmes par rapport aux hommes (Bosma et al., 2020). De plus, les entreprises dirigées par des femmes ont tendance à être plus petites et à générer moins de revenus que celles dirigées par des hommes.

La définition d'un entrepreneur a longtemps été influencée par des caractéristiques masculines telles que l'ambition, l'agressivité, la prise de risque et le leadership (Ahl, 2006). Cette définition masculine restant répandue dans l'entrepreneuriat, les femmes mettent souvent l'accent sur les traits masculins lorsqu'elles définissent un entrepreneur à succès, le décrivant comme compétitif, actif, indépendant, décisif et sûr de lui (Jennings & Brush, 2013). Cependant, les femmes ont traditionnellement été caractérisées comme affectueuses, compréhensives, chaleureuses et compatissantes (Lockyer et al., 2018). Ce contraste entre les caractéristiques attribuées aux hommes et aux femmes (stéréotypes) crée une discordance dans la compréhension de ce que signifie être une femme entrepreneure prospère.

Données et Méthodologie

Onze entretiens semi-dirigés ont été menés auprès de femmes diplômées du programme d'entrepreneuriat d'une grande école parisienne pour comprendre comment ces caractéristiques attribuées influencent les femmes entrepreneures. Cette prestigieuse école de commerce parisienne attire des femmes qui ont choisi l'entrepreneuriat comme carrière, en leur fournissant l'éducation, le réseau et la perception de soi nécessaires pour réussir en tant qu'entrepreneures. Donc toutes les participantes possèdent une orientation vers la performance et la croissance de leur entreprise.

Les résultats

Les résultats révèlent plusieurs thématiques clés : l'intériorisation des normes de genre, la lutte pour la crédibilité, le syndrome de l'imposteur et la menace du stéréotype. Ces éléments conduisent à un manque de reconnaissance des inégalités et à des difficultés aiguës.

L'intériorisation des normes de genre, et la lutte pour la crédibilité. De nombreuses femmes entrepreneurs ont intériorisé les normes masculines associées à l'entrepreneuriat. Elles s'efforcent de développer leurs entreprises et de réaliser des profits élevés, levant souvent des fonds auprès de business angels et de sociétés de capital-risque, et accordant la priorité à la croissance du marché et aux avancées technologiques par rapport à d'autres aspects de leur activité. Cependant, cette intériorisation des normes masculines peut créer une discordance entre leur personnalité réelle et l'idéal féminin attendu, entraînant un malaise et un conflit interne.

La menace de stéréotype et le syndrome de l'imposteur. Les participantes ont souvent mentionné avoir subi la menace de stéréotype, se sentant obligées de se conformer aux stéréotypes masculins de l'entrepreneuriat, craignant d'être perçues comme moins capables ou compétentes si elles manifestaient des traits féminins. De plus, elles étaient souvent aux prises avec le syndrome de l'imposteur, remettant en question leurs capacités et se sentant inadéquates malgré leurs réalisations. Ces craintes pouvaient être paralysantes, les empêchant de saisir de nouvelles opportunités ou de maximiser le potentiel de leur entreprise.

Bien que les participantes recherchent la croissance et le profit, beaucoup ont cité la liberté comme leur principale motivation pour devenir entrepreneures. Elles appréciaient la liberté de créer leurs propres emplois, équipes, orientations d'entreprise et horaires. Le concept de "création" revêtait une importance particulière, car elles y voyaient une opportunité de construire des entreprises alignées sur leurs valeurs et leurs objectifs d'impact social. Cependant, cet accent mis sur la liberté et l'impact social semble contraster avec leur adhésion aux marqueurs traditionnels de la réussite entrepreneuriale, tels que la forte croissance et la rentabilité.

Malgré les défis et les limitations imposés par les stéréotypes de genre, certaines participantes n'ont pas reconnu les désavantages auxquels les femmes sont confrontées en entrepreneuriat. Elles ont minimisé ces inconvénients ou les ont attribués à des lacunes personnelles plutôt qu'à des préjugés sexistes systémiques. Ce manque de conscientisation peut entraver les efforts visant à réduire les inégalités entre les hommes et les femmes dans l'entrepreneuriat.

Chapitre 5 : Améliorer la Théorisation grâce à l'Intelligence Artificielle : Exploiter les grands modèles de langage pour l'analyse qualitative des données en ligne

Ce chapitre présente une méthodologie innovante pour l'analyse qualitative de grands ensembles de données en ligne en tirant parti des progrès de l'intelligence artificielle (IA) pour le traitement automatique du langage naturel (TALN). Cette méthodologie utilise des grands modèles de langage (LLM), qui sont des algorithmes de pointe en TALN capables de capturer la structure inhérente, le sens contextuel et les nuances du langage humain. Le chapitre soutient que les LLM offrent aux chercheurs qualitatifs la possibilité d'analyser efficacement les données en ligne tout en préservant la richesse et la profondeur de l'analyse qualitative.

Les données en ligne, par leur volume important et la dispersion des sujets qu'elles couvrent, offrent une multitude d'opportunités pour explorer les phénomènes sociaux. Cependant, les méthodes qualitatives traditionnelles présentent des limitations lorsqu'il s'agit d'analyser ces ensembles de données volumineux en raison de la capacité d'analyse limitée des chercheurs. Les LLM proposent une solution en

comblant le fossé entre les approches quantitative et qualitative, permettant aux chercheurs d'analyser de grands ensembles de données en ligne tout en conservant la richesse de l'analyse qualitative.

Le chapitre commence par expliquer la technologie qui sous-tend la méthode. Le TALN vise à traiter le langage humain écrit et parlé à l'aide de techniques informatiques. Le machine learning (ML), un sous-domaine de l'IA, a pour objectif de permettre aux ordinateurs d'apprendre à partir de données sans programmation explicite. Les algorithmes de deep learning (DL), un sous-domaine du ML, utilisent des réseaux de neurones artificiels pour analyser les données. Finalement l'intersection du DL et TALN a donné naissances aux LLM. Les LLM, alimentés par des algorithmes de deep learning et de TALN, peuvent comprendre et reproduire le langage humain, en capturant le sens contextuel et les nuances.

La Méthode : Une Approche en Deux Phases

La méthode proposée se compose de deux phases :

Phase 1 : Préparation et Exploration

- Collecte et Prétraitement des Données : Cette étape consiste à collecter des données en ligne tout en respectant les pratiques éthiques de scraping et les exigences de protection des données. Les données sont ensuite prétraitées en supprimant les informations non pertinentes et en les convertissant dans un format adapté à l'analyse (normalisation, tokenisation, lemmatisation).
- Exploration des Données : Cette étape vise à acquérir une compréhension générale des données collectées. Elle implique l'analyse de l'activité en ligne (par exemple, nombre de publications, mots, mots par publication) et la réalisation d'analyses de fréquence des mots et de similarité des mots.

Phase 2 : Sélection des Données Pertinentes

- Sélection par Catégorie : Cette étape utilise des algorithmes basés sur les LLM pour l'analyse de sentiment (Sentiment Analysis) et la modélisation de sujets (Topic Modeling). L'analyse de sentiment classe les publications en fonction de leur tonalité émotionnelle (positive, négative, neutre), tandis que la modélisation de sujets identifie les thèmes sous-jacents dans les données.

- Recherche Ciblée : Cette étape utilise la technique de récupération d'informations, employant l'algorithme de similarité des phrases pour trouver des phrases similaires à des expressions de recherche spécifiques (requêtes) générées par le chercheur.

Le chapitre illustre la méthodologie en analysant 2 444 publications sur les réseaux sociaux et 12 entretiens avec neuf femmes entrepreneurs ayant des objectifs environnementaux (éco-entrepreneures). L'objectif est d'explorer comment elles se conforment aux stéréotypes de genre ou les rejettent dans leurs communications publiques (en ligne) et privées (entretiens). L'illustration démontre comment la méthode permet d'identifier efficacement les publications pertinentes exprimant des croyances liées au genre, permettant une analyse inductive plus ciblée.

Le chapitre discute les avantages et les inconvénients de la méthode proposée. Le principal avantage est son efficacité, qui réduit considérablement le temps et les efforts nécessaires pour analyser de grands ensembles de données en ligne. Elle améliore également les capacités d'analyse, augmente la précision et peut atténuer les biais en offrant de nouvelles perspectives. Les inconvénients incluent la nécessité d'avoir certaines connaissances en programmation Python et la possibilité de manquer des informations pertinentes malgré l'approche multidimensionnelle.

Le chapitre souligne que, si les LLM offrent des outils d'analyse puissants, le rôle du chercheur dans la théorisation reste crucial. La méthode facilite l'exploration et la sélection, mais l'interprétation et la compréhension des données dépendent toujours des compétences et du jugement du chercheur. La conclusion souligne le potentiel de cette méthode pour améliorer la recherche qualitative dans divers domaines, permettant aux chercheurs d'exploiter les vastes quantités de données disponibles en ligne tout en conservant une approche qualitative.

Chapitre 6 : Féminités Écologiques : Étude de la Performativité du Genre chez les Éco-Entrepreneures

Le chapitre 6 examine comment les éco-entrepreneures performent le genre, tout en gérant les attentes associées à l'entrepreneuriat. L'étude analyse la performance du genre des femmes dans deux contextes : les entretiens privés et les publications dans

les réseaux sociaux, notamment sur LinkedIn, Facebook et Twitter. Cette approche explore la fluidité du genre et la façon dont il est façonné par le contexte.

Le chapitre souligne comment le genre est socialement construit, ce qui conduit à des stéréotypes associés à la masculinité et à la féminité (Heilman, 2001). Les traits masculins sont associés à l'assertivité, la compétitivité et la prise de risque, souvent considérés comme essentiels à la réussite entrepreneuriale. Les traits féminins sont associés à la bienveillance et le soutien, souvent perçus comme moins compatibles avec les activités entrepreneuriales (Ahl, 2006; Ahl & Marlow, 2012). Cela crée une tension pour les femmes entrepreneures qui peuvent se sentir obligées à se conformer aux normes masculines pour réussir.

L'éco-entrepreneuriat, qui est au centre de cette étude, concerne les entreprises qui accordent la priorité à la soutenabilité environnementale. Les femmes entrepreneures sont constamment aux prises avec la pression de se conformer à des attentes contradictoires. Elles doivent montrer l'image d'une entrepreneure authentique en adhérant aux traits masculins, tout en incarnant des traits féminins tels que la bienveillance et la protection des autres. Comme le propose Hechavarria (2016), l'éco-entrepreneuriat pourrait être la solution pour équilibrer ces attentes contradictoires.

Données et Méthodologie

Les données de l'étude proviennent de 20 entretiens approfondis et de 5 entretiens informels réalisés auprès de femmes éco-entrepreneures françaises, ainsi que de 5314 publications sur LinkedIn, Facebook et Twitter de ces mêmes éco-entrepreneures.

Le chapitre utilise la méthode expliquée au chapitre 5 pour analyser le large volume de données en ligne. Cette approche a permis de sélectionner des publications pertinentes à la performativité du genre, qui ont ensuite été analysées qualitativement en regard des données des entretiens.

Résultats

L'étude identifie quatre dimensions de la performativité du genre chez les éco-entrepreneures :

Conformité aux Attributs Féminins. Cette dimension reflète les actions et les expressions qui s'alignent sur les stéréotypes de genre féminins traditionnels. Par exemple, le fait de prioriser les besoins familiaux par rapport aux activités entrepreneuriales, ainsi que d'exprimer des doutes et d'avoir besoin de réassurance ou de soutien de la part des autres. Cette dimension considère aussi le fait de mettre l'accent sur les émotions, l'ouverture et les relations personnelles dans leurs interactions commerciales.

Discours Environnemental. Cette dimension capture la façon dont les éco-entrepreneures intègrent les préoccupations environnementales dans leur performance de genre. Par exemple, elles peuvent utiliser un langage attentionné et bienveillant pour promouvoir leur mission environnementale et se positionner comme des modèles de pratiques durables.

Rejet des Attributs Féminins. Cette dimension met en lumière les actes et les expressions qui remettent en question ou renversent les stéréotypes féminins traditionnels. Par exemple, affirmer sa capacité et sa compétence, rejeter le besoin de validation externe, ainsi que souligner ses ambitions et rejeter l'idée que les femmes ne créent que des petites entreprises peu ambitieuses. De même, cette dimension rend compte des propos où les éco-entrepreneures remettent en question l'attente sociale normative selon laquelle les femmes devraient prioriser la famille par rapport à l'entreprise.

Création d'un Nouveau Discours sur le Genre. Cette dimension reflète les efforts des éco-entrepreneures pour aller au-delà de la binarité des genres, en combinant des attributs féminins et masculins afin de façonner une nouvelle identité entrepreneuriale. Par exemple, elles peuvent présenter une approche équilibrée qui valorise à la fois l'ambition et la collaboration, le profit et la durabilité. Cette dimension inclut leur positionnement en tant que modèle de rôle pour un paysage entrepreneurial plus inclusif et non sexué, ainsi que leur militantisme pour une approche plus collaborative de l'égalité des genres.

Le chapitre utilise le concept de "Féminité Écologique" pour décrire comment les femmes éco-entrepreneures gèrent ces attentes, combinant des attributs féminins et masculins afin de faire avancer à la fois leurs objectifs commerciaux et environnementaux. Il propose un cadre théorique permettant de comprendre ces

performances en mettant en évidence la fluidité et la dépendance au contexte du genre :

- Performance de la Féminité. Ce type de performance met l'accent sur les traits féminins traditionnels tels que la bienveillance, la collaboration et les liens émotionnels dans toutes leurs communications : entretien et réseaux sociaux.
- Performance de la Masculinité. Cette performance embrasse les traits typiquement associés à la masculinité, tels que l'assertivité, la compétitivité et la prise de risque dans toutes leurs communications : entretien et réseaux sociaux.
- Performance de l'Androgynie. A travers leurs communications publiques et privées les éco-entrepreneures cherchent l'équilibre entre les traits masculins et féminins. Ceci demande d'avoir conscience des dommages que les normes et les stéréotypes de genre peuvent causer et de prendre des mesures pour les minimiser.
- Performance de la Dissonance. Cette performance démontre un décalage entre les expressions publiques et privées du genre, trouvant des performances de genre quelquefois contradictoires et variées. La majorité de des participantes performent le genre en dissonance car elles doivent jongler avec deux exigences contradictoires : la rentabilité de l'entreprise et la protection de l'environnement.

L'étude présente plusieurs implications clés. Elle examine le genre au-delà de la binarité. Elle soutient que la compréhension de la performativité du genre nécessite d'aller au-delà des catégories binaires rigides. Les femmes entrepreneures incarnent différentes formes de féminité et de masculinité, adaptant leur comportement à des contextes spécifiques. De plus, la performance de genre varie entre les sphères privée et publique. Une même femme entrepreneure peut présenter des comportements genrés différents selon le public et la situation.

Les préoccupations environnementales peuvent influencer la façon dont les femmes entrepreneures performent les rôles de genre, les amenant à adopter des attributs attentionnés et bienveillants tout en remettant également en question les attentes entrepreneuriales en matière d'ambition et de prise de risque. Pour faire face aux défis

environnementaux, il est important de comprendre comment les femmes entrepreneures gèrent les attentes liées au genre afin de les aider à réussir dans leurs entreprises

Les résultats de l'étude ont des implications pour la recherche sur le genre et l'entrepreneuriat, soulignant la nécessité d'une compréhension plus nuancée des expériences des femmes.

Chapitre 7 : Discussion

Cette thèse examine l'impact des normes et des stéréotypes de genre sur les femmes entrepreneures. Elle soutient que les femmes entrepreneures ont la capacité à la fois de remettre en question et de renforcer ces croyances rigides. La recherche se concentre sur deux groupes distincts de femmes entrepreneures : celles orientées vers la croissance et celles orientées vers l'environnement. En analysant ces groupes contrastées, l'étude permet de mieux comprendre comment les normes et les stéréotypes de genre sont façonnés par les femmes entrepreneures.

Contributions à la recherche sur le genre et l'entrepreneuriat

Cette recherche répond aux appels à un changement de paradigme dans la recherche sur l'entrepreneuriat, en faveur d'une épistémologie féministe et d'un abandon des paradigmes fonctionnalistes qui renforcent la binarité des genres (Henry et al., 2016 ; Marlow, 2020). Elle remet en question la vision traditionnelle de l'entrepreneuriat comme étant intrinsèquement masculine en soulignant les qualités androgynes réaffirmant les résultats de l'étude de Mattner and Sundermeier (2023). Cela remet en cause la littérature existante et plaide pour une définition plus inclusive de l'entrepreneuriat qui reconnaisse la valeur des traits masculins et féminins. La thèse souligne l'importance d'étudier le genre en contexte (Welter, 2011), en reconnaissant que les normes et les stéréotypes de genre se manifestent différemment selon les circonstances.

Cette thèse plaide pour une compréhension nuancée du genre qui dépasse les classifications binaires et qui reconnaisse sa nature fluide et performative telle que proposée par Branicki et al. (2023) et Byrne et al. (2021). Elle met en avant le concept de "féminité écologique", qui correspond à des performances de genre qui mélangent

masculinité et féminité en réponse à des contextes, des objectifs et des valeurs spécifiques. Cela remet en question la notion de rôles de genre fixes et immuables, en décrivant plutôt le genre comme en étant performatif adapté selon les circonstances.

Contributions à la recherche sur le genre

Cette recherche s'appuie sur les travaux de Nentwich et Kelan (2014), en particulier sur leurs thèmes de "fluidité et contexte spécifique" et de "graduellement pertinent et subverti" en relation au genre. Elle met l'accent sur l'étude du genre à travers le prisme de la manière dont les individus adoptent et créent des positions de sujet, en reconnaissant l'importance du contexte dans la performance de genre. Cette approche met en évidence la fluidité du genre et la façon dont les individus renforcent et subvertissent les normes de genre en fonction de la situation. Alors que les études précédentes sur la performativité du genre reposaient principalement sur des entretiens, cette recherche introduit une approche novatrice en incorporant des ensembles de données volumineux sans sacrifier la nuance et la subjectivité nécessaire afin d'étudier la fluidité du genre. Elle explore la performativité du genre dans les espaces en ligne, en soutenant que les médias sociaux constituent un contexte précieux pour étudier la performance du genre en raison de l'absence de biais du chercheur et de la présence d'attentes sociétales d'un large public.

Contributions aux méthodes de recherche

Cette thèse introduit une approche méthodologique innovante qui combine des ensembles de données volumineuses avec une analyse de données qualitatives. Elle propose l'utilisation d'algorithmes de traitement automatique du langage naturel (TALN), en particulier des algorithmes basés sur les grands modèles de langage (LLM), pour enrichir le processus de théorisation. Cette approche permet aux chercheurs d'obtenir des éclairages plus profonds à partir des sentiments, des sujets et des phrases, élargissant ainsi leur champ d'analyse. Cette méthode permet d'analyser efficacement de grandes quantités de données tout en conservant les nuances et la subjectivité inhérentes à une analyse qualitative.

L'auteure soutient que cette méthode comble le fossé entre les paradigmes de recherche objectivistes et subjectivistes en intégrant les points forts des approches quantitative et qualitative. En intégrant les LLM dans la recherche qualitative, la thèse

propose un outil précieux pour comprendre les phénomènes sociaux complexes en recherche en management.

Implications pratiques

La thèse souligne l'importance de sensibiliser les femmes entrepreneures aux influences subtiles des attentes sociales et des stéréotypes de genre sur leurs entreprises. Elle suggère que les programmes de formation à l'entrepreneuriat devraient intégrer des formations à la connaissance de soi et des stratégies pour reconnaître et atténuer les biais inconscients.

La recherche propose des stratégies pour créer un écosystème entrepreneurial plus sensible au genre. Il s'agit notamment de promouvoir une palette diversifiée de modèles de réussite dans la formation à l'entrepreneuriat, les incubateurs et les médias, et d'adapter les programmes d'entrepreneuriat pour mieux soutenir les femmes entrepreneures en reconnaissant les variations interindividuelles liées au genre.

Limites de la recherche

Cette recherche se concentre exclusivement sur les femmes entrepreneures, ce qui limite sa capacité à saisir tout le spectre des performances de genre au sein de l'entrepreneuriat. De plus, bien que l'étude reconnaisse que les facteurs propres à chaque secteur d'activité peuvent influencer les expériences liées au genre, elle n'approfondit pas ces différences en raison de la taille limitée de l'échantillon.

La méthode proposée présente également des limitations. Elle nécessite des connaissances importantes en programmation et se limite actuellement à l'analyse de données textuelles, excluant les informations potentiellement précieuses contenues dans les images et les vidéos.

Recherches futures

Des recherches futures pourraient examiner l'impact du temps sur la fluidité du genre en explorant les variations des performances et des croyances liées au genre chez les individus à mesure qu'ils passent à travers diverses expériences de vie. Cela pourrait impliquer des études longitudinales capturant les différentes performances de genre au fil du temps.

L'examen de la performativité du genre au sein des communautés entrepreneuriales en ligne, en particulier l'influence du genre sur la dynamique des réseaux et l'engagement thématique, pourrait fournir des informations précieuses. Cette recherche pourrait explorer si des sujets spécifiques sont associés aux réseaux féminins, masculins ou mixtes et comment ces réseaux interagissent.

De plus, en s'appuyant sur la méthode proposée dans cette thèse, d'autres études pourraient aller au-delà des données textuelles pour intégrer la richesse du contenu vidéo et image disponible en ligne. Par exemple, l'intégration de vidéos et d'images pourrait enrichir l'analyse et fournir une compréhension plus globale de la fluidité du genre. Ces avancées pourraient impliquer l'analyse d'indices visuels tels que les gestes, la tenue vestimentaire et les scènes pour découvrir les aspects incarnés des performances de genre.

Conclusion

Cette thèse propose une analyse nuancée de l'interaction complexe entre les normes et les stéréotypes de genre et les expériences des femmes entrepreneures. Elle soutient que les femmes entrepreneures façonnent activement et sont façonnées par ces attentes sociétales, démontrant la capacité à la fois de renforcer et de remettre en question les croyances dominantes sur le genre. En préconisant un changement de perspective, passant d'un genre binaire à un genre fluide et performatif, la thèse encourage la poursuite de recherches sur ces performances afin de favoriser un environnement entrepreneurial plus inclusif et non genré.

Chapter 1 Introduction

In this introductory chapter, I trace the path that led me to embark on a doctoral program. I discuss the evolution of my perception of reality linked to an epistemological change, which is intertwined with the type of research that I undertake. In the second section of the chapter, I present the research gap and questions that this dissertation aims to address, as well as the contributions of this work.

My Doctoral Journey: A tale of an ontological shift

“The type of work we do as scholars are not just intellectual ones, they are intricately interwoven with who we are, made in poetic moments” (Cunliffe, 2018, p. 9).

In this section, I describe my doctoral journey chronologically. I start by explaining my experiential entrepreneurial background and exploring the lessons and questions that motivate my research on women's entrepreneurship. Then, I share the beginning of the doctoral program, revealing my interests and talents for qualitative inquiry, which opens new doors to knowledge building and new conceptual frameworks. Next, I explain my field access problems and how I turned this difficulty into an opportunity to explore Internet data, reconciling qualitative and quantitative research. Finally, I summarize my motivational background for this dissertation.

My entrepreneurial background - lessons and reflections

My doctoral journey started with the experiential perspective of a woman entrepreneur. Even before I decided to engage in a doctoral program, I reflected on the principal barriers and difficulties a woman entrepreneur faces. It was an essential period of introspection about the success and failure of my own business, what I perceived as an accomplishment, and what I perceived as a shortcoming.

I come from an entrepreneurial family. I have always been engaged in the family business, a construction company in the East of Mexico. Even though I did not always live in Mexico, I was present whenever the family business was in trouble. I worked there at different times, at the beginning of my career in 2000, after my return from Canada in 2007, and since 2015, being available to my father whenever he needed

my support. Holding a Mechanical Engineer degree and being part of a construction company in Mexico since the beginning of my career has allowed me to experience the difficulties women face in male-dominated sectors, in particular recognition and fair treatment.

I have a Master's in Entrepreneurship and have helped other women succeed in their entrepreneurial endeavors. During my time living in Canada from 2004 to 2007, I took on the responsibility of developing and launching the first compost service provided by my city. I was the development agent for less than a year, and then I joined the board of directors as a volunteer. At this moment, I started running a program to support women in developing their entrepreneurial projects. This was part of a government-founded program. I kept this position for a year, leaving to give birth to my first child. After my maternity leave, I decided to stay freelance. I continued providing services until I left the country in 2007. All these experiences made me confident in my skills and entrepreneurial abilities. I always thought I had everything it took to succeed as an entrepreneur.

I took a halt in my career after my daughter's accident that permanently damaged her spinal cord, rendering her partially paralyzed. During this difficult time, I gave birth to my second child. I created my business in 2012, adhering to the entrepreneurial ideals of freedom, passion, and growth. I launched an e-commerce site with the expectation of balancing my daughter’s demanding health schedule and business growth. Despite many long working days, specialized training in Online Marketing, and a big motivation, I could not attain my growth objectives. After Amazon's next-day delivery service started in my area, I could no longer keep the company competitive. I was then faced with my business closure in 2017, which I interpreted as an enormous failure. Therefore, I started to look at the different causes that led me to close my business.

I did not stop at the obvious reasons for my business closure, which included a lack of allocated resources and a difficult business sector with a major player. I started to look deeper, looking for more plausible explanations. If I was about to learn from past mistakes, I needed a full understanding of the factors that contribute to success and failure. I started looking at what the world of research says about women

entrepreneurs. I found that the explanations were somehow simplistic. The story of success and failure is intertwined with many different factors.

It is true that I have a unique situation linked to my daughter's health challenges. But this is, again, a simplistic explanation. Hence, I started by looking at my behavior—the things I thought were good and those not. I could not stop remembering the fears and doubts of all the women I trained to become entrepreneurs. It was a time to also reflect on my own. These were promising clues to look at. What are the other factors that play a role in business success? The factors that are not easily perceived and are sometimes hidden.

Toward the PhD program

As I progressed in my reading of research papers, I noticed a great personal inclination toward qualitative studies, particularly those that examine the realities of women's entrepreneurship from a more subtle perspective.

My first degree is in Mechanical engineering. I cannot help but see the world through a set of factors that need to be put together to keep the machinery going, but human beings are more complex than that. Human behavior is extremely complex. I saw it in my own experience. Education, training, and experience are not enough. Thus, I was fascinated by those qualitative studies that see women as a whole without reducing actions or behavior into variables. Therefore, I quickly accepted the subtility of qualitative research.

For someone who had been trained and worked with a lens seeing reality from a positivist paradigm, the subtlety of qualitative research was difficult to grasp. In my previous work experience, I have always taken facts at face value without stopping to reflect on individuals' unconscious perceptions.

Before entering the doctoral program, I did a Master's in Theories of Organizations and took the qualitative track. I remember that the epistemology course was a significant challenge. Moving from looking at the world as a beautifully balanced equation toward the messiness and complexity of human behavior was a great revelation, a tremendous challenge, something that attracted me and puzzled me at

the same time. Trying to understand human behavior by also understanding your own unconscious beliefs is indeed challenging.

My first interviews were a profound revelation. Without even realizing it, I was tapping into one of my most remarkable yet underappreciated qualities: my innate empathy and exceptional ability to connect with others. I have always been able to decode intuitively hidden meanings, understand non-verbal signals, intuit the atmosphere of a situation, and fully engage in a conversation. However, I never thought of these skills as a professional requirement. This marked the true beginning of my journey toward the doctoral program. I embarked on this exciting path by integrating my personal and professional experiences, a newfound passion for qualitative research, and the opportunity to cultivate dormant abilities.

I started the doctoral program with the conviction that I wanted to pursue qualitative research. I came to realize that human experience requires a delicate, subtle, and sensitive interpretation. Big traits can be generalized, as we need to make sense of the world. However, these generalizations can be misleading without a profound understanding of individuals' experiences.

However, at the beginning of my journey, as I was learning the ways of qualitative research, I needed it to find security in the way I have always approached knowledge. This is toward a positivist paradigm, looking at reality as fixed. This need can also explain why I gradually changed my conceptual framework about women entrepreneurs. First, I used Social Role Theory, which offers the comfort of the known. It is a theory mainly used in quantitative studies. A theory that made me feel comfortable. However, it felt somewhat simplistic. This brought me back to my original reflection after my business closure. My initial desire to look at human experience from its subtlety, finesse, and complexity has been the fire that ignited my curiosity. Therefore, I decided to venture into another possible explanation, and another stage of my journey began. I then turned my attention to Doing Gender and Gender Performativity. Embarking in this perspective demanded a pivotal transformation that is still in progress. It has been a challenging phase as it imposed not only an epistemological shift but also an ontological one. Leaving the security of confirmed knowledge toward a world of intense subjectivity, although challenging, is fascinating. In this new world, truth remains elusive; knowledge is not fixed and is probably never

acquired. Human existence is beyond a complex set of interconnected experiences, where the subjective and the real coexist in both opposition and harmony.

The journey would be simple and boring if everything went as planned. My journey is an exciting one! Facing difficulties is part of making a journey interesting and exciting.

An opportunity to bridge subjective and objective knowledge

As I was about to embark on ethnographic research, to go deep into the unknown and immerse myself in this newfound world of immense possibilities, a door was closed. In the middle of my second year, when data collection should be done, I lost my field of research.

A group of researchers, including myself, were invited to participate as observers in the first edition of the Business Convention for the Climate (CEC in French). This convention takes the format of a ten-session program over eight months, where business leaders are invited to reflect on their business models and propose a transformative blueprint based on sustainable practices. The first edition was made up of 150 business leaders, including 35 entrepreneurs. As researchers, we were invited to investigate the process of business transformation toward sustainable practices, identifying the challenges faced by businesses in this transition. I was in charge of following the entrepreneurs. We were welcome in the first session, which ran over three consecutive days.

We soon identified major problems within the organization of this first edition. However, we never received the opportunity to express our concerns. After the first session, we were told that we were not welcome in the second session. The convention leaders explained that they lacked the resources to welcome us, and as a consequence, we were perceived as a disturbance rather than supporters. We did not receive the opportunity to adapt our participation in the convention. A few days later, they announced to us that the research group was no longer needed. This decision was final. Like this, all the preparation work for ethnographic research was gone.

Trying to save what was lost, I delved into social media data, wishing to follow the convention and its 35 entrepreneurs during this process. My goal was to do nethnographic research. However, this attempt was harder than anticipated and

deprived me of the possibility of real contact with the person on the other side of the screen.

Then, another turn in the journey began: trying to reconcile an innate desire for qualitative inquiry, the cruel reality of having no access to data, and the time constraint of finishing a PhD program on time. As an engineer, I was trained to solve problems, be pragmatic, and move into action. It is a good set of skills to have in times of need. There was not time for much introspection; it was time for action to get things done.

However, an important internal battle emerged. I was not ready to let go my initial motivation to dedicate my time and effort to study women's entrepreneurship following a qualitative approach, but I needed access to data. This is the real turning point that defined the researcher I am today. Someone with an authentic inclination toward subjectivity, but indeed a pragmatic one. It could be perceived as not belonging to any epistemological branch. However, someone cannot deny who she is. The use of new technologies for qualitative approach is a testament to this duality that lives in me. I learned to hone all my skills and create bridges: to be pragmatic and problem-solving when looking into new technologies, objectivist when coding, and subjectivist when interpreting data. My last piece of research testifies to this journey. A journey that bridges paradigms and opens new avenues.

I must say that someone cannot completely undo her own path. I still am, and think, much that I acknowledge, with the mind of an engineer. However, I would like to think that I have been able to develop the sensitivity of a mindful social scholar who is amazed by the simplest and most complex aspects of human experience.

After this explanation, the composition of the research presented in this dissertation may be less surprising. It is the testimony of a profound personal evolution and my ability to connect apparently contradictory paradigms, which, in my perspective, are not as conflicting as they may appear. Despite my profound inclination for qualitative research, detaching oneself from inherent biases is arduous. The methodological chapter (chapter 3) will explain how I managed to bridge both paradigms, how I tried to limit bias, and what ethical guidelines I followed.

In summary, three main factors paved my doctoral journey: my experience as a woman entrepreneur, my personal inclination for qualitative research while I had been trained as an engineer, and the difficulty of accessing fieldwork. These constitute the

motivational background of my intellectual journey and help explain the choice of theories and approaches I employed in this dissertation.

Summary of the motivational background of this dissertation

As mentioned in the previous section, my personal and professional experiences shape my journey into academia. Drawing on over twelve years of professional experience, I arrived at this field following the dissolution of my own business. Despite holding a Master's degree in Entrepreneurship, actively participating in the family business, and training numerous women entrepreneurs, my business could not succeed, compelling me to reflect deeply on the reasons behind the closure of my business. This personal experience and my desire to assist other women to flourish in their entrepreneurial endeavors motivated me to investigate gender issues in entrepreneurship, especially gender stereotypes.

Scholars claim that the existing biases against women entrepreneurs stemming from gender stereotypes hinder women entrepreneurs' success (Balachandra et al., 2019; Brush et al., 2009; C. G. Brush & Cooper, 2012; Gupta et al., 2009, 2014; Javadian et al., 2021; Jennings & Brush, 2013). Therefore, I believe it is important to understand not only the negative effect of gender stereotypes on women's entrepreneurship but also how they navigate these rigid beliefs. How do they perceive gender norms and stereotypes? Do they reflect on them, criticize them, or play with them? Are these norms and beliefs internalized more or less unconsciously? As explained at the beginning of this section, I am motivated to study less apparent influences. As such, my motivation comes from my personal passion and professional experience in the field of entrepreneurship.

Moreover, my dissertation gave me the opportunity to study environmental issues through the lens of environmental-oriented entrepreneurs. Growing up close to the sea in the East of Mexico made me attuned to nature; hence, it resonates with me to incorporate an environmental component in my research. Even though I could not keep my original field, I hold on to this line of research. The imminent environmental challenges our societies are grappling with, coupled with the necessity to find innovative ways to establish sustainable economies and societies, motivated me to focus on entrepreneurs who incorporate an environmental component into venture

creation. I believe overcoming the negative effects of gender stereotypes in entrepreneurship can pave the way for men and women alike to shape more inclusive societies and create environmentally resilient ones.

Additionally, the academic journey allows me to cultivate my intellectual curiosity. The path to knowledge development has allowed me to fully develop my skills and interests. Furthermore, my engineering background has been instrumental in exploring new technological advancements, allowing me to propose an innovative method to integrate extensive data sets into qualitative analysis for the research community.

To sum up, my motivation to undertake the doctoral journey comes from my passion for my subject, the relevance of the field, and the potential positive impact of my research. In a world increasingly recognizing the power of diversity and inclusion and the need for sustainable ventures, I believe this research could positively impact society and enrich the academic community. I hope to make a valuable difference in the lives of women entrepreneurs and the sustainable development of our societies.

General overview of the dissertation: Research gap, research question, and contributions

Over the past decades, the field of gender in entrepreneurship has grown significantly (Deng et al., 2020; Henry et al., 2016; Marlow, 2020). From the original perspective of looking at gender as a simple variable of comparison to a deep understanding of women's entrepreneurial experiences (Henry et al., 2016; Jennings & Brush, 2013; Marlow, 2020). Today, the field has made tremendous progress in understanding women's unique challenges (Cabrera & Mauricio, 2017; Guzman & Kacperczyk, 2019) and significantly contributed to addressing the difficulties and barriers that women face. In the realm of gender stereotypes, many studies have stated the predominance, repercussions, and stability of these rigid beliefs (Charlesworth et al., 2021; Gustafsson Sendén et al., 2019) and their possible change (Bhatia & Bhatia, 2021; Eagly et al., 2020), calling to understand their influence and repercussions on our social experiences, including entrepreneurship.

Consequently, entrepreneurship research has turned its attention to understanding how gender norms and stereotypes impact entrepreneurs in their entrepreneurial endeavors. Some of these studies followed the original perspective to study gender as a variable, comparing women and men entrepreneurs (e.g., Gupta et al., 2009, 2014; Gupta & Turban, 2012; Yang et al., 2020). These studies point out the negative influence of gender stereotypes on women's entrepreneurship. For instance, Gupta et al. (2014) used the concept of stereotype threat to explore the differences in opportunity business evaluation between men and women. They found that men's opportunity evaluation was higher than women's without any gender-stereotypical information presented. However, when entrepreneurship was presented with gender-neutral characteristics, gender differences in opportunity evaluation disappeared (Gupta et al., 2014), signaling the impact of gender stereotypes in entrepreneurship. Despite their significant insights, these studies still analyze women in relation to men, implicitly assuming that masculine entrepreneurship is the norm (Ahl, 2006; Lewis, 2006; Swail & Marlow, 2018), disregarding women's agency and experiences.

Scholars have called for a shift in the way research studies gender, from analyzing gender as a variable to gender as a lens (Ahl, 2006; Ahl & Marlow, 2012; Brush et al., 2009; Lewis, 2006; Marlow, 2014). Henry et al. (2016) called for a methodological shift to study how gender is performed in entrepreneurship. They favor qualitative studies despite being time-consuming and riskier for publication purposes (Henry et al., 2016). Furthermore, Marlow (2020) challenges the functionalist ontology and the neoliberal ideology that dominates entrepreneurship research, proposing a "feminist informed critique" that questions the "masculinized, market-based, [..] and whole ethos of the entrepreneurial project" (Marlow, 2020, p. 46).

Following this call, recent studies on gender norms and stereotypes have taken a more subtle approach to studying gender stereotypes questioning their stability. Following Henry et al. (2016), Mattner and Sundermeier (2023) draw upon a social constructionist perspective considering the contextual construction of gender stereotypes. They advocate for a more open measurement approach when studying gender stereotypes and question the "timeliness, contextualization, and predetermination" of current scales (Mattner & Sundermeier, 2023, p. 3). Furthermore, Zhao and Yang (2020) argue that gender stereotypes need to be analyzed across local contexts, considering their variation of intensity across different situations, challenging

the idea of stereotypes being “universally potent and irreversible” (Zhao & Yang, 2021, p. 1458). As Welter (2011, 2020) has repeatedly invited entrepreneurship research to consider the importance of historical, institutional, and social contexts.

The recent shift to study gender norms and stereotypes that question their stability, considering the context and the entrepreneur’s agency, as well as the call to shift toward a feminist ontology from Henry et al. (2016) and Marlow (2020), has motivated this dissertation. This work follows my personal evolution, initially heavily influenced by Social Role Theory, then shifting to performative analysis of gender stereotypes. Up to now, studies analyzing gender stereotypes in entrepreneurship have taken a macro approach, disregarding women’s experiences and how they construct and deconstruct such stereotypes. Moreover, studies on gender stereotypes follow a functionalist paradigm, perpetuating the idea that women lack something (Ahl & Marlow, 2012). Going beyond what we already know about the pervasive effect of gender norms and stereotypes in entrepreneurship and its potential variability according to context, I explore the subtle experiences of women entrepreneurs. By considering their capacity to challenge or reinforce these beliefs, I embark on a journey to explore how women navigate them. Acknowledging that there is not a sole femininity but multiple ones (Lewis, 2014), I draw on Butler’s notion of performativity (Butler, 1988, 1990, 2004) to analyze how women entrepreneurs perform gender according to context (Nentwich & Kelan, 2014). This dissertation thus answers the following research question: How do women entrepreneurs, throughout their entrepreneurial action, shape gender norms and stereotypes in entrepreneurship? It also answers the following sub-questions: How do growth-oriented and environmental-oriented women entrepreneurs navigate these norms and stereotypes? Do they challenge them? Do they conform to or reject them?

To tackle these research questions, I examine two types of women entrepreneurs. First, I study growth-oriented women entrepreneurs (Chapter 4). According to Sweida and Reichard (2013), growth-oriented women entrepreneurs are subjected to dual stereotypes. High-growth entrepreneurship is usually linked to technology and manufacturing. Women entrepreneurs who venture into these sectors deal with industry-related stereotypes and the masculine stereotype of entrepreneurship (Sweida & Reichard, 2013). Thus, studying growth-oriented women entrepreneurs allows me to explore how gender stereotypes are perceived by these women

entrepreneurs: Do they fully adhere to the masculine stereotype, playing their entrepreneurial career as if they were men, neglecting their feminine identity? Or do they criticize the constraints due to masculine stereotypes and try to defend a more balanced view of their entrepreneurial life? Suppose general tendencies among the interviews of women entrepreneurs are observed. Can we conclude at the macro level that traditional masculine gender stereotypes of entrepreneurs are reinforced or subverted in the context of growth performance?

Second, I study a different cohort of women entrepreneurs: environmental-oriented women entrepreneurs (Chapter 6). In the previous cohort, women entrepreneurs are expected to adhere to a masculine normativity of entrepreneurial performance. In contrast, this second cohort is expected to be in opposition, favoring environmental care. According to Hechavarria (2016), women entrepreneurs have a greater propensity to establish environmentally oriented ventures as this aligns with the stereotypical ideas of caring and nurturing ascribed to women. Moreover, environmental-oriented women entrepreneurs possess a dual objective: to make a significant ecological impact (Kirkwood & Walton, 2010) and improve market share and growth (Ljungkvist & Andersén, 2021). Thus, this second cohort allows me to study how gender stereotypes are reinforced and challenged by women entrepreneurs who adhere, according to theory, to a feminine performance of entrepreneurship. Moreover, this study takes an interesting shift in analyzing two different sets of data. It uses Artificial Intelligence (AI) as part of its methods to efficiently select relevant social media. Thus, this study considers the different types of performances enacted by an entrepreneur according to the audience, in this case, a public (social media) and a private (interview) audience.

Studying how gender norms and stereotypes are shaped by their creators opens our understanding of how these fixed attributes are maintained and challenged simultaneously. This dissertation makes several contributions by analyzing women entrepreneurs' experiences in various contexts. First, it contributes to the field of gender in entrepreneurship by expanding our knowledge about gender stereotypes. By proposing that women entrepreneurs simultaneously reinforce and subvert these beliefs, this research proposes a nuanced way to study gender stereotypes, challenging their supposed stability. Moreover, it demonstrates women entrepreneurs' various gender performances and their capabilities to shape the entrepreneurial field.

Second, this study advances our understanding of gender performativity within the realm of entrepreneurship by analyzing “doing gender as flexible and context specific” (Nentwich & Kelan, 2014, p. 128). It proposes that women entrepreneurs enact a variety of femininities and masculinities, adapting their performances to the audience highlighting the flexibility of gender. Moreover, by combining two different datasets, this research suggests an innovative way to study gender performances according to context.

Third, this dissertation proposes a unique methodological approach to enhance qualitative analysis. It allows a combination of large and variable datasets while maintaining a qualitative approach to data analysis. I argue that using AI for NLP algorithms enhances the theorization process, allowing researchers to derive new insights from sentiments, topics, and phrases, refining the analysis by efficiently finding the supporting data.

Understanding how women entrepreneurs deal with gender norms and stereotypes has various implications. As previous studies have stated, gender stereotypes can be damaging, limiting one's actions and behaviors. Even though women entrepreneurs suffer from their impact, they lack self-awareness of their own behavior and actions. Understanding how these beliefs are reinforced is necessary to diminish their influence and free women entrepreneurs from their pervasive influence. Signaling that gender stereotypes are also challenges creates opportunities to reinforce those challenging behaviors and promote change. Understanding the different actions and behaviors that challenge rigid and restrictive beliefs can allow entrepreneurs, educators, administrators, and policymakers to tailor better programs, services, and communities for entrepreneurs where these actions and behaviors are favored. Thus, rigid gender norms and stereotypes are dismantling over time.

This dissertation presents its results in the form of articles. Therefore, it is structured as follows: Chapter 2 explains the theoretical background of the research. Chapter 3 delves deeply into the ontological and epistemological premises of this dissertation and explains its methodology. Chapters 4 to 6 are the three articles that constitute the research results. Their abstracts are presented in Chapter 2. Chapter 7 discusses the dissertation's findings and presents the avenues for future research. It ends with a conclusion that summarizes the main takeaways.

Chapter 2 Theoretical Background and Literature Review

This research delves into the concept of gender within entrepreneurship research. Utilizing feminist theories as a theoretical framework, this dissertation positions gender as a social construct. In this chapter, I briefly explain the main currents of feminist theories, as the evolution of the gender concept is deeply embedded in their ontological paradigms. Subsequently, I explain the gender theories that have been instrumental in shaping the field of gender in entrepreneurship. Then, I present an overview of the literature concerning women's entrepreneurship and the position of this research within entrepreneurship literature. Finally, I introduce a summary (abstracts) of the following chapters.

Feminist theories

According to Lindsey (2013), a theory is feminist if it "challenges the status quo" (Lindsey, 2013, p. 14) that disadvantages women. Following this extensive definition of a feminist theory, this section explains the three main currents of feminist theories and their ontological positions.

Liberal Feminism

Liberal feminist (LF) theories adopt an essentialist viewpoint and defend an egalitarian vision of women and men (Ahl, 2006; Fischer et al., 1993). Liberal Feminism (LF), a movement rooted in liberal political philosophy, emerged in the late 1800s under the pioneering influence of Mary Wollstonecraft, Judith Sargent Murray, and Frances Wright. Liberal Feminism (LF) is based on "enlightenment beliefs of rationality, education, and natural rights" (Lindsey, 2013, p. 17). Therefore, women have equal rational capabilities as men. Thus, any subordination of women is the result of discrimination and societal barriers. The theory does not question the social system's overall structure; it only stands against discrimination and inegalitarian rights. Once structural barriers are eliminated, the fundamental premise is that "women will evolve to become more like men" (Fischer et al., 1993, p. 154).

Social Feminism

Social feminist theories were developed from a more comprehensive theoretical background, from social learning theory to psychoanalysis (Fischer et al., 1993). The term was first used by William O'Neil in 1969 comprising a set of feminist ideals beyond the suffragist and equal right movement (Black, 2019). Social Feminism (SF) posits that socialization shapes men and women differently as early experiences in life create socially distinctive worldviews for men and women. Therefore, SF does not consider women and men essentially the same but promotes "equality in difference" (Byrne & Fayolle, 2010, p. 79). Women and men have equally valid societal contributions and equally valuable learning modes. It is recognized that social feminist theories contributed to differentiating and redefining the concept of sex and gender as two separate constructs. The underlying assumption is that one's sex is determined by physiological characteristics and one's gender by social experiences. SF argues that "women's experiences and ways of knowing have been denigrated" (Fischer et al., 1993, p. 155) and advocates for its recognition and legitimation.

Post-structuralist Feminism

Post-structuralist feminist theories question "the construction of the individual as the subject of knowledge"(Calás & Smircich, 1989, p. 356). The key theorists and writers are Judith Butler, Bronwyn Davies, Patti Lather, and Betty St Pierre (Davies & Gannon, 2005). They challenge the idea of the binary categories of women and men by exploring the "constitutive force of linguistic practices and dismantling their apparent inevitability" (Davies & Gannon, 2005, p. 312). Therefore, Post-structuralist Feminism (PSF) posits that social and linguistic constructs are instrumental in forming gender beliefs, suggesting that these beliefs and identities are malleable and capable of being reshaped. PSF elucidates how power relations influence individuals to conform to societal expectations and norms deemed desirable. There is a pivot from analyzing the rational conscious subject toward exploring desire and unconscious thought, recognizing individual subjectivity through "symbolic repertoires" (Davies & Gannon, 2005, p. 313). The underlying assumption is that power relations influence women and men by shaping gendered acts produced and reproduced consciously or

unconsciously. Thus, PSF recognized women's and men's agency and societal power relations (Byrne & Fayolle, 2010).

Ecofeminism

Ecological Feminism or ecofeminism is the connection between feminist issues, revendications, and nature (Warren & Cheney, 1991). Ecofeminism was developed from various social movements since the 1970s (Shiva & Mies, 2014). According to Karen J. Warren, ecofeminist philosophy "arises out of and builds on the mutually supportive insights of feminism, science development and technology, and local perspectives" (Warren et al., 1997, p. 4). Ecofeminism proposes significant connections between the way women, racial minorities, and the underprivileged are treated and the respect accorded to the natural environment. Just as there exist various strands of feminism, there is a similar variety of ecofeminist perspectives (Warren et al., 1997). Therefore, ecological feminism is an umbrella term that welcomes feminist and ecological activism, theological and philosophical essays, historical and sociological accounts, and diverse practices (Goutal, 2017). From a theoretical standpoint, multiple epistemological and ontological approaches coexist, from essentialist to constructionist and functionalist to spiritual approaches (Goutal, 2018). Due to its hybrid nature, ecofeminism has been largely criticized. Ecofeminism has been attacked for its essentialism, conservatism, and depoliticization stances (Goutal, 2017). Even though these criticisms refer to certain ecofeminist currents, the whole movement has been impacted. Moreover, a coherent theoretical framework is difficult to recognize, exacerbating the criticisms (Biehl, 1991).

Gender theories

The concept of gender, as elucidated in the previous section, has been significantly influenced by myriad theoretical approaches that have deepened our understanding of this phenomenon we call gender. The primary perspectives from which gender has been explored are sociological and psychological. However, the scope of interest in

this topic has extended beyond these domains of study. Gender studies have blossomed into a comprehensive area of research across all social science disciplines, permitting multifaceted views on gender studies.

Evolution of the gender concept

The advancement of gender studies is linked with feminist theories, as the evolution of the concept is situated within each feminist current. In the beginning, gender studies were intertwined with women's movements and rights (Wharton, 2009). Early definitions see gender as a synonym of sex as a fundamental human nature (Goffman, 1977). Soon, the concept included other factors, referring to gender as psychological, social, and cultural differences between males and females (West & Zimmerman, 1987; Wharton, 2009).

Even if the concept of gender expanded considering societal and cultural factors, essential differences between women and men were viewed as fixed (Alvesson & Billing, 1992), leading to a well-defined characterization between genders (Bem, 1981). This set of attributes or characteristics that differentiates genders has been the foundation of most gender research from the past decades (e.g., Bem, 1981; Eagly et al., 2000; Eagly & Karau, 2002). Even though it presents advantages to categorizing gender into two distinct and opposite attributes, it reinforces the assumption of two sexes – male versus female, and two genders – masculine versus feminine, giving the impression of a fixed gendered system (Acker, 2006).

Researchers questioned this fixed idea of gender and proposed a processual view of gender (Foss, 2010; West & Zimmerman, 1987; Wharton, 2009) and its "social relational context" (Ridgeway & Correll, 2004, p. 511). West and Zimmermann introduced the concept of "Doing Gender" as an "ongoing activity embedded in everyday interaction" (West & Zimmerman, 1987, p. 130). Thus, the gender concept moved beyond the idea of a set of attributes, a variable, or a role (Butler, 1988; West & Zimmerman, 1987). Gender is something that is performed rather than something that exists (Butler, 1990). The notion of gender fluidity and performativity is then introduced by Butler (1988), pushing the boundaries of the concept as non-binary and illusive. Thus, gender is regarded as something existent due to the repetition and reproductions of gendered acts compelled to be produced by the prevailing power

relations present in society (Butler, 1988, 1990, 2004). Gender is then placed as a multilevel system, beyond individual identities, that impacts all social relations, including institutions and organizations (Wharton, 2009).

In this section, my focus is on the prominent gender theories employed in entrepreneurship research. Firstly, I delve into the Social Role Theory, a theory vastly applied in entrepreneurship research, which aligns with a social feminist view. This is succeeded by exploring the Doing Gender Theory, which adopts a social constructivist approach from a post-structuralist feminist perspective. Finally, I examine the Gender Performativity Theory, which puts forth a radical approach based on a post-structuralist perspective.

Social Role Theory

Social Role Theory (SRT) is one of the most influential theories on gender in entrepreneurship research. Its origins come from the seminal work that appeared in 1987 by Alice H. Early. In 1991, Alice H. Early and Wendy Wood proposed the Social Role Theory (Eagly & Wood, 2012) to explain sex differences in social behavior. In 2000, Social Role Theory of Sex Differences and Similarities: A Current Appraisal was published (Eagly et al., 2000) as part of a collection of gender theories. Later on, under the name of Role Congruity Theory by Alice H. Eagly and Steven J. Karu, the theory expanded to capture role congruity in female leaders (Eagly & Karau, 2002). Since its beginnings, SRT has focused on social behavior by looking at sex differences and similarities from a social-psychological standpoint (Eagly et al., 2000).

SRT posits that “sex differences and similarities in behavior reflect gender role beliefs that in turn represent people’s perceptions of men’s and women’s social roles in the society in which they live” (Eagly & Wood, 2012, p. 459). Based on this theory, distinct social roles are developed by men and women due to their physical differences, such as men's superior upper-body strength and women's breastfeeding capabilities. Consequently, certain tasks are more effectively accomplished by one sex, depending on the culture and societal context. SRT suggests that the division of labor in societies stems from this task specialization. From these physical differences and task specializations, beliefs surrounding gender roles originate, thus implying that each sex exhibits a specific set of characteristics. Gender roles seemingly exemplify the

inherent attributes of the sexes, painting them as natural and inevitable. Consequently, society amplifies specific traits and skills to bolster these gender roles through an exhaustive socialization process.

The theory establishes that roles include two types of expectations: descriptive and injunctive norms (Eagly & Karau, 2002). Descriptive norms are “consensual expectations about what members of a group actually do,” while injunctive norms are “consensual expectations about what members of a group ought to do or ideally would do” (Eagly & Karau, 2002, p. 574). Therefore, gender roles are “descriptive and injunctive expectations associated with women and men” (Eagly & Karau, 2002, p. 574).

Gender stereotypes are formed from the observed behavior of men and women in their sex-typical gender roles, for example, men being breadwinners with higher status and women being homemakers with lower status (Eagly & Karau, 2002). The matching behavior of women and men confirms people’s beliefs about how women and men should behave, creating and reinforcing gender stereotypes (Eagly et al., 2000).

A fundamental argument of SRT is that gender roles create and reinforce expected behaviors that materialize in a set of attributes assigned to one’s sex as “people infer the traits of men and women from observations of their behavior” (Eagly & Wood, 2012, p. 466). The theory divides these attributes into two distinctive and opposite sets of characteristics labeled agentic and communal (Eagly & Karau, 2002). Agentic characteristics are mainly ascribed to men and refer to task-oriented attributes. Therefore, men are thought to be masterful, assertive, competitive, dominant, aggressive, ambitious, independent, self-sufficient, and self-confident. Communal characteristics are mainly ascribed to women and refer to socioemotional attributes. Therefore, women are thought to be friendly, unselfish, concerned with others, emotionally expressive, affectionate, helpful, kind, nurturant, and gentle (Eagly et al., 2000; Eagly & Karau, 2002). SRT argues that individuals assume that people’s behaviors reflect their intrinsic characteristics, thus reinforcing gender role beliefs. According to the theory, agentic characteristics are perceived of greater worth and value than communal characteristics. This increases and strengthens men’s access to societal resources, status, and power.

A fundamental assumption of SRT is that “women and men typically are rewarded by other people for conforming to gender roles and penalized for deviating” (Eagly & Wood, 2012, p. 468). SRT posits that group members who display stereotypical characteristics to the group receive positive evaluations, whereas group members who display counter-stereotypical characteristics receive negative evaluations (Eagly & Karau, 2002). An inconsistency of role behavior from the individual or group lowers the evaluation of the group, leading to negative evaluations and prejudice. Therefore, people will react more positively to behavior consistent with their gender roles (Eagly & Wood, 2012).

Doing Gender

The theory of Doing Gender (West & Zimmerman, 1987) emerges from a procedural approach to gender as socially constructed (Lindsey, 2013). Doing Gender expanded Erving Goffman’s ideas of social interactions as an enactment of theatrical performance (Goffman, 1976). Sociologists Candice West and Don H. Zimmerman published their seminal work in 1987. Later on, Candice West and Sarah Fenstermaker expanded on the concept of Doing Gender to incorporate race and class in their work Doing Difference (West & Fenstermaker, 1995).

The theory proposes to analyze gender “as a routine, methodical, and recurrent accomplishment” (West & Zimmerman, 1987, p. 126). Men and women are compelled to do gender as part of a societal prerequisite. Therefore, performing gender roles involves complex social cues, interactions, and nuanced political activities that categorize specific behaviors as expressions of masculinity or femininity. Gender is not a property of individuals. It is a “feature of social situations” that legitimates a fundamental division of society into men and women (West & Zimmerman, 1987, p. 126).

The theory differentiates between sex, sex category, and gender. Sex results from the socially agreed criteria of classification based on biological characteristics to differentiate females and males. For Doing Gender, the criteria of classification can be genitalia or chromosomal. The sex category is formed by applying the sex criteria. Sex categorization is “established and sustained by the socially required identificatory display that proclaims one’s membership in one or the other category;” thus, gender

is “the activity of managing situated conduct in light of normative conceptions of attitudes and activities appropriate for one’s sex category” (West & Zimmerman, 1987, p. 127).

Doing Gender posits that gender is not a role nor a set of attributes. Gender is created through human actions and interactions in everyday life. The theory argues that the “notion of gender as a role obscures the work that is involved in producing gender in everyday activities” (West & Zimmerman, 1987, p. 127).

The theory sustains that “doing gender” creates differences between women and men. These differences are not natural, essential, or biological; they are constructed, yet they reinforce the idea of “the essentialness of gender” (West & Zimmerman, 1987, p. 137). The theory's central claim is that gender is not something that one is but something that one recurrently does (West & Zimmerman, 1987).

The theory uses the idea of accountability to relate to the coercive influence of society. According to the theory, a successful gender display must be appropriate to each situation and adaptable if the situation requires it. One must perform the display as “seen and seeable appropriate” according to one’s sex category (West & Zimmerman, 1987, p. 135). Therefore, each individual is accountable for “doing gender” right.

Individuals do gender bewaring of how they may look or be characterized, as all gender displays must be seen in accordance with socio-cultural standards. According to the theory, every activity is measured according to a womanly or manly standard, yet not necessarily adhering to “normative conceptions of femininity and masculinity” but engaging in behavior “at risk of gender assessment” (West & Zimmerman, 1987, p. 136). In this way, individuals engage in a “self-regulatory process” as they evaluate their own and others' actions (West & Zimmerman, 1987, p. 142).

According to the theory, “doing gender is unavoidable” (West & Zimmerman, 1987, p. 145). Its compulsory nature relies on allocating domestic, economic, political, and interpersonal power and resources assigned to each sex category. Depending on every situation, one sex category could be more important than the other, thus obtaining a higher allocation of power and resources. Therefore, gender performance is in constant evaluation and legitimation. This process portrays the differences between men and women as fundamental or natural, thus reinforcing their differences and legitimates social arrangements, making gender performance unavoidable.

For West and Zimmerman, “gender is a powerful ideological device” (West & Zimmerman, 1987, p. 147). It produces, reproduces, and legitimates the actions of the sex category.

Gender performativity

The theory of gender performativity was developed by the philosopher Judith Butler, whose influential work laid the groundwork for queer theory. Her seminal book Gender Troubles was published in 1990, which comprises all her postulates and the foundation of her gender performativity theory. Butler's approach to gender adheres to a radical post-structuralist feminist perspective (Davies & Gannon, 2005). Her work explores the philosophical postures about heterosexuality, bisexuality, homosexuality, and gender from a phenomenological perspective. Butler has published multiple essays and books that complement and expand her theory of gender.

Butler deconstructs the concept of gender to render it “neither true nor false, neither real nor apparent” (Butler, 1988, p. 528). She questions the basic premises of the construct and proposes a radical ontological switch on how we look at gender. She defends a clear separation between biological sex and gender. She posits sex and gender as radically distinct. The theory of gender performativity establishes that gender cannot be perceived as a static noun, a tangible entity, or an unchanging cultural identifier. Instead, it is an ongoing activity, a repeated act of sorts. Butler asserts that gender necessitates a recurring performance; this repetition simultaneously enables the reenactment and reexperiencing of socially accepted actions while facilitating legitimization. Instead of viewing gender as a fixed identity, locus, or agency, Butler describes it as a fragile identity that is temporally constituted and established in an external space through the “stylized repetition of acts” (Butler, 1990, p. 140). Butler asserts that "gender is not a fact" (Butler, 1988, p. 522). According to her theory, gender is a construct that emerges from the recurring performance of various acts, stating that without these actions, gender would not exist (Butler, 1990). She suggests that societal and individual behaviors incessantly reinforce the gender binary, male/female, thereby providing the illusion of inherent gender existence.

Additionally, Butler posits that culture itself is not the architect of gender. Instead, the individual performances shaped by societal expectations craft the perception of what

is 'male' and 'female.' Society, acting as a regulator, cements the binary gender construct by enforcing normative performances and disciplining those who deviate from these norms. Consequently, in Butler's view, gender is performative - the ceaseless repetition of these acts before an audience (Butler, 1990). This constant reiteration generates the illusion of a static entity known as gender, widely accepted as a norm by many. Therefore, Butler disagrees with the notion that gender is culturally constructed, as this suggests a “certain determinism of gender” (Butler, 1990, p. 12). Thus, Butler opposes the belief that a biological female is socially and culturally transformed into a subordinate woman. Furthermore, Butler states that the sex categorization is also constructed. The belief in discrete and polar genders is a cultural fiction created to maintain the heterosexual law. In this sense, the sex categories have been artificially naturalized through culturalization. She argues that gender is fluid, and the expression of multiple genders is possible. Thus, in Butler’s view, no set of traits, attributes, or characteristics is attached to gender.

The acts, gestures, and enactments that constituted gender are performative, enabling man or masculinity to be easily represented as a female body and vice versa. Thus, gender can “potentially proliferate beyond the binary limits” (Butler, 1990, p. 143). In this sense, the existence of multiple genders and the fluidity of gender identities suggest “an openness to resignification and recontextualization” (Butler, 1990, p. 176). However, some gender performances claim the place of nature or symbolic necessity (Butler, 2004) by adhering to the heterosexual law, thus reaffirming their dominance and apparent origin. According to Butler, gender is “the apparatus by which the production and normalization of masculine and feminine take place” (Butler, 2004, p. 48). However, even if gender is the mechanism by which masculinity and femininity are normalized, it can also be the mechanism by which gender is deconstructed and denaturalized.

Even if gender is a continuous activity performed without full consciousness or willingness, it is not mechanical. Gender is a performance within a scene of constraint. It is not done alone; it is always done with or for others. According to Butler, gender performance is regulated by the collectivity. She argues that gender coherence is desired and thus regulated through public and social discourse. The purpose of this regulation is to maintain the heterosexual law for reproductive aims. Therefore, gendered acts and enactments are highly contingent with punitive consequences.

Those who fail to do gender right are continuously punished (Butler, 1988, 1990). In Butler's view, the regulation of genders responds to the compulsory and naturalized heterosexuality that implies the existence of gender as a binary, masculine and feminine. The illusion of a gender core is then created to regulate sexuality (Butler, 1990).

Having explored the aforementioned gender theories, I now present how these theories have been instrumental in advancing the field of Entrepreneurship.

Women Entrepreneurship

Women have made substantial progress in the field of entrepreneurship over the past few decades. Their contributions play pivotal roles in individual lives, communities, and nations as a whole (Brush et al., 2009; Brush & Cooper, 2012; Dheer et al., 2019; Hechavarria et al., 2019). Reports by the Global Entrepreneurship Monitor (GEM) demonstrate that women entrepreneurs have been instrumental in creating, managing, and developing businesses across a spectrum of sectors (Bosma et al., 2020; Bosma & Kelley, 2019). However, notwithstanding these promising figures, the reality remains that fewer businesses are owned and managed by women than men (Hill et al., 2023; Jennings & Brush, 2013). Additionally, woman-led businesses consistently trail behind those led by men in terms of size and revenue (Cliff, 1998; Gupta & Bhawe, 2007; Guzman & Kacperczyk, 2019; Hughes et al., 2012; Powell & Eddleston, 2008). Many researchers have delved into this issue, attempting to understand the underlying factors. They have focused on understanding women entrepreneurs' actions, characteristics, motivations, and success rates, acknowledging that their gender-related uniqueness is complex and multifaceted (Marlow, 2020; Minniti & Naudé, 2010). Over the past decade, numerous scholars have focused on studying women's entrepreneurship (Cabrera & Mauricio, 2017; Deng et al., 2020; Yadav & Unni, 2016). This increased academic attention underscores the significance of understanding and addressing the persistent gender gap within this field.

Scholars have been exploring the underlying causes of this gap, proposing that this is rooted in a pervasive gender bias against women entrepreneurs. In this section, I explain why entrepreneurship is a gendered field, the influence of gender norms and stereotypes on women entrepreneurs, and the approach in which this dissertation is conducted.

A gendered definition of an entrepreneur

Despite the continuing effort to bring more women into entrepreneurship, a persistence gap is still evident (Dheer et al., 2019; Guzman & Kacperczyk, 2019; Bosma et al., 2020). Women entrepreneurs face barriers of different order from institutional to personal level (Zhang et al., 2009; Brush et al., 2009; Zhao & Yang, 2021; Bullough et al., 2022). The literature on women's entrepreneurship has recognized that gender beliefs are prevailing in entrepreneurship, thus creating institutional and personal barriers that damage women entrepreneurs (Brush et al., 2009). Financial institutions show biases toward women entrepreneurs when evaluating their business potential, thus penalizing their access to resources and, as a consequence, limiting their growth potential (Brush et al., 2019; Hechavarria et al., 2019; Kanze et al., 2018; Shaw et al., 2009).

Entrepreneurship is defined as a gendered field (Ahl, 2006; Jennings & Brush, 2013) where women face not only the difficulties of business creation but also the barriers created by gender norms and stereotypes. Consequently, women entrepreneurs are less inclined to engage in business creation. Studies have demonstrated that women perceive entrepreneurship as a less viable career endeavor (Brush et al., 2017; Gupta et al., 2009, 2014; Moriano et al., 2012). Those who opt for venture creation face legitimacy and credibility issues that limit their entrepreneurial endeavors (Javadian et al., 2021; Ladge et al., 2019; Santos et al., 2016; Stead, 2017; Swail & Marlow, 2018).

The influence of gender norms and stereotypes

Gender norms are “the expected attitudes and behaviors society associates with each sex” (Lindsey, 2013, p. 5). The social construction of gender norms encourages and assumes differences between women and men in all aspects of their lives: career

paths, skills, knowledge, and social capital (Fiske, 2017). This can lead to normative expectations of desirable characteristics and behavior of each gender, namely gender stereotypes (Eagly & Karau, 2002; Lindsey, 2013). In turn, these stereotypes push occupational segregation by shaping individual cognitions and assumptions about what behaviors and actions are appropriate for one's sex (Eagly & Wood, 2012; West & Zimmerman, 1987). As entrepreneurship is a gendered phenomenon, women's entrepreneurial intentions and actions will also be subjected to gender stereotypes (Bianco et al., 2017; Bruni et al., 2004; Clark Muntean & Ozkazanc-Pan, 2015; Marlow, 2020; Marlow & McAdam, 2013).

A successful entrepreneur has been associated with agentic attributes, often described as assertive, risk-taker, and independent (Ahl, 2006; Balachandra et al., 2019; Byrne et al., 2019; Javadian et al., 2021). This means that an entrepreneur is perceived as agentic. When women opt for business creation, they are penalized for deviating from their expected communal behavior, as their gender norms and stereotypes are not aligned with the expected characteristics of an entrepreneur (Ahl, 2006; Fiske, 2017; Heilman, 2001). Women entrepreneurs navigate between their own role perception and society's perception (Eagly et al., 2000). Therefore, women entrepreneurs struggle to reduce the discrepancy between both roles as they try to define their own entrepreneurial identity (Byrne et al., 2019; Eddleston & Powell, 2008; García & Welter, 2013). At the same time, they try to balance others' perceptions and expectations (Garcia-Quevedo, 2022). The continuing evaluation from different actors - customers, investors, and providers, influences their ability to access different activity sectors, confining them in traditionally female activities and diminishing their potential (Balachandra et al., 2019; Gupta et al., 2019; Kanze et al., 2018; Lockyer et al., 2018; Marlow & McAdam, 2013; Uzuegbunam et al., 2021; Yang et al., 2020). Therefore, gender stereotypes in entrepreneurship significantly influence the cognition and behavior of women entrepreneurs. Researchers have turned their attention to the impact of the prevailing gender norms and stereotypes surrounding entrepreneurship as they hinder women's ability to feel confident as entrepreneurs.

Feminist lens on women's entrepreneurship research

Most research in women's entrepreneurship focuses on comparisons between men and women. Some scholars widely criticized this one-sided analysis (Ahl, 2006; Ahl & Marlow, 2012; Brush et al., 2009; Cliff, 1998; Henry et al., 2016). They argue that such analyses assume differences rather than similarities between women and men entrepreneurs, emphasizing women's supposed shortcomings. Moreover, these studies disregard cultural norms and family dynamics (Brush & Cooper, 2012; Orser & Elliott, 2015; Yousafzai et al., 2018). They advocate for a holistic approach that includes motherhood and cultural and social norms (Brush et al., 2009; Hughes et al., 2012).

Acknowledging that most current research focuses on financial performance and gender comparisons, some scholars have taken a critical stand. They have challenged the traditional definition of entrepreneur, the economic growth lens, and the ontological and epistemological premises of the current research (e.g., Ahl, 2006; Brush et al., 2009; Jennings et al., 2023). By taking a feminist approach and proposing to the research community a feminist lens that considers the power relations and the gender norms governing women's lives, they intend to shed light on the entrepreneurial gap (Ahl, 2006; Clark Muntean & Ozkazanc-Pan, 2015; Ekinsmyth, 2014; Lockyer et al., 2018; Marlow & McAdam, 2013). Therefore, this research adheres to this current to shed light on how women entrepreneurs navigate gender norms and stereotypes.

Moving away from the gender binary

Scholars have been promoting a shift from studying gender as a variable to gender as a lens (Brush et al., 2009; de Bruin et al., 2007; Hughes et al., 2012; Lewis, 2006; Marlow & McAdam, 2013). Moreover, scholars have been calling to recognize gender as a nuanced concept and various forms of masculinity beyond the patriarchal view (Marlow, 2020; Simarasl et al., 2022; Smith, 2022). This research aligns with this call to expand the conventional binary understanding of gender as solely 'male' or 'female,' instead appreciating its inherent fluidity.

The limit of the gender binary

The assumption of gender attributes from Social Role Theory (SRT) has been widely employed in entrepreneurship research. This categorization has been used to understand the difference in venture growth (e.g., Anglin et al., 2021), behavior (e.g., Mueller & Dato-on, 2013), access to resources (e.g., Johnson et al., 2018), and opportunities (e.g., Gupta et al., 2019) between men and women. SRT focuses on two opposite genders and their differences. It has been widely used in quantitative studies because the theory allows easy operationalization with clear opposite variables. From the perspective of communal versus agentic characteristics, entrepreneurship research has made significant progress. However, this advancement is not without criticism. In entrepreneurship research, men have been normative, while women have been studied as the other using a perspective of difference (Lockyer et al., 2018; Smith, 2022). In women's entrepreneurship research, men have taken the silent position, making women the proxy for gender, thus limiting our understanding of gender and its implications (Ahl & Marlow, 2012; Smith, 2022).

While SRT recognizes that changes in gender stereotypes and attributes may occur alongside variations in gender roles (Eagly et al., 2000, 2020), it tends to analyze gender from a dualistic viewpoint - masculine and feminine. This analysis overlooks the diversity within individuals of the same sex. To advance the field, it is crucial to reconsider the paradigms we uphold and the assumptions underpinning our theories (Alvesson & Billing, 1992; Alvesson & Sandberg, 2011). SRT tends to predetermine two static, polarized genders, thereby limiting individual agency and resulting in an overly simplified classification of individuals. To understand how women entrepreneurs navigate gender norms and stereotypes, a more nuanced approach is necessary.

Doing Gender sees gender from a constructivist perspective, implying that gender is not fixed but constructed according to different circumstances. West and Zimmerman inform us of the malleability of the gender concept. They offer a new perspective on analyzing gender as a construct in constant doing. If gender is in constant doing, then the rigid beliefs that are held by society are constantly challenged. Therefore, by looking at how an individual constructs gender, we can analyze how gender is produced and modified. However, Doing Gender is still based on the assumption of

the gender binary, and, inevitably, Doing Gender must be analyzed from a masculine versus feminine perspective.

Therefore, we turned to gender performativity theory to study gender as a nuanced concept beyond the binary perspective. Gender performativity advocates view gender as inexistent, fluid, and adapted to contexts. Gender is performative, a cumulus of gendered acts performed in front of an audience with punitive boundaries. However, gender performativity considers the individual's capability to be subversive (rejecting) or submissive (conforming) to the norms in place. This approach suggests analyzing gender as ongoing acts enacted in front of an audience, considering its punitive consequences. The underlying assumption is that gender is fluid, in constant doing and undoing, yet limited by societal pressure. From this new assumption, we can regard gendered acts beyond the binary perspective, adapted to situations and audiences accounting for their fluidity. Thus, gender must be seen in context, as each act is performed according to an individual's goals, interests, experiences, and values. Consequently, to comprehend the impact of gender on entrepreneurship beyond an opposite set of traits, it is essential to examine women entrepreneurs' gendered practices within a particular context. This new perspective calls for an ontological shift to analyze the construct of gender beyond a binary perspective, as gender is merely a cumulus of acts creating its appearance (Butler, 1988, 1990).

Several scholars have embarked on this line of inquiry. For example, Lewis (2014) proposed different types of entrepreneurial femininities: individualized, relational, maternal, and excessive femininity. She proposes these entrepreneurial femininities as a set of performances that may vary by context (Lewis, 2014). Moreover, Byrne et al. (2021) investigated the concept of multiple masculinities and femininities as performed by men and women within the context of a CEO succession. They propose that the enactment of specific gender identities by successor CEOs may either facilitate or obstruct their efforts to establish themselves as legitimate successors. Both men and women CEOs perform masculine identities, which are defined as entrepreneurial, authoritarian, and paternalistic, as well as relational femininity. However, only female CEOs additionally perform maternal and individualized femininity when engaging with various stakeholders (Byrne et al., 2021). In a related study, Hytti et al. (2023) explored how male entrepreneurs perform entrepreneurial masculinities at the intersection of work and family life (Hytti et al., 2023). Furthermore,

Branicki et al. (2023) applied Butler's theory of gender performativity to analyze how gender performances influence entrepreneurial opportunities and experiences. They conducted their study within the context of a contemporary film, examining how the performances in the film serve to construct and deconstruct gender in ways that either reinforce or challenge gendered expectations about entrepreneurship (Branicki et al., 2023). Collectively, these studies have challenged the traditional understanding of gender in entrepreneurship, thereby advocating for an epistemological shift.

Ontological and epistemological premises to study gender fluidity

As previously explained, the concept of gender has evolved over time. This evolution is linked to the changes in its ontological premises, that is, what is the nature of the reality that we call gender? Following Butler's arguments, we implied that gender cannot be measured as "there would be no true or false, real or distorted acts of gender" (Butler, 1988, p. 528). This forces the researcher to approach gender from a subjective perspective[1] by seeing gender as a construct in constant movement, always in the making, constructed and deconstructed with each gendered act. As stated previously, Butler calls for an ontological shift, pushing the study of gender toward a nominalist ontological stance[1], positioned within the post-structuralist feminist currents (Davies & Gannon, 2005).

Davies and Gannon (2005) argue that post-structuralist theorizing does not hold the paradigms endorsed by positivists. Knowledge is found in the interaction with the other by engaging with individual events that the researcher can apprehend in relation to the other and through open and receptive listening to the other (Davies & Gannon, 2005). Therefore, the study in Chapter 6 follows an interpretivist epistemology using a qualitative approach to data analysis. Indeed, gender performativity theory adopts a radical position toward gender, challenging current views (radical change) and emphasizing the importance of actors (subjective perspective).

[1] Ontologically, subjectivism embraces nominalism. In its most radical interpretation, nominalism posits that the organization and framework of social phenomena we explore and the phenomena themselves are a construct of social actors. This creation process is facilitated by deploying language, conceptual categories, perceptions, and subsequent actions. (Saunders et al., 2016).

Furthermore, Nentwich and Kelan (2014) propose different avenues of research to conceptualize and operationalize gender following a post-structuralist approach. They proposed studying gender as doing structures, doing hierarchies, doing identity, flexible and context-specific, and gradually relevant and subverted (Nentwich & Kelan, 2014, p. 125). They argue that gender can be studied as context-specific, signaling the flexibility component of the concept (Nentwich & Kelan, 2014). Moreover, they highlight the gradually relevant and subverted nature of gender performances. This entails exploring gender when it is performed in less relevant or challenging ways.

Applying a feminist lens to this dissertation

Following this call, Mattner and Sundermeier (2023) have taken a more subtle approach to studying gender stereotypes and questioning their stability. Therefore, they draw upon a social constructionist perspective considering the contextual construction of gender stereotypes. They advocate for a more open measurement approach when studying gender stereotypes and question the "timeliness, contextualization, and predetermination" of current scales (Mattner & Sundermeier, 2023, p. 3). Moreover, Zhao and Yang (2020) argue that gender stereotypes need to be analyzed across local contexts, considering their variation of intensity across different situations, challenging the idea of stereotypes being "universally potent and irreversible" (Zhao & Yang, 2021, p. 1458).

The recent shift to study gender norms and stereotypes that question their stability, considering the context and the entrepreneur's agency, as well as the scholarly calls for a more nuanced study of gender, considering its various forms of masculinities and femininities (Ahl & Marlow, 2012; Henry et al., 2016; Lewis, 2014; Marlow, 2020; Smith, 2021, 2022)), has motivated this dissertation. Going beyond what we already know about the pervasive effect of gender norms and stereotypes in entrepreneurship and its potential variability according to context, I explore the subtle experiences of women entrepreneurs. By considering their capacity to challenge or reinforce these beliefs, I embark on a journey to explore how women navigate them. Therefore, this dissertation analyzes gender norms and stereotypes as a form of conforming to or rejecting the prevailing gender beliefs in entrepreneurship. I then answer the following research question: How do women entrepreneurs, throughout their entrepreneurial action,

shape gender norms and stereotypes in entrepreneurship? And the following sub-questions: How do growth-oriented and environmental-oriented women entrepreneurs navigate these norms and stereotypes? Do they challenge them? Do they conform to or reject them?

To answer these research questions, this dissertation comprises three articles presented in Chapters 4, 5, and 6. The research extends existing knowledge on the widespread impact of gender norms and stereotypes in entrepreneurship. Chapter 4 focuses on the experiences of growth-oriented women entrepreneurs dealing with gender beliefs and their ability to challenge or reinforce them. High-growth ventures are often associated with traditionally masculine sectors like technology and manufacturing. Sweida and Reichard (2013) state that growth-oriented women entrepreneurs are subjected to industry- and entrepreneurship-related stereotypes (Sweida & Reichard, 2013). Therefore, the study of growth-oriented women entrepreneurs provides an opportunity to examine how gender stereotypes are both reinforced and subverted within the context of growth performance.

To capture gender fluidity, in Chapter 6, I explore gender as a summary of "scripts" and “acts” (Butler, 1988, p. 526) enacted within different contexts. Butler reinforces the fluidity of gender by denoting its capacity for transformation (Butler, 2004). Chapter 6 utilizes two “theatrical contexts” (Butler, 1988, p. 521): personal interviews and online data. By operationalizing gender as gendered practices (Martin, 2003) perform in front of an audience, I could shed light on how women entrepreneurs play gender according to contexts (Nentwich & Kelan, 2014; Welter, 2011, 2020). Given that gender is performative, the performance itself is subject to change. This perspective paves the way for analyzing gendered practices as either conforming to or challenging established norms. This approach transcends traditional gender attributes, allowing for examining gender as a construct continually produced and reproduced in response to the audience to which it is presented. This enables an analysis of how gender is constructed by individuals while simultaneously observing any modifications or adaptations made to these performances. This approach diverges from the conventional research paradigm that interprets gender through the lens of attributes or roles and inevitably places women as the other (Lockyer et al., 2018; Swail & Marlow, 2018). I then recognize women’s capabilities to adapt and transform rigid gender beliefs that limit women's entrepreneurial endeavors.

Examining the concept of gender through the theoretical framework of gender performativity presents a set of methodological challenges. This approach requires capturing a diverse array of gendered practices that collectively constitute gender. This involves recording multiple instances in which gender is enacted or performed. As posited by Butler, gender is not a static construct; instead, individuals adjust their gender performances in response to their respective audiences. Consequently, the study of gender performativity requires investigating a variety of contexts or settings to fully encompass the spectrum of performances. This is essential to capture the fluid and nuanced nature of gender effectively. Therefore, Chapter 5 proposes an innovative methodology to efficiently incorporate large online datasets into a qualitative analysis. It leverages the new advancements in AI for NLP. Specifically, it uses Large Language Model-based algorithms to efficiently select relevant information from a large amount of online data. This method is then employed in Chapter 6 to analyze gender performativity using two distinct datasets: interviews and social media posts.

Summary of articles

The results of this dissertation are presented in the form of three articles. Chapter 4 analyzes the impact of gender norms and stereotypes on growth-oriented women entrepreneurs based on qualitative material from 11 interviews. Chapter 5 presents a deep explanation of my innovative methodology based on AI Large Language Models (LLMs) for relevant data selection of online data combined with inductive manual qualitative analysis. The methodology enables me to analyze multiple settings of women entrepreneurs' gender performances. Chapter 6 studies the gender performativity of 20 environmental-oriented women entrepreneurs (ecopreneurs) using the methodology explained in Chapter 5, combining LLMs and inductive manual analysis to explore interviews and social media posts.

Here, I present the abstract of each article and specify their respective publication stage.

Chapter 4 – How gender norms impact growth-oriented female entrepreneurs

This article was presented at the 2020 Diana International Research Conference in Nice (online), France (Juin, 2020). It is now published in Entreprendre & Innover: Garcia-Quevedo, Diana. “How Gender Norms Impact Growth-Oriented Female Entrepreneurs:” Entreprendre & Innover n° 49-50, no. 2 (January 24, 2022): 60–70. https://doi.org/10.3917/entin.049.0060.

An extended version of the published article is presented in this chapter.

Abstract

Entrepreneurship is a gendered field. Despite years of special programs to help female entrepreneurs, they still face many challenges and limitations as entrepreneurship is perceived as a male-dominated field. A qualitative study of eleven growth-oriented women entrepreneurs was conducted. How do they face gender stereotypes as business owners? Do they internalize masculine norms and consequently experience stereotype threat and impostor syndrome, or do they succeed in performing as successful women entrepreneurs? The results show that growth-oriented women entrepreneurs are not excluded from the influence of the prevailing masculine norms. This study explores the repercussions of gender norms and stereotypes in women's entrepreneurship and gives advice to help women entrepreneurs overcome them.

Keywords: growth-oriented female entrepreneurs, women entrepreneurship, gender stereotypes, gender norms.

Chapter 5 – Enhancing Theorization Using Artificial Intelligence: Leveraging Large Language Models for Qualitative Analysis of Online Data

This article was presented at the 43rd BCERC (Babson College Entrepreneurship Research Conference) in Knoxville, TN (Juin, 2023) and the 83rd Annual Meeting of the Academy of Management in Boston, MA (August 2023). It is now in Review and Resubmit at Organizational Research Methods.

The manuscript submitted at Organizational Research Methods is presented in this chapter.

Abstract

Online data is constantly growing, providing a wide range of opportunities to explore social phenomena. Large Language Models (LLMs) capture the inherent structure, contextual meaning, and nuance of human language and are the base for state-of-the-art Natural Language Processing (NLP) algorithms. In this article, we describe a method to support qualitative researchers in the theorization process by efficiently exploring and selecting the most relevant information from a large online dataset. Using LLM-based NLP algorithms, qualitative researchers can efficiently analyze large amounts of online data while still allowing deep contact with the data and preserving the richness of qualitative analysis. We illustrate the usefulness of our method using 2444 social media posts by nine women entrepreneurs who pursue an environmental mission (ecopreneurs) and validate those results with a manual qualitative analysis of the same dataset. Our method can help researchers to explore and select online data efficiently, it enhances their analytical capabilities, leads to new insights, and ensures precision in counting and classification, thus strengthening the theorization process.

Keywords: Natural Language Processing, Large Language Models, qualitative method, Machine Learning, BERT, text analysis, gender stereotypes

Chapter 6 – Green Femininities: Studying Gender Performativity on Women Ecopreneurs

This article has been accepted for presentation at the 84th Annual Meeting of the Academy of Management in Chicago, IL (August 2024). The journal Entrepreneurship Theory and Practice is the target outlet.

Abstract

Research reveals a greater propensity among women entrepreneurs towards environmentally oriented ventures. However, societal expectations often impact women's participation in entrepreneurship, which is typically associated with masculinity. Traditional binary viewpoints on gender fail to acknowledge women's capability to navigate gender norms and stereotypes. To move beyond a static view and acknowledge that gender is multifaceted and complex, this research examined the gender performances of women entrepreneurs venturing into the environmental

sector (ecopreneurs) using Butler's performativity theory. We followed a qualitative approach, analyzing data from 25 interviews and 5,314 online posts using a novel methodological technique based on Large Language Model algorithms for relevant online data selection. We argue that women ecopreneurs enact 'green femininities,' which refers to the blend of femininity and masculinity adapting to situations and audiences. We identified four gender performance types among women ecopreneurs: femininity, masculinity, androgyny, and dissonance. It is vital to comprehend how women ecopreneurs manage gendered expectations, especially if we wish to support more environmental-oriented ventures to address today's challenges.

Keywords: gender performativity, ecopreneurs, women entrepreneurship, environmental entrepreneurship

Chapter 3 Methodological Approach

Introduction

As explained in Chapter 1, this work follows my epistemological journey. Therefore, each article presented in this dissertation has its own epistemological premises. I see the work of this dissertation as a continuum adhering to Morgan and Smircich's (1980) arguments of a “subjective-objective continuum” (Morgan & Smircich, 1980, p. 493).

As I have evolved in my understanding of human nature, shaking my well-established objectivist ontology, my way of approaching knowledge has also evolved, requiring me to think about my epistemology premises. My transition from one perspective to another must be seen as a gradual one. Through a journey of self-discovery, I attempted to incorporate insights from different perspectives while deepening my knowledge and curiosity about gender issues.

The first section of this chapter explains this epistemological evolution. The second section presents the resulting methodological choices. The third section clarifies the complex process of bridging objective data processing with algorithms and subjective interpretive analysis. Finally, the last section clarifies ethical processes related to data collection, transcription, and analysis.

Epistemologies of the dissertation: The ambidextrous brain

Morgan and Smircich (1980) built their analysis following Burrell and Morgan's (1979) typology. However, they restricted their analysis to the functionalist and interpretive paradigms (Morgan & Smircich, 1980). The functionalist paradigm refers to an objectivist point of view. It is concerned with explanations related to the social order and status quo from a positivist standpoint (Burrell & Morgan, 1979). Conversely, the interpretive paradigm refers to a subjectivist point of view. It is concerned with understanding “the word as it is” at “the level of subjective experience” (Burrell & Morgan, 1979, p. 28). Thirty years later, Cunliffe (2011) retook the work of Morgan and Smircich (1980) to expand on their first analysis, including an intersubjective perspective and expanding their descriptions of the subjective-objective continuum (Cunliffe, 2011). This section is then built on these works.

Ontological assumptions are concerned with “the very essence of the phenomena under investigation” (Burrell & Morgan, 1979, p. 1). Thus, the essence of how I, as a researcher, see reality. Is this reality the product of external forces, or is it the product of my own cognition? This answer is linked to the way I study that really, therefore the nature of my epistemological assumptions. How do I approach knowledge? What constitutes acceptable and valuable knowledge? Before my encounter with qualitative approaches, I used to think that knowledge could only be identified and communicated as “hard, real, and in tangible form” (Burrell & Morgan, 1979, p. 1). Thus, adhering to a positivist epistemology. As described in Chapter 1, my epistemological assumptions were radically changed over the course of my doctoral studies.

The epistemology of the first empirical article (Chapter 4) is rooted in a functionalist paradigm, inclined to study reality as a passive observer and to look at gender as a set of norms and roles to be taken by the subject. My decision to use this approach is double. First, my natural inclination toward a positivist epistemology linked to my engineering degree is evident. Second, the management field is still overly favoring this functionalist perspective (Henry et al., 2016). It felt safe initially, but this perspective quickly ignited the initial reflection that motivated me to start a PhD program, as explained in my doctoral journey (Chapter 1). Human nature cannot be entirely defined by a functionalist approach. Social experiences are not fixed structures where human beings are subjected to the influence of a more or less deterministic set of forces. Human experience is complex. This propelled me to look for other ways to understand gender beyond a simple set of roles and norms that an individual is compelled to follow. As Henry et al. (2016) stated, “If one wants to study gender (and not sex), […] a post-structuralist feminist and constructionist epistemology is necessary” (Henry et al., 2016, p. 21).

I challenged myself to explore the unknown as I progressed on my ontological and epistemological journey. Those previously fixed ontological assumptions started relaxing toward a more nuanced and subjective way of perceiving reality. The opportunity to start a field following an ethnographic approach captivated me. I followed ethnographic and reflexivity courses and read papers to understand this approach. I remember entering the field with a big feeling of uneasiness, not knowing how this new experience of being immersed in the field would unfold. Sadly, this project stopped abruptly. All the other researchers involved in the project and I were asked to

leave. Even though the field was lost, my initial motivation remained. This will impact on the work to come.

The methodology article (Chapter 5) is the culmination of the attempts to rescue a field, the failure to save it, and being open to opportunities. In the beginning, this was not the result of any ontological reflection. It was mainly the result of a pragmatic approach when facing the hard reality of having to complete a dissertation on time when an original path had been lost.

This Chapter could be seen as my attempt to bridge two seemingly opposite paradigms, merging two different ontologies based on contrasted epistemology. On one hand, the very nature of LLMs, which are, in essence, probabilistic models. LLMs are designed from a pure objectivist ontology, assuming language can be structured, measured, and predicted. They are in the far right of Cunliffe's (2011) and Morgan and Smircich's (1980) positivist assumptions. Leveraging LLMs following a subjective perspective is a great challenge. This article has never intended to erase or diminish any interpretive approach. Its goal is to enhance them, not by mixing ontologies but by complementing each other. This paper proposes to use new technologies as augmentation (Raisch & Krakowski, 2021). The researcher can use LLMs as loyal assistants which are deprived of any ability to interpret. Interpretation is the sole ability of the researcher, as the subjectivity of texts can only be grasped by the researcher. This paper proposes a new path of data selection before subjective interpretation.

However, building the article presented in Chapter 5 required deep ontological and epistemological reflections. It demanded clarifying where the machine's contribution ends and where the interpretation begins. This distinction is blurred and difficult to articulate. It required two different brains, different postures, and distinct approaches. Writing the code and using the right algorithms is a narrow, structured, and rigid way of thinking. It requires an objectivist perspective following a pragmatic approach. There is no room for subjectivity. This initial programming step (Python coding) was completed over months of trials and errors, completely isolated from any form or attempt of subjective interpretation.

As presented in Chapter 5, the proposed method is divided into two distinctive phases. The first phase follows a functionalist paradigm, where text is seen as word frequencies and associations. The second phase intends to bridge a pure functionalist

approach and a more interpretive one. Here, my posture as a researcher makes an important shift from looking at the data as a set of associations to looking at the data in context. Even though the algorithms are based on a positivist stand, I am no longer programming them. I am only using them as tools. Seeing them as tools frees me to use them as I need them. They become mere vehicles for approaching my data. I decide when and how to use them according to how I interpret the text unfolding before me. As with any interpretive approach, this is a back-and-forth process of finding, contextualizing, and interpreting data. The use of the algorithms as tools stops when I deem necessary once I have found all the relevant data that supports my interpretation. Then, a process of subjective interpretation can start, making the final shift toward a subjective ontology using an interpretivist epistemology. Following Cunliffe's (2011) arguments, Chapter 5 shows how the subjectivism-objectivism antonym has been eroded.

More than a decade ago, Cunliffe argued that “researchers now face choices about their work in terms of the myriad of metatheoretical and methodological options” (Cunliffe, 2011, p. 648). This statement has become more acute with AI. Today, LLMs offer new opportunities for qualitative researchers to process text data using the contextual meaning of language, which is essential for qualitative analysis. Chapter 6 is the result of my ontological and epistemological journey. I attempt to show how combining two seemingly opposite paradigms can bring new forms of approaching data for qualitative analysis. It is the result of my ontological evolution and my capacity to bridge distinct epistemologies and related methods. Inspired by the work of Burrell and Morgan (1979) on sociological paradigms, I proposed visualizing this dissertation as a bridge between paradigms. Figure 2 presents this dissertation's different theories and methods and my personal evolution.

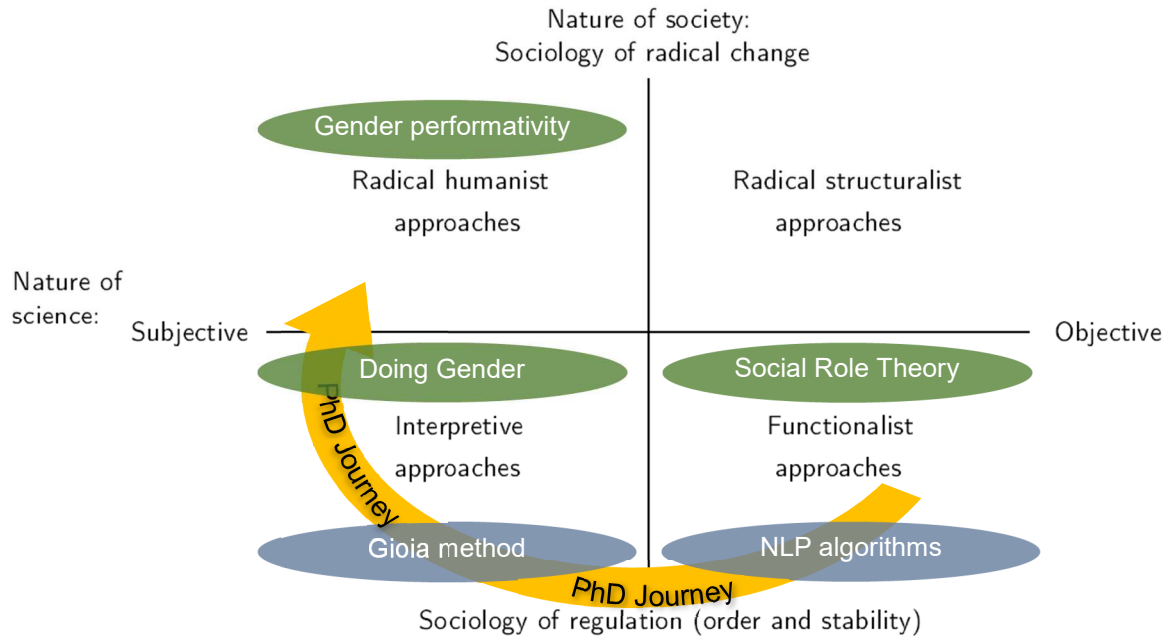

Figure 2 The paradigms of this research inspired by Sociological Paradigms and Organisational Analysis (Burrell & Morgan, 1979, p. 22).

After explaining my ontological and epistemological premises in this section, I now link them to my choice of methods in the following section.

Choice of Methods

Indeed, the choice and use of methods are directly related to my ontological and epistemological evolution as a researcher. As the research route is not straight, my choice of methods has also been impacted by the constraints of my doctoral journey. According to Cunliffe (2011), the pluralistic nature of management research means that methods span the boundaries of ontology and epistemology. One must look at its own assumptions that "influence our method, theorizing, and writing" (Cunliffe, 2011, p. 659).

Morgan and Smircich (1980) propose that any given methodological technique "often lends itself to a variety of uses according to the orientation of the researcher" (Morgan & Smircich, 1980, p. 498). Cunliffe (2011) further argues that while some methods are specific to a particular perspective, others can be used across paradigms. For instance, participant observation from a positivist perspective can be used to record

the number and length of interactions, while an interpretive perspective can be used to explore the subjective meaning of those interactions (Morgan & Smircich, 1980). Therefore, as I progressed in my ontological and epistemological evolution, the way I employed qualitative methods has also evolved.

Because chapters 4, 5, and 6 reflect my ontological and epistemological journey, each uses different methods.

Chapter 4 follows my original inclines toward a positivist epistemology and is influenced by Social Role Theory (Eagly & Wood, 2012). Social Role Theory is derived from a functionalist paradigm following a positivist epistemology. This perspective influenced my use of qualitative methods. In this study, I used semi-structured interviews following the Gioia methodology (Gioia et al., 2013) as a guided, step-by-step structured analysis. Therefore, I used qualitative templates still influenced by a positivist epistemology. This study aims to understand how gender stereotypes impact growth-oriented female entrepreneurs. Moreover, data was collected during COVID times when social contact was restricted. All interviews were conducted via Zoom. Even though the interviews were vivid conversations, I did not have the opportunity to observe beyond their image on the screen.

Chapter 5 proposes a methodology leveraging the new advancements in AI for NLP. To illustrate the method, it uses a subsample of the dataset of Chapter 6. This article proposes several NLP algorithms, including LLM-based, to efficiently select relevant online data in preparation for manual qualitative analysis.

Chapter 6 presents an empirical study of how environmental-oriented women entrepreneurs perform gender using the method developed in Chapter 5. As explained before, Chapter 6 is based on a different ontology from Chapter 4, and consequently, my approach to knowledge is different. Therefore, the choice of methods follows this change. The study collects two types of data: in-depth interviews and social media posts. The in-depth interviews were conducted in a lively, informal manner, allowing for deep and meaningful conversations. Eight main topics were discussed during each interview. However, the questions were tailored to each participant's unique life experience, aiming to understand their individual perceptions and interpretations. Some of them are complemented by informal interviews, where I had the opportunity to interact with the entrepreneur without any formal structure. In some cases, I had the

opportunity of meeting participants in person over casual meals. These informal conversations provided important clues for the formal interviews and the subsequent analysis presented in Chapter 6.

The second type of data was collected from the Internet using social media sites. The nature of this data is radically different from the interviews. This characteristic required making an important distinction between the two data types during the analysis. To efficiently collect and select the relevant online data needed to answer my research question, I followed the method explained in Chapter 5.

As explained, online data is selected using LLM-based algorithms, which follow a positivist approach. As the amount of data collected is too large to be manually selected, the method proposed in Chapter 5 proves valuable. However, a clear distinction between relevant data selection and subjective interpretation must be made. This requires dealing with two distant epistemologies. As explained in the previous section, phase two of the method helps to make a bridge between the two epistemologies. This bridge can be defined as a functionalist interpretation, where patterns, general ideas, and categories (functionalist view) are selected following my intuition (interpretive view). This first interpretation is made by selecting the data I judge relevant to my research question. Once this phase is completed, both sets of data, interviews and selected online data, can be interpreted using a subjective approach.

Given the nature of the data used in Chapter 6 (interviews and social media posts), I decided to guide my analysis following the Gioia method (Gioia et al., 2013). As described above, the interviews are full of context impacted by my personal contact with the entrepreneurs and my own bias. In contrast, social media posts are distant, have an obscure context, and are created with ambiguous goals. During the interpretation process, it was essential to keep this critical distinction to contextualize the variety of performances in each type of data. Therefore, keeping track of the origin of the data was essential. Thus, I needed a tool to help me organize my data, keeping this distinction while allowing me to analyze them in conjunction. The data structure proposed by Gioia et al. (2013) is well-situated to make this distinction and simultaneous connection, particularly during the formation of the first-order codes. Therefore, in Chapter 6, the Gioia method also guides the interpretive analysis.

However, in this study, I loosely followed the template, as opposed to Chapter 4, in which the template was closely followed. In the Chapter 6 study, I allowed myself more room to adapt the template to my needs.

Nevertheless, bridging qualitative research and algorithms means dealing with a tension between opposing epistemologies. Navigating this tension involves activating objective processing and subjective interpretive analysis differently but consciously according to the method's successive steps. The next section explains this rigorous process.

Dealing with the tension between epistemologies: Bridging algorithms and qualitative research

In this section, I elaborate on the epistemological tension formed by combining two distinct methods: NLP algorithms (including LLM-based) and interpretive methods. The combination of these methods is based on the research question that studies gender performativity in two distinct settings: interviews and social media posts.

As previously mentioned, the nature of these two data sets is markedly different, necessitating different approaches. It is important to highlight that the primary objective of using NLP algorithms is to efficiently select relevant online data, not to provide an interpretation. Moreover, this dissertation does not propose any new interpretive approach; instead, its contribution is found in bridging these two distinct methodologies.

Moreover, my implicit assumption is that not all online data is useful in answering the research question. Thus, a selection must be made. Without this assumption, one can simply start an interpretive analysis considering all the online data as important and valuable. I argue that online data must be selected, as the data collected from the Internet vary widely in quality and content. Thus, much of this data is not relevant to a particular research question.

I deal with the tension of combining NLP algorithms (including LLM-based) and interpretive methods following five steps. Steps one and two follow a functionalist paradigm. Steps three and four follow what I call a functionalist interpretation, where data is interpreted following patterns, categories, and similarities. Finally, step five is dedicated to a subjective interpretation without any algorithm's assistance.

Step one: Python code. The first step is creating the Python code. This step requires to be completely dissociated from the other four steps. Computing programming requires certain skills and reasoning that are incompatible with subjective thinking. Step two can be initiated only once the Python code has been tested and validated in a subsample of the data and is fully operational.

Step two: Data collection, preparation, and validation. This second step aligns with the first phase of the method presented in Chapter 5. A minimum level of interpretation is required to validate the data as suitable for the research question. It mainly involves looking at tables containing word counts, word frequency, and data characteristics, such as the number of posts, social media platform, post length, and dates.

Step three: Selection using Sentiment Analysis and Topic Modeling. This step refers to the Data Selection step, which is part of phase two of the method presented in Chapter 5. In this step, I process data following sentiments and topics (functionalist approach) and select data following my interpretation (interpretive approach). Sentiment Analysis can only categorize positive, negative, or neutral sentiments. Thus, Sentiment Analysis is used following an essentialist approach to gender (e.g., women are more sentiment-expressive than men). The nature of Topic Modeling allows for a different type of classification. Topic Modeling is programmed to find the implicit topics in the data. In this case, the algorithms found the topics of feminism, gender equality, and women's empowerment. Even though Topic Modeling may give the impression of providing a sort of interpretation, the results are based on clustering (grouping together data points). Thus, these topics are found by the algorithm based on probability, not guided by intuition or subjective interpretation by the researcher. After validating the data contained in those topics, I can disregard the topics unrelated to the research question. By looking at the data from sentiments and topics, the goal in this step is to create a first set of raw data that contains gender expressions and disregard all those

posts that do not contain any. For example, links to job postings, simple links to other sites, or event invitations will not be considered.

Step four: Selection using Information Retrieval. This step is an important bridge from a purely functionalist interpretation to a more subjective one. It refers to the Target Search step, which is part of phase two of the method presented in Chapter 5. Here, the boundaries between epistemologies become blurred. Recent advancements in AI have paved the way for applying LLM-based algorithms in NLP. These advancements enable us to grasp the semantic meaning and subtle nuances of human language, which are essential for qualitative analysis and allow another degree of interpretation in this step. Information Retrieval requires the creation of queries, which are sentences or paragraphs constructed by the researcher from her interpretation of the Literature, the interviews, and the posts selected in the previous step. Thanks to the new technological advancements, queries can capture the subtle nuance of human language. Consequently, query creation is the first attempt at subjective interpretation. After a first reading of the interviews and posts, I selected sentences or paragraphs that I judged better respond to the research questions. As in the previous step, the goal is to create a set of raw data relevant to the research question. However, the selection of posts involves a more subjective interpretation. In this step, the key interpretation component is selecting the phrases used as queries to launch the Information Retrieval algorithm. It requires a back-and-forth process of finding the right phrases (the interpretative process by the researcher), obtaining the results (algorithmic automatic process), and selecting relevant data (the interpretive process by the researcher).

Step five: Subjective interpretation. All relevant online data must be selected prior to starting the interpretation process. Hence, the utilization of algorithms ceases at this point. Like in all interpretive analysis, an iterative process is needed. This step requires a high level of subjectivity to make sense of rich context, identify possible intentions of locutor toward the audience, and articulate all these elements for theory building. Therefore, it is imperative to leave all the previous steps behind to be fully immersed in the data.

The steps show a continuum, as suggested by Cunliffe (2011) and Morgan and Schmicich (1980), from rules and fixed structures to fine and subjective interpretation.

It is not easy for the researcher to move from one step to the next. I must be mindful of myself as I move from one step to the next, which requires time and adaptation. Important time breaks are necessary and unavoidable as I change my posture from looking at the data as probabilistic results to expressions full of subjectivity.

Even though I used NLP algorithms in this dissertation, the algorithms are used as selection tools. The data analysis and findings rely on subjective interpretation in the two empirical studies. Therefore, the norm of validity, reliability, and replicability of quantitative analysis does not apply. One can find the same results provided by the algorithms as my Python code, and the online data are publicly available. However, the selection of data (steps 3 and 4) and the subsequent analysis (step 5) rely solemnly on my interpretation. Thus, the value of the findings can be judged by their appropriateness to the social reality studied (Allard-Poesi & Perret, 2014) and the quality of the argumentation (Alvesson & Sköldberg, 2017). Therefore, the value of the findings is assessed by their quality, rigor, and relevance.

Lastly, this research, which involved personal interviews and online data, required an ethical procedure of data collection, transcription, and analysis. These procedures are explained in the following section.

Ethical practices of data collection, transcription, and analysis to protect personal data.

At the time of data collection, my institution was putting in place the ethics committee. As a result, this research has not received formal approval. However, I totally adhere to the following ethical practices.

All my participants have previously been contacted by email or in person. In this first contact, I explained the nature of the interview and the type of research and asked for consent. The participants expressed their consent verbally or by return email. Participation was voluntary. Before the beginning of each interview, I explained again the nature of the interview and how I guaranteed their data protection. Specifically, I explained how I protect their identity using external services (e.g., Zoom, Microsoft Cloud service). Therefore, I adhere to the following:

Their name, age, business name, marital status, and number of children are never recorded. Hence, this information is not found in any transcription. This protects their identity, as I used Zoom for many of my interviews. Zoom did not guarantee any recording protection at the time of the interviews. Moreover, even though I pay for cloud services, all my interviews are stored in the Cloud, which can potentially be a liability if I have a data bridge. This way, their identities always remain anonymous.

I transcribed all the interviews, erasing names, company names, and personal information. After the transcription was finished, I sent it back to the participant for approval. Only one person asked me to erase a phrase in her interview.

Each interview was assigned a code. As the interviews do not contain the participant's name, I stored them in the Cloud using this code. Once data analysis started, a pseudonym was assigned to each participant; thus, the code is only used to identify a particular transcription.

I kept a notebook in my house that contains the link between the interview's code and the participant's real name.

Regarding the online data used, I only scraped publicly available data. The scraper was programmed to avoid collecting sensitive information such as names, emails, telephones, etc. I anonymized all data by assigning an alias to each participant before data processing, erasing hyperlinks, and double-checking for sensitive information that may have been scrapped. The anonymization of online data is part of the method presented in Chapter 5.

As explained throughout this chapter, my way of seeing reality has evolved, seeing it as a subjective-objective continuum. This has been an evolution as I have incorporated different perspectives into my research. This is reflected in the epistemological premises and choice of methods presented in this dissertation. Therefore, the following chapters present the results of my research following this epistemological evolution.

Chapter 4 How gender norms impact growth-oriented female entrepreneurs

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Introduction

The Global Entrepreneurship Monitor (GEM) indicates that women entrepreneurs create, run, and grow businesses across all sectors (Bosma & Kelley, 2019). They make important contributions to innovation, employment, and wealth creation in all economies. However, women still face a significant number of difficulties and obstacles in establishing and running businesses (Brush et al., 2009; Shaw et al., 2009; Sweida & Reichard, 2013). As a result, women create fewer businesses, and their ventures underperform as they remain smaller in terms of revenue, job creation, and size relative to those of men.

Some scholars argue that these difficulties could be related to how entrepreneurship is perceived. The definition of an entrepreneur has long been defined based on masculine characteristics, such as ambitious, aggressive, risk-taking, and natural-born leader (Ahl, 2006). As this male stereotype persists in entrepreneurship, women tend to assign more weight to masculine traits when defining a successful entrepreneur, describing him or her as competitive, active, independent, decisive, and self-confident. However, women have long been defined as affectionate, understanding, warm, and compassionate (Tagg & Wilson, 2012). This juxtaposition of male and female stereotypes leads to an incongruence of what it means to be a successful woman entrepreneur. When women entrepreneurs define themselves like other women, they risk experiencing imposture syndrome and stereotype threats because they consciously or unconsciously try to cope with the prevailing masculine norms in entrepreneurship (Ladge et al., 2019).

Studies have found that women turn to entrepreneurship notably to create a better work and family balance (d'Andria & Gabarret, 2016). However, this is not their only motivation for venture creation. Like men, women entrepreneurs are also driven by business opportunity, desire for success and independence, economic reward, and job satisfaction (d'Andria & Gabarret, 2016). Thus, some women have become entrepreneurs driven by opportunity recognition and business growth. These women entrepreneurs, known as growth-oriented women entrepreneurs (Hechavarria et al., 2019), follow an entrepreneurial path driven by opportunity, where they notably take advantage of technology to achieve high growth.

The prevailing male definition of an entrepreneur creates a specific identity tension for growth-oriented women entrepreneurs. By following such an entrepreneurial stereotype, they are deviating from their ascribed feminine attributes (Eagly et al., 2000). On the one hand, their high-growth choice of business engenders an entrepreneurial identity that adheres to the masculine description of an entrepreneur. On the other hand, they may want to remain true to themselves and affirm their feminine characteristics, which are usually perceived as incongruent with entrepreneurship.

This study analyzes how growth-oriented women entrepreneurs are impacted by the gender norms and stereotypes in entrepreneurship. How do they face gender stereotypes as business owners? Do they internalize masculine norms and consequently experience stereotype threat and imposture syndrome, or do they succeed in performing as successful women entrepreneurs?

It appears that even the most qualified women entrepreneurs are impacted by gender norms, making it harder for them to legitimize their endeavors. The results of our study help to explain the major difficulties and dualities that women entrepreneurs face every day and offer some suggestions to overcome the negative impact of gendered norms.

Literature Review and Theoretical Background

The feminist lens on entrepreneurship and the entrepreneurial norm

The definition of an entrepreneur has been long defined by masculine characteristics, like being ambitious, aggressive, risk-taking, and a natural-born leader (Ahl, 2006; Ladge et al., 2019). As this male definition persists in entrepreneurship, women tend to assign more weight to masculine traits when defining a successful entrepreneur, describing him or her as competitive, active, independent, decisive, and self-confident. However, women have long been defined as affectionate, understanding, warm, and compassionate (Ahl, 2006; Bem, 1981; Tagg & Wilson, 2012). It has been well documented that entrepreneurship is not gender-neutral (Jennings & Brush, 2013; Lewis, 2006). Scholars have argued that entrepreneurship is presented in the press,

educational materials, and academic literature as a profession more suitable for men than women (Ahl, 2004; Jennings & Brush, 2013). This juxtaposition of male and women ascribed characteristics (stereotypes) leads to an incongruence of what it means to be a successful female entrepreneur. Women entrepreneurs then define themselves as the “other” (Lockyer et al., 2018), questioning if their endeavors live up to society’s expectations. Therefore, when women opt for venture creation, consciously or unconsciously, they have to cope with the prevailing entrepreneurial norm. That is, entrepreneurship is perceived as a male activity, and male traits better fit the definition of a successful entrepreneur (Dheer et al., 2019; Gupta et al., 2009; Gupta & Turban, 2012)

Ladge et al. (2019) applied the concept of the impostor phenomenon (Clance & Imes, 1978) to understand the impact and limitations that the prevailing entrepreneurial norm exerts on women entrepreneurs. They have analyzed how the impostor fears (the intellectual insecurities in high achievers who are unable to internalize their success) influence women’s entrepreneurial identity and their desire for business growth (Ladge et al., 2019). They argue that impostor fears shape women’s entrepreneurial identity through “family demands, lack of role models, and firm performance” (Ladge et al., 2019, p. 619). They conclude that impostor fears diminish women’s entrepreneurial identity and intentions to grow their businesses.

Gupta et colleagues have conducted several studies on entrepreneurial intention, entrepreneurial identification, and gender stereotypes applying the concept of stereotype threat developed by Steele (1997). Stereotype threat refers to “the event of a negative stereotype about a group to which one belongs becoming self-relevant” (Steele, 1997, p. 616). Their findings suggest that women who are more inclined to develop an entrepreneurial career will be greatly affected by stereotype threat (Gupta & Bhawe, 2007). Likely, when the entrepreneurial stereotype was presented, women’s ability to evaluate new business opportunities decreased (Gupta et al., 2014).

Studies using feminist theories on gender identity and legitimacy have also been undertaken to understand the implication of entrepreneurship as a gendered phenomenon (Lewis, 2013; Stead, 2017; Swail & Marlow, 2018; Tagg & Wilson, 2012). Women entrepreneurs construct their entrepreneurial identity by combining attributes from male and female traits and develop legitimating strategies to ease the tension

generated by the gendered content in entrepreneurship (García & Welter, 2013; Lewis, 2013; Swail & Marlow, 2018).

The influence of gender norms

In their Social role theory, Eagly and Wood establish that sex differences and similarities in behavior reflect gender role beliefs. These gender role beliefs represent people's perceptions of men's and women's social roles and are expected to be followed by the members of the society in which they live (Eagly & Wood, 2012). Eagly et al. define gender roles as "collections of beliefs about what men and women actually do and ought to do" (Eagly et al., 2000, p. 126). Gender refers to "social, cultural, and psychological traits linked to males and females through particular social contexts" (Lindsey, 2013, p. 4). And role is defined as "the expected behavior associated with a status" -a category or position in society (Lindsey, 2013, p. 2). Gender roles are performed according to gender norms, the shared rules that guide people's behavior in specific situations (Lindsey, 2013). According to Lindsey, because the status of women is consistently ranked lower than men in today's societies, and women's new professional roles have not been fully integrated into today's institutions, therefore women's acceptable role behavior is severely restricted. Thus creating constrained gender norms for women and rigid definitions of their normative role behavior -gender stereotypes- (Lindsey, 2013). Empirical evidence shows that people's self-concepts contain gender stereotypical content. Therefore, people internalize gender stereotypes as personal gender identities by reflecting people's beliefs about men and women. Thus, they portray behaviors that match those of gender stereotypes, reinforcing the gender norms (Eagly et al., 2000).

Today, women still need help to establish their credibility as authentic entrepreneurs (Lockyer et al., 2018). They are constrained to follow the prevailing entrepreneurial norm deriving from their gender norm, thus creating tension when defining their identity as entrepreneurs (García & Welter, 2013). Few empirical studies have been undertaken to explore the repercussions of gender norms in entrepreneurship (Bianco et al., 2017; Clark Muntean & Ozkazanc-Pan, 2015; Lockyer et al., 2018; Meek et al., 2010). The societal-level attitudes, beliefs, and expectations regarding gender norms

at home and in the marketplace shape people's self-perceptions impacting their access to resources for venture creation (Clark Muntean & Ozkazanc-Pan, 2015).

Therefore, this research seeks to answer the following questions: How do they face gender stereotypes as business owners? Do they internalize masculine norms and consequently experience stereotype threat and imposture syndrome, or do they succeed in performing as successful women entrepreneurs?

Most entrepreneurial research avoids or does not consider the prevailing gender and entrepreneurial norms in entrepreneurship (Bianco et al., 2017). Gender equality in entrepreneurship will be possible by recognizing how gender beliefs and perceptions influence all entrepreneurial activities and environments (Clark Muntean & Ozkazanc-Pan, 2015). Therefore, it is important to understand the different factors that affect the decision to start a business and the environment that impacts the success of women-owned ventures. Analyzing the influence of gender norms and entrepreneurship as a gendered activity can shed light on the complex phenomenon of women's entrepreneurship.

Methodology

The study follows a qualitative approach. To better understand the why and how of the women entrepreneurship phenomenon and the role that social norms play, an interpretive epistemological approach is better suited. Data collection through non-standardized semi-structured interviews is chosen to gather contextual material from the life reality of the participants (Schultze & Avital, 2011). The semi-structured interviews allow us to understand the participants' views, perceptions, opinions, motivations, and the reason for their decisions and behaviors (Alvesson, 2003).

Sample

This article draws on semi-structured interviews of the female alumni of the entrepreneurial program of a prestigious business school in Paris, France (HEC Paris). Purposely selected, rather than random sampling was used to single out the

participants (Charmaz, 2014; Strauss & Corbin, 1994). These women entrepreneurs have chosen entrepreneurship as a career path by applying and finishing the entrepreneurial program, thus obtaining the required education to succeed, an extensive network to rely on, and a self-perception as competent entrepreneurs. These women entrepreneurs can be identified as growth-oriented (d'Andria & Gabarret, 2016) as they are driven by market opportunity and business performance. They portray the characteristics of the male definition of an entrepreneur. This allows us to minimize the influence of factors such as education, entrepreneurial self-efficacity (Mueller & Dato-on, 2013; Sweida & Reichard, 2013), network access (Foss, 2010), and capital access (Brush et al., 2019; Carter et al., 2007), thus observing the influence of the gender norms when other factors remain similar to their men counterparts. We interviewed eleven women alumni who had started a business in the past 15 years (Table 1). Their businesses are in different stages of development, from the launching phase to exponential growth. Most are in sectors dominated by men (e.g., sport/entertainment, food and services). Three participants have young children (less than seven years old), while the rest have no children. Four of them have a male co-founder, four others are in a female-only founder team, and one is in a sole proprietorship. Their range of age varies from mid-twenties to their early forties. The interviews were conducted in French, and the videos were recorded and transcribed. The interviews were translated into English for data presentation.

Interview protocol

To create an engaging atmosphere, every interview started with an open question about the participant's personal and educational backgrounds (Dundon & Ryan, 2010). This first question was designed to create a friendly conversation about the participant's entrepreneurial experience. Then, seven main subjects were used to guide the semi-structured interviews. Participants were asked about their motivation to create their business, their experience during the business' launch and development, all the difficulties that they encountered during the business creation and development, their business growth expectations and objectives, the support that they received (or the lack of support) during business creation and development; work and personal life balance; and their personal definition of an entrepreneur. To minimize

bias, specific questions regarding the research objectives about gender norms, gender stereotypes, gender roles, and motherhood were not asked (Alvesson, 2003). The open questions allowed the participants to freely express their experiences, revealing in their stories the impact of gender norms. Some participants were contacted a second time by email for more details about a specific subject.

Data analysis

A computer-aided qualitative data analysis software (NVivo 1.4) was used for data analysis. The construction and interpretation of the data were guided by the Gioia methodology (Gioia et al., 2013). This approach is useful for studying complex entities and allows us to understand individuals in their situational context, which is key for our study. Following Gioia methodology, an inductive analysis was undertaken, forming the first-order codes presented in Figure 3. This first step produced many raw codes to stay close to the participants' voices. This inductive phase was followed by an abductive phase, creating a second level of coding. During the abductive phase, the literature analysis helped form the second level of coding by adding parent categories and reducing the first-order codes to a more manageable number. These parent categories helped to form the second-order analysis producing the second-order codes (Figure 3). The parent categories were used to build the third level of coding, creating the aggregate dimensions. This process allows us to form the data structure (Figure 3), our groundwork for data interpretation and results.

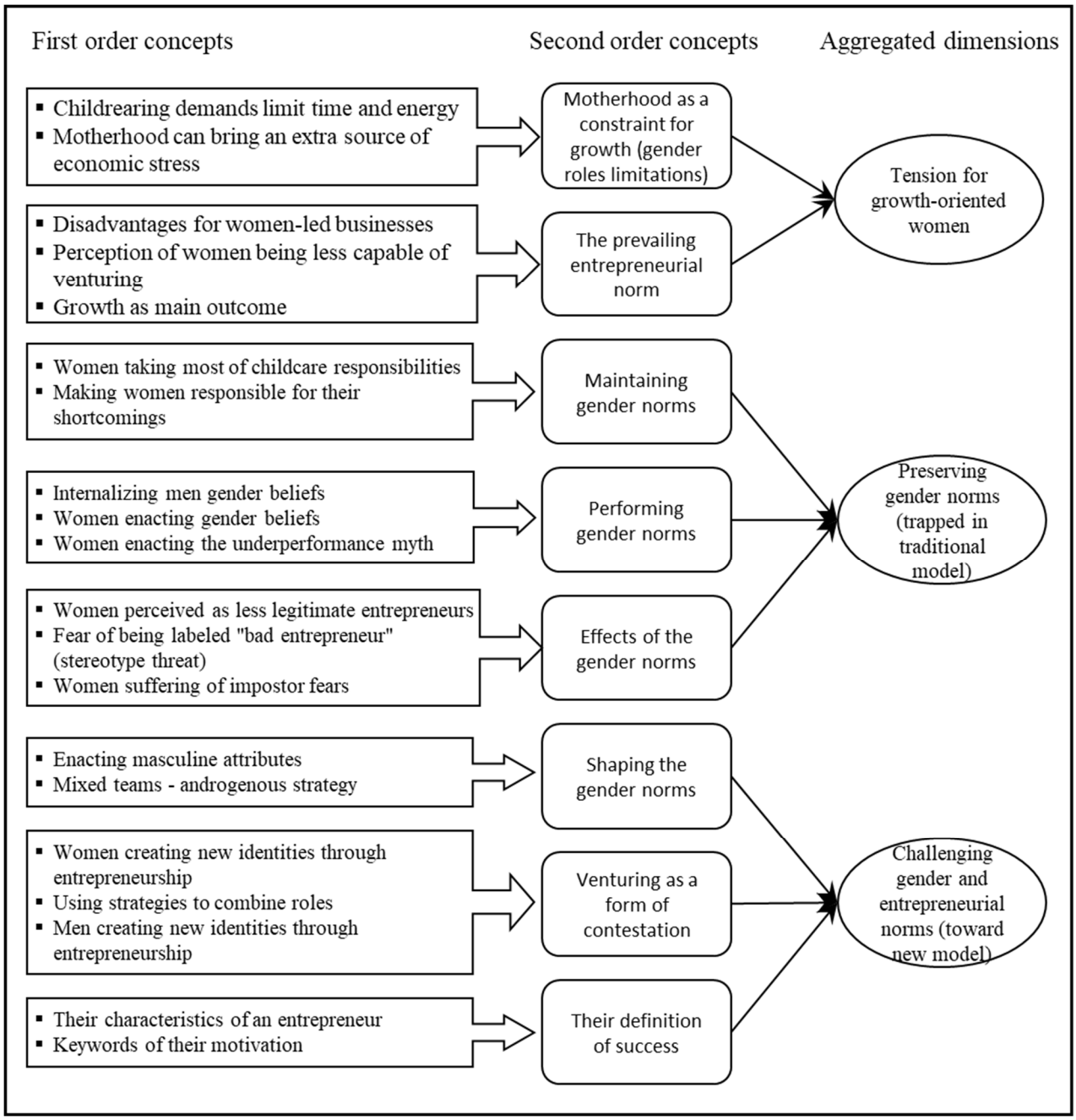

Figure 3 Data structure growth-oriented women entrepreneurs

Table 1 Sample growth-oriented women entrepreneurs

	Age group	Children	Marital status	Industries sectors	Years in business	Num. of employees	Number of businesses created
Mary	41 - 50	0	Single	Business counseling	+ 10 years	0 – 5	3
Jennifer	31 - 40	2	Married or with a Partner	Restaurant	5 - 10 years	50+	1
Linda	31 - 40	0	Married or with a Partner	Marketing	- 5 years	6 - 15	2
Clare	21 - 30	0	Married or with a Partner	HR	- 5 years	6 - 15	2
Alison	31 - 40	0	Married or with a Partner	Sport / Entertainment	- 5 years	6 - 15	1
Margaret	31 - 40	0	Single	Publishing	5 - 10 years	6 - 15	1
Chloe	31 - 40	3	Married or with a Partner	E-learning	5 - 10 years	0 – 5	1
Megan	21 - 30	0	Single	Health	- 5 years	0 – 5	1
Sara	31 - 40	2	Married or with a Partner	Retail	- 5 years	0 – 5	4
Emma	41 - 50	0	Single	Counseling / Training	5 – 10 years	0 – 5	2
Olivia	21 - 30	0	Single	Eco-Industry	- 5 years	6 – 15	1

Findings

Internalizing masculine norms and their consequences

Before entering the entrepreneurial program, the participants had already exhibited a high degree of entrepreneurial intention (belief that they could become entrepreneurs). They decided to follow an entrepreneurial program, thus obtaining the required education to succeed. Accessing the program also helped them build an extensive network on which to rely and a self-perception as competent entrepreneurs. High-growth entrepreneurship is characterized by profit orientation and innovative strategy (Sweida & Reichard, 2013). Furthermore, high-growth entrepreneurs focus notably on market growth, technological change, and adequate capitalization. Our interviews show that 10 participants are profit-oriented and portray high growth intentions (See

Table 2). Most of them have raised funds from business angels and venture capitalists. Eight of them have developed proprietary web and mobile applications as part of their business growth strategy in their current or previous business. For those who privilege a brick-and-mortar model, growth is also part of their objectives. Alison, the founder of a sports facility, expresses her goal as *"to create a fitness chain around Europe and the USA."* We can argue that they have internalized the growth norm as part of their entrepreneurial identity. As Sara, a serial entrepreneur and owner of a retail brand, states: *"Growth is what drives me. If I can't double my sales every year, I will be pretty sad.*"

Fighting for Credibility

A successful entrepreneur is perceived as a growth-oriented masculine figure; growth-oriented women entrepreneurs may be perceived as needing more legitimacy by the stakeholders of their business sectors and the entrepreneurial community. This results in self-expression of doubts about being able to perform the entrepreneurial role successfully as a woman, especially in male-dominated sectors.

Clare, the co-founder of an HR platform where she oversees the human resources aspects, struggles with being recognized as a capable entrepreneur by her tech partners and venture capitalists. She said: *"I have always had to fight, and I still do it today. It's a question of legitimacy. My legitimacy toward others."* Margaret, who co-created a venture in the publishing sector, confirms this difficulty: *"The impression that I have sometimes is that we [women] allow ourselves to do something that we should not allow ourselves to do, that does not conform to what it is expected from us, and that it is negatively viewed."* Initiating a business in sectors dominated by men exacerbates the disadvantageous position held by women. For Margaret, initiating a venture in a sector where the top executive positions are held by men, but the middle and lower positions are mostly occupied by women was a challenge. Margaret recalls the comments that she received when proving her business concept: *"Being two women with an innovative idea, well, there are some people who said to us: «You are cute, we will talk later». «Well, no, it is good to have ideas, but that will never work, let it go, stop immediately» with a lot of disdain, really. It was like pretending to believe that we would be able to do that, that we could be business owners."* Women must

tolerate others' gendered stereotypical beliefs and be able to overcome them if they want to establish their credibility.

The threat of the prevailing stereotypes

Empirical evidence shows that people internalize gender stereotypes as personal gender identities that reflect their beliefs about men and women. Thus, they portray behaviors that match those of gender stereotypes (Eagly et al., 2000). In turn, others' perceptions impact their actual self-belief about being an entrepreneur, which matches (or does not) their ideal-self and expectations. This results in a somewhat tainted identity as an entrepreneur who lacks something ("small," little," "not tech"). Linda, an entrepreneur in marketing and communications explains: *"You show yourself as a woman, you are young, also I love to put makeup on, etcetera. I had the impression to be, you know, the little girl who comes to sell her service."* Jennifer, the founder and manager of a successful restaurant chain, mentioned an experience when a client did not believe that she was the actual owner of her restaurant. Likewise, Margaret spoke of how a competitor used people's perceptions of women creating mostly "*small, handcrafted, not tech, artisanal work*" to diminish her innovative and technological offer.

The actual norms implicitly suggest that women are less capable of venturing or are "unsuccessful" entrepreneurs. These conditions put women entrepreneurs at risk of stereotype threat (Gupta et al., 2014; Steele, 1997). Women entrepreneurs, notably those who are growth-oriented, may fear being judged stereotypically (perceived as an incompetent woman entrepreneur) or inadvertently misbehaving (not matching the masculine traits of the successful entrepreneur) and therefore conforming to the stereotype. For Jennifer, motherhood activated the threat, seeing as, from then on, she was embracing feminine attributes and distancing herself from the entrepreneurial norm. She mentioned: "*[After I became a mother], I wanted to do even more, to prevent others saying that because I have become a mother, I would dump the business."* For Megan, a young entrepreneur in the health tech sector, the threat came from women-only programs. She vividly expressed that she would not use any of "*those women-only services*" because *"people will think that clearly, they [women] are in need of something."* The stereotype threat is very subtle but indeed pervasive. It can restrict

possible actions and put great pressure on the person experiencing it. Olivia, a young entrepreneur in the eco-industry, perceives the threat as being linked to her age. On multiple occasions, she felt that others deemed her less capable, hence diminishing her participation and opportunities. She shares: *"It has happened to me many times to be the youngest and the only woman in the meeting. When I speak, either [they] make me understand that I must calm down and stay in my corner, or they listen to me, but they laugh."*

Dealing with impostor fears

Even though all the participants have completed a highly selective and extensive entrepreneurial education, some of them expressed *"not feeling capable"* or *"not having self-confidence"* to become entrepreneurs after the end of the program. This relates to the impostor phenomenon, which growth-oriented women entrepreneurs are especially vulnerable to because high-achieving individuals (like our sample) are more inclined to feel like fraud (Clance & Imes, 1978; Ladge et al., 2019). Impostor fears are notably detrimental as they devaluate women's abilities and constrain action. For Emma, who provides training and entrepreneurial support, impostor fears translated into full paralysis. After the great success of her TedTalk, many potential clients and investors contacted her; she shared: *"I experienced the biggest impostor syndrome ever! I told myself: I am alone; those people are crazy; they think I can help them, but I won't be able to help them for real. I felt really upset and afraid. I felt like a chicken waiting for the knife!"* Eventually, all the participants overcame their impostor fears and created their own businesses, yet the impostor phenomenon did not completely disappear. Clare, who still struggles with her feelings of inadequacy, recalls the advice from another women entrepreneur: *"You will always feel like an impostor, so if you want to do it [become an entrepreneur], just do it."*

Our results show that women still live in a paradox of conforming to the norms, enduring their effects, and at the same time preserving them. Because growth-oriented women entrepreneurs completely ascribe to the entrepreneurial norm of growth and success, they are even more vulnerable to its effects. Furthermore, they have to deal with their real-self, ideal-self, and ought-self discrepancy (Higgins, 1987). The prevailing gender norms suppose women to be warm, nurturing, and compassionate

(female stereotypes). At the same time, successful entrepreneurship is measured in terms of performance and growth, and to attain success, an entrepreneur should be ambitious, independent, and risk-taking (male stereotype). This condition creates a discrepancy between the real-self (what I really am), the ideal-self (what I want to be, a successful entrepreneur), and the ought-self (what others want me to be, conform to the stereotype). Growth-oriented women entrepreneurs cannot become men; they can only mimic male attributes but should remain women. This helps us to understand the paradox of why they endure, conform, and preserve the norms even though they are negatively affected by them. Hence, they continue to face limitations and challenges as they walk a thin line between entrepreneurial expectations and feminine normativity.

Table 2 shows how our participants adhere to the gender norms and their consequences. This suggests that the internalization of the norms is explained not only by high growth objectives (when goals of internationalization, rapid increase in sales, or profitability are expressed) but also by strong profit orientation and technological innovation. Those who fully adhere to the norms are more severely impacted by their consequences.

Table 2 Consequences of masculine norms internalization

	Adhering to masculine norms of entrepreneurship			Consequences of masculine norms internalization		
	Profit orientation Yes=Y No=N	High growth objectives Yes=Y No=N	Tech. innovation Yes=Y No=N	Doubts about legitimacy	Experience of stereotype threat	Impostor fears (Explicit=E or Implicit=I)
Mary	Y	N	Y	Moderate	N	I
Jennifer	Y	Y	N	Not reported	Y	I
Linda	Y	Y	N	High	Y	I
Clare	Y	Y	Y	Very high	Y	E
Alison	Y	Y	N	Moderate	N	I
Margaret	Y	Y	Y	High	Y	I
Chloe	Y	N	Y	Moderate	Y	I
Megan	N	Y	Y	Moderate	Y	I
Sara	Y	Y	N	Moderate	Y	I
Emma	Y	Y	Y	Very high	Y	E
Olivia	N	N	Y	Moderate	Y	I

Does the norm remain unchallenged?

Even though the growth-oriented women entrepreneurs do not question the male norm in entrepreneurship, this does not mean that they are happy with it. They express a great need for female presence in entrepreneurship, as Clare mentioned: *"We have many models of male entrepreneurs, way fewer women entrepreneurs. I was astonished by the lack of female role models in the ecosystem."* They even verbalized their desire to become role models for future women entrepreneurs. Alison mentioned that she believes she can help women entrepreneurs by just being one: *"There is a very easy way to help them [the women]; it is to be a role model, so to exist."*

Interestingly, although they all have growth goals for their businesses, when asked about their motivation to become an entrepreneur, half of them mention that their main motivation is freedom. For them, it is the freedom of creating their job, their team, the direction of their venture, and their schedule. The idea of "creating" is particularly important to them. They talk about business creation as an opportunity to do so according to their personal values and the idea of social impact. For them, independence, creation, and impact are the pillars that drive their ventures (also see Lebègue, 2015).

There is another paradox here. On the one hand, these entrepreneurs follow the definition of venture success according to the existing norms, as explained earlier. On the other hand, only one mentioned financial success as a motivation (see Table 3). They followed an entrepreneurial career based on a genuine desire for personal accomplishment and not as a means of power, superiority, or wealth, even though continuous growth is an important goal for them, as previously stated. This can only be interpreted as a result of the internalized gender-based model of entrepreneurship. They accept the norms, but their inner motivations and intentions are somehow in opposition to them. It seems like these growth-oriented women entrepreneurs find it difficult to bring "feminine values"[2] into venture creation. This may be explained by a lack of awareness about the way gender stereotypes influence their behavior.

[2] As defined by Orser and Elliot, feminine values refer to the mutuality of relationships, economic independence, social action, synthesis of opposites, internal wisdom, and promotion of conflict resolution (Orser & Elliott, 2015).

Getting into the process of awareness

The study reveals that some participants are unaware of the impact of the gendered norms in entrepreneurship. However, they are still influenced by these norms, and their ventures are equally influenced. Some can recognize that something impacts them, but they are not able to describe it, far less to explain it. They, of course, understand the notion of gender stereotypes and are aware of their existence and repercussions. However, they fail to make the connection that these stereotypes play an important role in their entrepreneurial careers. Linda portrays this reality clearly. She shared how she faced different treatment from her male competitors when negotiating an offer with her clients. She tries to make sense of, why for the same service, she receives a lower price: *"I don't know how to explain this to you. There is something that happens at the unconscious level. I'm not able to explain it to you, to understand why. For now, I don't have the answer. It is something that I felt, but I can't argue about it."* Others fail to recognize that, indeed, women are in a disadvantageous position against men. Megan expressed her beliefs about the women-only support programs in entrepreneurship: *"We are able to have the same ideas. So, I don't see why we should need women-only contests or women-only incubators."*

The younger and less experienced respondents are notably unaware that some rules and perceptions impact them and their businesses. The more experienced entrepreneurs, especially those who have been confronted with gender stereotypes, are more aware of their impact. For Margaret, the difference is related to a gendered education: *"I don't think that there is a natural difference between men and women. I think, in fact, there are differences related to our education and to the perception that the others have about us."* As they learn to relate more to this reality, they become more able to take advantage of it. Jennifer talks about how she manages people's perceptions and behaviors when talking with clients and providers: *"Systematically, they think that I'm the assistant, that I'm there to take notes. It's so funny. Now, I can get a lot of fun out of it, I can play with it."* For these women entrepreneurs, the negative beliefs and perceptions are only one more difficulty to overcome. They have developed a high degree of resilience to face all these difficulties and constraints. As Bernard (2018) explained in her study about entrepreneurial resilience, they have acquired the feeling of controlling the situation, of being strategically adaptable, and having the openness of choice that allows them to play with the norms (Bernard, 2018).

Nevertheless, these new attitudes and strategies are not easy to form. Linda spoke of how, at the beginning of her entrepreneurial career, she did not see any difference between men and women. However, with time and experience, she discovered another reality: *"You know, at the beginning, I was naïve, I was enthusiastic, I didn't see the limits. It was when I created my second business that I saw the difference. It took me at least 5 to 6 years to understand. Ah yes, there is a difference!"* The more they become conscious of the gender norms that limit them, the more they can overcome those limitations. As they slowly developed their "foreigner's view," this outside position allows them to see their lives from a different perspective (Alter in Verzat, 2014). These women entrepreneurs' foreign view allows them to "change their destinies" by creating new identities outside the stereotypes imposed on them, transforming their differences into their strengths, finding new ways of doing, and using the prevailing norms to their advantage.

Table 3 shows the relationship between experience, high growth intention, inner motivation, and awareness of the norms. Those who have been in business for a long time or are in their second or third business are more capable of recognizing their effects.

Table 3 Goals, motivations, and relationship to gender norms.

	Women entrepreneur profile	Goals and motivations		Awareness of gender norms
	Long (LE) / short (SE) experience	Growth goal High (H) / Moderate (M)	Expressed inner motivations (why did you become an entrepreneur?)	1=Yes, can explain and play with 2=Yes, can explain but not play 3=Yes, but can't explain 4=Yes, but avoid 5=No
Jennifer	LE	H	Creation/Freedom	1
Mary	LE	M	Creation/Freedom	2
Clare	LE	H	Impact	2
Margaret	LE	H	Independence/Impact	2
Chloe	LE	M	Creation	2
Emma	LE	H	Financial performance	2
Linda	LE	H	Independence/Freedom	3
Alison	LE	H	Creation	3
Sara	LE	H	Creation/Freedom	4
Megan	SE	H	Impact/Freedom	5
Olivia	SE	M	Impact	5

Discussion and Practical Implications

Despite the efforts to diminish the gender gap in entrepreneurship, there is still much to be done. By helping women entrepreneurs to understand that, indeed, entrepreneurship is perceived as a masculine field and gender stereotypes surround it, they can be better prepared to create and develop businesses and later become role models for others and ultimately challenge prevailing norms.

Our study confirms that women entrepreneurs are negatively impacted by gender stereotypes. Recent studies have found that customers' beliefs will favor or not against women entrepreneurs and that venture capitalist decisions are impacted by the gender attributes displayed by the entrepreneur (Javadian et al., 2021). Women entrepreneurs need to be aware that it is not only their strong will, knowledge, and effort that will shape their endeavors; it is also a whole society that looks at them, expecting some sort of behavior from them. At a personal level, they cannot change other peoples' perceptions, but they can be aware of the implicit effect on their lives and ventures. Policymakers, educational institutions, investors, and male entrepreneurs should recognize that the gendered norms in entrepreneurship are a real constraint.

There is a variety of possible means to overcome these barriers. Entrepreneurship Education programs can focus on self-awareness and on how to control one's own biases (for example, by taking gender-career Implicit Association Tests[3]). Institutions can set up rules that encourage actors to exert effort against unconscious stereotypes (for example, during recruitment or investment juries). More generally, entrepreneurship education programs, incubators, and media should promote a diversity of role models and greatly encourage women business owners to get on the podium. The whole society could benefit from the promotion of non-binary norms about entrepreneurship as more studies have underlined the importance of incorporating feminine attributes in venture creation. It would open entrepreneurship careers to today's self-censored girls. It would also limit the amount of unnecessary suffering due to stereotype threat or impostor syndrome, which have nothing to do with effective capabilities and only hinder wealth creation.

[3] https://implicit.harvard.edu/implicit/takeatest.html

Chapter 5 Enhancing Theorization Using Artificial Intelligence: Leveraging Large Language Models for Qualitative Analysis of Online Data

This article is now in the second Review and Resubmit at Organizational Research Methods.

Introduction

“There is a blue ocean of text available on the Internet” (Marshall et al., 2022, p. 24). Online data captures rich human interactions and covers a wide range of topics, cultures, and contexts. However, the very large size, dispersed topics, and the variable quality of online datasets make it difficult for qualitative researchers to systematically explore this rich source of information. For a few decades, scholars have been using Natural Language Processing (NLP) to help them process large amounts of data (Kobayashi et al., 2018; Marshall et al., 2022; Tonidandel et al., 2018). However, most traditional NLP algorithms work on word-level counts and semantics that do not capture the meaning of text and the nuance of human language (Chan et al., 2021), which limits their application in qualitative research. New advances in Machine Learning (ML) allow NLP algorithms to overcome these limitations, particularly Large Language Models (LLMs), which are the base for state-of-the-art NLP algorithms. As Aceves and Evans (2023) assert, “knowledge is now accessible through more available sources of textual data,” and this knowledge can now be represented through LLMs' expanding theoretical capabilities (Aceves & Evans, 2023, p. 21).

Today, LLMs are able to “understand” and replicate human languages (Zhang & Li, 2021). Algorithms based on these models help to understand complex bodies of text and generate expressive outputs such as essays, summaries, and answers to complex questions (Liu et al., 2019). These advancements expand the set of analytical tools available to qualitative researchers. LLMs are opening new avenues for qualitative researchers, as we will demonstrate and discuss in this article.

As LLMs have become available to the public only very recently, most of the current academic literature still refers to ML as a general term. ML has been promoted as an important and valuable tool for theory building (Choudhury et al., 2021; Kang et al., 2020; Leavitt et al., 2021; Obschonka & Audretsch, 2020; Pandey & Pandey, 2019; Shrestha et al., 2021). For instance, Shrestha et al. (2021) explore the use of ML to enrich theory building, and several researchers (e.g., Leavitt et al., 2021; et al., 2021) have called for an investigation into the potential of new ML algorithms to create more robust theory and advance knowledge. ML and NLP algorithms have for example already been used for applications beyond their quantitative capabilities, mobilizing

their inductive capabilities via pattern recognition (e.g., Aranda et al., 2021; Doldor et al., 2019; Leavitt et al., 2021; Shrestha et al., 2021; Williamson et al., 2022).

However, there is also some criticism about promoting the use of ML algorithms for theory building. For example, Lindebaum and Ashraf (2021) point out the positivist stance on which these algorithms have been built and their lack of subjective analytical capacity.

Even though we acknowledge this general criticism by Lindebaum and Ashraf (2021), in this paper, we wish to go one step further and empirically investigate and demonstrate how LLM-based NLP algorithms could be used by qualitative researchers without neglecting their wish to "feel" and "sense" their data when treating large data sets. We take advantage of LLMs to capture the thickness and depth of contextual meaning needed for qualitative research (Alvesson & Sköldberg, 2017; Van Burg et al., 2022) and we leverage the automation and augmentation capabilities of ML (Raisch & Krakowski, 2021) to efficiently analyze large amounts of online data. In this paper, we propose a method built on LLM-based NLP algorithms to expand a researcher's capacity to analyze large online data sets, while maintaining the richness of qualitative analysis. In particular, we wish to demonstrate how to efficiently explore large online samples, select relevant data, and automatize time-consuming tasks while preserving deep contact with the data.

In this paper, we provide an illustration of how this method can be used: Drawing on large amounts of data, we analyze how women entrepreneurs pursuing an environmental goal (ecopreneurs) conform to or reject gender stereotypes in both public and private settings. Entrepreneurs are highly active on social media platforms, utilizing them to showcase their businesses, aspirations, and values, both on an organizational and personal level. Yet, given the gendered nature of entrepreneurship (Ahl, 2004; Jennings & Brush, 2013), women might communicate differently across public domains like social media platforms compared with private communications like confidential interviews. This variance could arise from their desire to either conform to or challenge gender stereotypes, whether in public or private settings. LLMs can help researchers to understand the subtleties of the gendered communication of startups, balancing organizational and personal issues.

For the public setting, we leverage NLP algorithms, including LLM-based algorithms, to analyze 2444 social media posts by nine women entrepreneurs who adhere to environmental goals (ecopreneurs). We demonstrate how to use the algorithms to efficiently explore and select the information most relevant to our research question to constitute a smaller data set to be further analyzed inductively. For the private setting, we conducted 12 interviews with the same nine women ecopreneurs: nine in-depth interviews (one with each woman) and three additional informal interviews. As we illustrate in the results section, using algorithms to explore and select relevant data allows qualitative researchers to expand their analytical capabilities and to make use of large amounts of online data. LLMs allowed us to advance our understanding of gender stereotypes and enriched the theorization process following a qualitative approach.

This article is structured as follows. First, we introduce ML and NLP concepts and explain the intersection between these fields, as their goals and differences are often not clearly stated in the literature. Second, we introduce the literature on entrepreneurship and gender that guides our interpretation of the illustration. Third, we explain our method step-by-step using our dataset of 2444 online posts. Fourth, we briefly present the results of the illustration. Finally, we discuss our findings, where we argue that LLMs push researchers increasingly into a gray zone where qualitative and quantitative approaches start to merge and where we need more than ever to be open minded about new ways of working.

Description of ML, NLP, LLMs, and the intersection of the fields

NLP aims to provide a set of computational techniques to process written and spoken human language by applying linguistics, computer science, and mathematics (Kang et al., 2020). NLP can be divided into two overlapping subfields: Natural Language Understanding (NLU) and Natural Language Generation (NLG). The former focuses on semantic analysis and meaning of text whereas the latter focuses on automatic generation of human-like text. NLP originated in the late 1940s, after WWII, with the need for automatic translation (Jones, 1994). Since then, NLP research has focused

on algorithms for tasks such as translation, information retrieval, text summarization and generation, question answering, sentiment analysis, toxicity and spam detection, name entity recognition, topic modeling, and more (Cambria & White, 2014). Since the emergence of AI, NLP has benefited from its advancements and has evolved rapidly, fueled by new AI and ML algorithms (Kang et al., 2020).

ML is a subfield of AI. Most of the current advances in AI are done through ML, which aims to teach computers to learn from data without being explicitly programmed (Samuel, 1959). There are two main types of ML techniques: supervised and unsupervised learning (Shrestha et al., 2021). In supervised learning, the algorithm is trained on labeled data. The labeled data consists of a set of input data and corresponding correct output labels. Supervised learning aims to predict new outcomes from unseen data using a model built on training data (Choudhury et al., 2021). In unsupervised learning, the algorithm does not receive any labeled training data. Instead, the goal is to discover patterns or relationships in the data by analyzing the input data without any guidance (Teodorescu, 2017). Some machine learning tasks can be thought of as a combination of supervised and unsupervised learning.

Deep Learning (DL) is a subfield of ML. DL algorithms are designed to learn from data and make predictions in a way that is similar to how a human brain processes information (Park & Woo, 2019). A DL model is composed of multiple layers of artificial neural networks, which are inspired by the structure of the brain. The layers of the neural network are organized into an input layer, one or more hidden layers, and an output layer. The input layer receives the input data, and the output layer produces a prediction based on the processing of the input data through the hidden layers (Shrestha & Mahmood, 2019).

Figure 4 graphically shows the interconnection of these four areas. The intersection of DL algorithms and NLP has allowed the appearance of LLM algorithms able to automatically analyze human language, recognizing the contextual meaning of words and sentences, and accounting for polysemous (a word with different meanings) and homonymous (words with the same spelling but different meaning) as well.

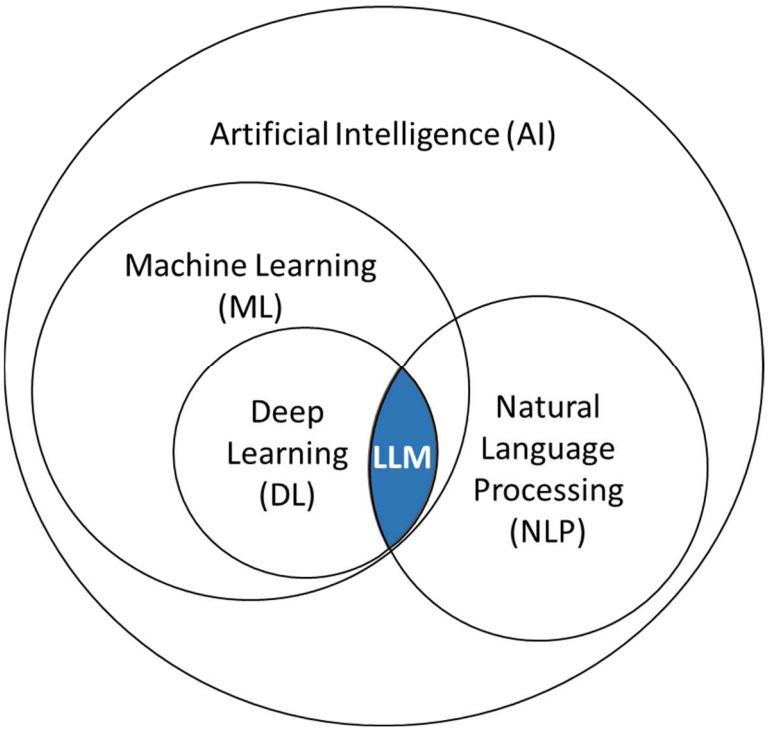

Figure 4 Visual representation of the intersection of ML, DL, and NLP

Studying gender performativity with women ecopreneurs

Studying gender in entrepreneurship

Entrepreneurship is considered to be a gendered field (Ahl, 2006; Jennings & Brush, 2013) where women are not only facing the difficulties of business creation but also the barriers created by gender norms and stereotypes (Ahl, 2006; Brush et al., 2009; Gupta et al., 2014; Marlow & McAdam, 2013). Gender norms can impact entrepreneurs in their career paths, skills, knowledge, and social capital (Fiske, 2017). Gender stereotypes encourage occupational segregation by shaping individual cognition and assumptions about appropriate behaviors and actions for one's sex (Eagly & Wood, 2012; West & Zimmerman, 1987).

Hechavarria and colleagues (2012) claim that women entrepreneurs emphasize environmental value creation and that their goals are more compatible with feminine stereotypes. Women ecopreneurs strive to create a green and more eco-friendly economy (Mieszajkina, 2016). By favoring people and nature over economic

outcomes, women ecopreneurs challenge the implicit masculine stereotype embedded in the traditional beliefs and organizational practices of economic entrepreneurship (Hechavarria et al., 2012). In doing so, women ecopreneurs conform to gender stereotypes typically attributed to women, thus diminishing negative evaluations (Eagly et al., 2000). Gender stereotypes exert a subtle but strong effect on behavior and actions (Fiske, 2017; Heilman, 2001), and it is not surprising that many women entrepreneurs prefer to pursue environmental goals.

Studying gender as a social construct

In post-structuralist feminist theories, gender is seen as something that people do, as opposed to who they are (Butler, 1990; West & Zimmerman, 1987). Gender is "performed" according to situational features in a “theatrical context” where each “act” of gender will be adapted to the audience (Butler, 1988, p. 521). These acts are guided by gender norms and stereotypes; thus, gender is regarded as a performance enacted within a “scene of constraint” (Butler, 2004, p. 1).

The study of gender as “performative” (Butler, 1990), “embedded in everyday interaction” (West & Zimmerman, 1987, p. 130) has been mostly explored using qualitative methods (e.g., Bruni et al., 2004; Branicki et al., 2023). As the amount of data analyzed must be limited to make the different nuances and subtleties visible, small data sets, particularly interviews, have often been favored. However, various acts of gender can be found in text expressions, particularly in online platforms, representing people’s gendered beliefs and stereotypes (Bucholtz, 2003; Kendall & Tannen, 2015). Studying women in different settings (whether in the public or private realm) and with different data sets (whether online communications or private interviews) would allow us to analyze in a very holistic way how gender is performed. Investigating the presence of women ecopreneurs on social media and how they express themselves on these public platforms compared to in private interviews would allow us to better grasp how they conform to or reject gender stereotypes. However, the large amount of data that needs to be analyzed would normally prevent the researcher from going down this road.

Limitations of traditional qualitative methods and opportunities offered by LLMs

Qualitative methods have focused on individuals' subjective experiences and meanings, interpreting language and contexts (Alvesson & Sköldberg, 2017). However, researchers' analytical and interpretative capacity is limited due to the amount of data they can analyze. Today, LLMs can capture the semantic meaning and context of human language, creating new opportunities for qualitative researchers. LLMs can help find relevant data in large online datasets, which prepares the ground for the interpretative analysis.

Some scholars have already gone down this road and combined NLP algorithms with other methods to conduct qualitative research. For example, Aranda et al. (2021) propose a mixed-method approach, integrating NLP algorithms in critical discourse analysis. They acknowledge the challenge that qualitative researchers face to manually process and analyze large and unstructured datasets (Aranda et al., 2021). In their model, Aranda et al. (2021) use NLP to facilitate the qualitative interpretation of data in a sequential process that guides and informs each iteration. Another example is the work conducted by Doldor et al. (2019). They use NLP to inductively analyze 1478 feedback comments to understand gender differences in leaders as a pre-selector of feedback comments, which in turn they analyze inductively to create their first, second, and aggregate codes (Doldor et al., 2019). The authors favor the use of modern techniques to complement qualitative analysis, citing the benefits of using automatic text analysis as being "time and resource efficient" (Doldor et al., 2019, p. 17). These scholars argue that the combination of NLP algorithms and the interpretivist approach to qualitative research yields significant benefits (Aranda et al., 2021; Doldor et al., 2019). Furthermore, Li et al. (2019) have compared a manual qualitative analysis with different NLP algorithms. They point out a significant gain in time spent on data analysis: twenty hours for the manual analysis versus mere minutes for the automatic one (Li et al., 2019).

As LLMs have only recently become available to the public, research using these new methods for qualitative analysis has not yet been published in management journals. We therefore investigate how the new capabilities of NLP algorithms based on LLMs, which can capture the nuance and contextual meaning of human language, can be leveraged to increase qualitative researchers' analytical scope. To exemplify our

approach, we applied our method to investigate how women ecopreneurs conform to or reject gender stereotypes in different settings (public and private) using two types of data (online communications and interviews). In the next section, we show how we used different NLP algorithms, including LLM-based algorithms, to explore a large dataset and select the data relevant to our research question.

Leveraging NLP for qualitative analysis: An illustration

Online data needs to be prepared because it is highly dispersed and tends to be of poor quality (Villalobos et al., 2022), making it difficult to analyze. Since individuals' online posting activity follows their own interests and goals, not all content matches the research question. Moreover, some content is repeated across social platforms. Therefore, a process to select relevant data is needed. We used different NLP algorithms to assist us in our analysis of 2444 posts to explore and select the posts that are relevant to our research question, "How do women ecopreneurs conform to or reject gender stereotypes?" by looking at different settings (public and private) using two types of data (online communications and interviews). We collected the publicly available entrepreneurial communications (online posts) of nine French women ecopreneurs from their LinkedIn personal and business, Facebook business, and Twitter business accounts from June 2021 to August 2022. In total, we analyzed 145,612 words in their original language (i.e. French) from the 2444 posts using NLP algorithms.

The method comprises two phases: 1) the Preparation and exploration phase and 2) the Relevant data selection phase. We used different types of algorithms for each phase. We started with the more commonly used NLP algorithms then moved on to the state-of-the-art LLM-based algorithms. Phase 1 is made up of two steps: data collection and pre-processing, and data exploration. Phase 2 consists of two steps: selection by category and targeted search. Table 4 shows a summary of all the steps and the algorithms for each step. The Python code used in each step is found in Appendix A. The final results will be presented in the "Results of the illustration" section.

Table 4 Method Summary

Step	Action	Python Library	Step description	Researcher's role
Phase 1 Preparation and exploration				
Data collection and Pre-processing	Scraping	BeautifulSoup Selenium, FacebookScraper	Collect data following terms of use and data protection requirements.	Verify website's terms of use and compliance with data protection.
	Anonymization	re (regular expressions)	Remove sensitive data such as email, names, telephone numbers, addresses, and hyperlinks.	Validate outcome.
	Normalization	re (regular expressions)	Remove stop words, punctuation, and capitalization.	
	Tokenization and lemmatization	NLTK and Spacy	Generate tokens and lemmas from text.	
Data Exploration	Online activity	Pandas	Count number of posts, likes, replies, posts per user, words per post, etc.	Perform exploratory data analysis to identify potential data issues and get initial insights.
	Word Frequency	Pandas	Compute word counts and list the most frequent words.	
	Word similarity (Joulin, et al., 2016)	GenSim	Create word embeddings (FastText) and compute the cosine similarity between words.	Select a list of words relevant to the study and analyze the co-occurring words to determine which ones are relevant for further analysis.
Phase 2 Relevant data selection				
Selection by category	Sentiment Analysis (Barbieri et al., 2022)	Transformers	Classify data as positive, negative, or neutral.	Analyze sentiment classification using top-down and bottom-up approaches. Create raw codes for further analysis.
	Topic Modeling (Grootendorst, 2022)	BERTopic	Create topics extracted from the data.	Analyze topics using top-down and bottom-up approaches. Create raw codes for further analysis.
Targeted Search	Information Retrieval using Sentence Similarity (Reimers & Gurevych, 2019)	SentenceTransformers	Create sentence embedding and retrieve relevant data using cosine similarity measure.	Iteratively retrieve targeted data using relevant phrases as queries. Phrases are based on the researcher's judgment and can be generated by the previous steps.

Phase 1 Preparation and exploration phase

Data collection and pre-processing

The purpose of this step is to retrieve the data and make it suitable for analysis. Online data is typically unstructured and contains text, images, and video. Some actions are necessary to prepare the data before analysis.

Scraping and Anonymization. We followed responsible scraping practices (Marshall et al., 2022) to comply with website terms of use and data protection requirements. Although there are free scraping services like Octoparse and Apify that can be customized, we decided to create our own scrapers for each online source using specialized Python libraries. The scraper was programmed to collect the date, time, text, hashtags, and likes of each post on the publicly available LinkedIn personal, LinkedIn business, Facebook business, and Twitter business activity pages of each ecopreneur. It was programmed to avoid collecting personal information such as names, emails, telephone numbers, addresses, and hyperlinks. As part of our ethical practice on web scraping and data protection compliance, all the data was subjected to a second verification and anonymization to erase any sensitive information before processing.

Normalization, Tokenization, and Lemmatization. The dataset needs to be normalized, tokenized, and lemmatized to improve the performance of the algorithms used for analysis (Kobayashi et al., 2018). Normalizing means removing punctuation, emojis, and common words (stop words). Tokenization means converting a string of text into individual units called tokens. Lemmatization converts a word to its base form or lemma (e.g., the infinitive of verbs). For these three tasks, we used the RE (regular expressions), NLTK, and Spacy libraries, respectively. NLTK is the most used library for NLP tasks; however, it is English-language centric. Spacy is a library that provides lemmatization for French and other languages and allows our method to be customized for many languages, which is vital given that online data is multicultural and multilingual.

Data exploration

This step aims to give researchers a general understanding of the data and extract the first insights useful for qualitative analysis.

Online activity. An online activity analysis creates a map of the user's online activity. When analyzing social media data, it is important to understand users' activity. We start by counting the number of posts, words, and words per post for each ecopreneur. This allows us to identify the more active ecopreneurs and on which platform. We analyzed our four datasets – LinkedIn personal, LinkedIn business, Facebook business, and Twitter business – separately for two reasons: 1) Each platform is different. For instance, tweets are very short (only 280 characters), while LinkedIn posts can be very long (more than 2,000 characters) conveying complex messages. 2) The ecopreneurs are not active on all the platforms. Aggregating all the datasets would give more weight to the active ones across the three platforms, blurring the results. Table 5 shows the online activity by ecopreneur and by dataset, as well as the pseudonym assigned to each woman ecopreneur. We observed that online activity is very variable. Some of them are very active, creating long posts, while others are mostly occasional users. Table 5 shows that Sara and Olivia only use LinkedIn personal, while Jane and Lucy are the most active across platforms.

Table 5 Online activity for each woman ecopreneur by dataset.

Pseudo	Lk pers. words total	Lk pers. total posts	Lk pers. words per post	Lk biz words total	Lk biz total posts	Lk biz words per post	Fb biz words total	Fb biz posts total	Fb biz words per post	Tw biz words total	Tw biz posts total	Tw biz words per post
Sara	85	2	43									
Emily	461	5	92	146	2	73	9915	131	76			
Nancy	10595	78	136	841	15	56	11386	90	127			
Carmen	227	3	76	514	7	73	1742	35	50			
Hope	77	3	26	2208	31	71	3263	33	99			
Julia	2077	20	104	1247	25	50	1522	95	16			
Olivia	798	5	160									
Jane	3736	34	110	19794	280	71	5141	75	69	14137	500	28
Lucy	1926	15	128	20195	169	119	18470	156	118	15109	635	23
Totals	19982	165		44945	529		51439	615		29246	1135	

The first column shows the pseudonym of each ecopreneur. Lk pers. = LinkedIn personal posts;
Lk biz = LinkedIn business posts; Fb biz = Facebook business posts; Tw biz = Twitter business posts.

Word frequency. Word frequency distribution is used to check the relevance of the datasets to a research question. It provides a first exploration of post content to justify the use of the dataset. It retrieves the list of most used words by all ecopreneurs, per ecopreneur, and per dataset. In our case, we observed that the list of most frequently used words in LinkedIn personal posts confirms the values of this group of individuals as environmentally committed entrepreneurs. The most frequent words on LinkedIn personal are *training* (114), *change* (94), *power* (91), *ecology* (67), *transition* (64), *impact* (63), and *want* (60). Moreover, the word frequency count is dominated by the most active ecopreneurs. Analyzing them individually shows which ecopreneur influences the total count and provides a first glimpse of the topics addressed in their online communication. Word frequency count is complemented by "word similarity" analysis to get a more explicit view of the content in each dataset to check its relevance to the research question. The complete list of word frequency per dataset is found in Appendix A.

Word similarity. Word similarity analysis uses FastText (Joulin et al., 2016) from the GenSim library to convert each word into a vector representation (embedding). Once a vector is created for each word, the similarity between any two words is determined by calculating the cosine similarity[4] between the corresponding vectors. Word similarity is used to find the group of words that are closely related to the most frequent words from the previous step. In our case, the word *training* was disregarded because it is mainly used by only one ecopreneur, Nancy. For each of the remaining words, the algorithm identified the list of words with the highest co-occurrence in the text. Word similarity confirmed that the word *change* closely relates to *behavior* and *engagement*. This means that in their posts they talk about change, behavior, and engagement as related to each other. One important limitation of word similarity is that it only measures the strength of word co-occurrence without considering the meaning of sentences and the nuances of human language. This is why we need more advanced NLP algorithms, i.e. LLM-based algorithms, to take these nuances into account.

[4] Cosine similarity measures the similarity between two vectors by calculating the angle between them. It helps determine whether the vectors are pointing in a similar direction (Han et al., 2012).

Phase 2 Relevant data selection

Thanks to LLM-based algorithms, which take semantic context into account when finding sentiments, topics, and ideas, relevant data can be selected efficiently. These new algorithms help us to select with confidence the most relevant data that the researcher will later interpret.

We used the Bidirectional Encoder Representations from Transformers (BERT) model from Google (Devlin et al., 2019) to extract meaningful insights from the data at the sentence level. BERT has been proven to capture the semantic meaning of words, to find similarities at the sentence level, and to be context-sensitive (Devlin et al., 2019). BERT allows us to process data in its original form without the need for normalization, tokenization, or lemmatization. Thus, we can examine any variant in a word family as well as symbols and punctuation.

We used BERT-based algorithms for three NLP tasks: Sentiment Analysis, Topic Modeling, and Information Retrieval. Sentiment Analysis determines the sentiment, or affect, expressed in the text, whereas Topic Modeling discovers the underlying themes or topics in a collection of texts. Sentiment Analysis and Topic Modeling have been widely used in management research (Kang et al., 2020; Pandey & Pandey, 2019; Shankar & Parsana, 2022; Yeomans, 2021), while Information Retrieval has received less attention. Information Retrieval aims to search a collection of documents, which can be in the millions, and find a set that is the most relevant to a query. This technique is the foundational block of search and recommendation systems, like an Internet search engine. Sentiment Analysis helps us to look at the data from an emotional perspective to check whether women ecopreneurs have emotional content in their communications. Topic Modeling helps us to characterize the posts and check if gender is among the implicit topics in the data. Lastly, Information Retrieval helps us select posts that correspond to the researcher's own first intuitions and to interview quotes[5].

Selection by category

Sentiment Analysis. Understanding the sentiments embedded in a text is an important dimension in social media communications, especially for women entrepreneurs; it

[5] For the relevant data selection, we used our nine in-depth interviews and three informal interviews for data retrieval. The interviews were analyzed without any algorithm assistance.

has been stated that women may use more affective expressions than men (Eagly et al., 2020). As not all online data is produced in English, we use a multilingual Sentiment Analysis algorithm XLM-T to take multilingual variants into account (Barbieri et al., 2022). The algorithm classifies the sentiments in each post as positive, negative, or neutral. Since the classification is probabilistic, the algorithm assigns a value between 0 and 1 as a sentiment probability score reflecting the confidence in the assigned classification. We sorted the posts by author, dataset, sentiment, and score. First, we calculated the percentages of posts classified as positive, negative, or neutral by entrepreneur and by dataset. Table 6 shows the results for each entrepreneur. In our case, we observe that most ecopreneurs communicate using positive expressions across the three platforms, as shown in Table 6. On LinkedIn personal most of the posts are positive (78.8%), while on LinkedIn business and Twitter business the trend was toward more neutral posts, 37.1% and 37.7%, respectively. This could mean that the women ecopreneurs try to remain neutral in their business communications while allowing themselves more affective expressions in their personal accounts. Second, we moved to a detailed view for significant posts. We started by retrieving the first 20 posts with a score higher than 0.5 in each category and by dataset. We noted that the algorithm assigned above 0.95 probability scores to the positive posts and below 0.3 to the negative ones. This means not only that these women ecopreneurs express many sentiments in their posts, but also that their most emotionally expressive posts are positive. For instance, we repeatedly found expressions like “I am very happy” or “I am very grateful.” As most posts are positive and have a high probability score, we retrieved the first 40 posts with the highest positive score per dataset to read in detail. In total, the algorithm retrieved 320 posts[6].

Using the algorithms, we were able to identify 320 posts out of 2444 that carry the most affective expressions. Of these 320, we selected 26 posts that we judged relevant to our research question. We created a Word document with these 26 posts, which constituted our first selection of posts to be used for inductive analysis.

[6] We retrieved 160 positive posts from LinkedIn personal, LinkedIn business, Facebook business, and Twitter business (40*4). Then the higher 80 negative scored posts from the same four datasets (20*4) and 80 neutral (20*4).

Table 6 Aggregate Sentiment Analysis percentage for each entrepreneur by dataset.

Alias	LinkedIn personal			LinkedIn business			Facebook business			Twitter business		
	% Neg	% Ntr	% Pos	% Neg	% Ntr	% Pos	% Neg	% Ntr	% Pos	% Neg	% Ntr	% Pos
Totals	13.3	7.9	78.8	4.9	37.1	58.0	9.1	29.4	61.5	3.2	37.7	59
Carmen	0.0	0.0	100.0	0.0	28.6	71.4	28.6	25.7	45.7			
Emily	0.0	20.0	80.0	0.0	0.0	100.0	6.9	22.1	71.0			
Hope	0.0	0.0	100.0	19.4	16.1	64.5	18.2	24.2	57.6			
Jane	8.8	5.9	85.3	4.3	41.4	54.3	4.0	40.0	56.0	3.8	38.0	58.2
Julia	0.0	0.0	100.0	8.0	32.0	60.0	6.3	51.6	42.1			
Lucy	6.7	33.3	60.0	3.6	37.9	58.6	3.8	31.4	64.7	2.6	37.5	59.8
Nancy	20.5	6.4	73.1	0.0	6.7	93.3	17.8	7.8	74.4			
Olivia	40.0	0.0	60.0									
Sara	0.0	0.0	100.0									

%Neg = negative percentage; % Ntr = neutral percentage; %Pos = positive percentage

Topic Modeling. We use Topic Modeling to explore the topics in the data and select the most relevant ones for our research question. Unlike Sentiment Analysis, in which posts are classified using fixed categories (positive, negative, and neutral), in Topic Modeling posts are classified into categories extracted from the data. We used BERTopic (Grootendorst, 2022) as it has been proven to excel among Topic Modeling algorithms (Davis et al., 2022; Egger & Yu, 2022). We extracted ten topics from the LinkedIn, Facebook, and Twitter business datasets and five from LinkedIn personal because the number of posts for this dataset was very small (only 165 posts). Once we identified a set of topics, each post was assigned the topic it belonged to and a score reflecting confidence in the assignment. Due to the nature of our data, BERTopic generated topics that reflect each ecopreneur's business products, services, and ideas. These topics suggest that this group of women ecopreneurs use social media primarily to promote their businesses rather than their environmental values. The aggregate list of topics for each dataset and the number of posts assigned to each topic per ecopreneur are found in Appendix A. We then moved to a detailed view of each post and entrepreneur. For this, we selected topics that represented more than one entrepreneur. We verified the relevance of the topic allocations and looked for content related to gender in those posts. In total, the algorithm retrieved 40[7] posts, of

[7] Two topics per dataset times five posts (2*4*5).

which only two appeared to speak about gender. This means that gender is not a topic per se in this data. This group of women ecopreneurs does not explicitly talk about gender in their online communications.

Even though only a few posts were selected in this step, Topic Modeling allows a better understanding of the data. It also reassures us as we proceed to disregard a significant number of posts as unrelated to our research question. Sentiment Analysis and Topic Modeling facilitate an inductive approach to the data, whether from a global view of the datasets or a detailed view of each post. The algorithms offer an “entry point” to analyze the data from a sentiment (affect) and topic (theme) perspective and to zoom in on a particular piece of information deemed relevant to the researcher.

Targeted search

The Sentence Similarity algorithm for Information Retrieval is used in a more abductive approach to test propositions based on the researcher’s intuition regarding the research question.

Information Retrieval. In this step, the algorithm is used as a search tool to find information deemed relevant for the researcher. Our Information Retrieval algorithm is based on the SentenceTransformers library (Reimers & Gurevych, 2019), and its aim is to find similarities at the sentence level. For this illustration, we used the CamemBERT model of the SentenceTransformers library, which is pre-trained in French (Martin et al., 2020). As in word similarity, the similarity between any two sentences, paragraphs, or documents is quantified as the cosine similarity between the corresponding embeddings. This algorithm allows researchers to retrieve the set of sentences, paragraphs, or documents most relevant to a search phrase (query) by finding the items with the highest cosine similarity with respect to the query.

The researcher can follow different approaches to create queries at different moments in the analytical process. For this illustration, we created queries based on the literature review and after the first analysis of interviews. The list of queries is shown in Table 7. First, a query is fed into the algorithm which then retrieves any posts that are similar to the query. When the algorithm receives a query, it will generate a list of the most similar data to that query. Like Sentiment Analysis and Topic Modeling, Information Retrieval also gives a probabilistic result, assigning a similarity score from 0 to 1.

Table 7 List of queries.

	Query (Translated from French)
1	The environment as a value of my company
2	Women are more sensitive and risk averse than men
3	Women create small and less ambitious businesses
4	I didn't necessarily defend myself against people who sometimes weren't very nice in the professional world
5	I don't want to be helped because I'm a woman. I have the impression that it leads me to a situation of weakness, to say, I am a poor woman, I need help
6	The woman's role is the protective mother, it is logical and therefore you want to minimize the risk
7	The mission remained economic centric, and I didn't feel good in this model, but what precipitated the change was that I had a baby
8	It's very classic entrepreneurship, classic business. My idea is not to make millions
9	I didn't feel legitimate at all. I felt that I was suffering from the famous imposter syndrome much more than male entrepreneurs
10	Regaining a little confidence in myself and telling myself that I am as capable as a man of accomplishing and creating
11	Share with them the love of their profession and discover their working methods
12	But your success also makes it your responsibility to participate in changing the system, in depth. Being a player in the circular economy means having an environmental impact, but also a social one
13	Bringing feminism and the environment together
14	Giving, sharing, and caring for others as a value
15	Nurturing nature and emotions

During our inductive analysis of the interviews, we found that the women ecopreneurs talked about their feelings of being an imposter, even without any question or reference to imposter syndrome from the interviewer. We expected that women ecopreneurs would have fewer legitimacy issues if they follow gendered expectations of women as being nurturing or caring for the environment. Yet, our interviews revealed that this is not so. This prompted us to include a query related to imposter syndrome to find out if they talked about it on social media. Nancy is the only one who talks openly online about imposter syndrome: *“I didn't feel legitimate at all. I felt as though I was suffering from the famous imposter syndrome much more than male entrepreneurs”*. The algorithm retrieved the following post from LinkedIn personal with a 0.34 similarity score:

> *Women entrepreneurs are 3 times more likely to lack self-confidence than our male counterparts! 🤦 No wonder we see them less on the cover of magazines on entrepreneurship (which you will find in the men's department). These are the kind of numbers that make you think... and make you want to get moving 🔥 This is also why I got involved and why I contribute to Ecofeminist Entrepreneurship Week*.

Lucy, who offers support to women in developing their businesses, also refers to the doubts and uneasiness of women in relation to entrepreneurship. The following post, with 0.35 similarity, was retrieved from the LinkedIn business dataset:

> *You want to get started but you don't dare? 🧚 Wondering if your project is an impact project, do you have the skills to qualify as an 'entrepreneur'?*

For each query, we retrieved the first 10 posts with the highest similarity score for each dataset. In total, the algorithm retrieved 600[8] posts, and we selected 75 to be further analyzed inductively.

Table 8 shows a summary of the selection made by each algorithm and the manual selection of relevant posts made by the researchers. Ultimately, we selected 103 posts to be further analyzed inductively along with our transcribed interviews. The results of this analysis are presented in the Results of the Illustration section.

Table 8 Summary of posts selection.

Total number of posts	Selection by algorithm		Relevant post selection by the researcher according to research question	
	Action	Number of posts	Number of posts	Percentage of total posts
2444	Sentiment Analysis	320	26	8%
	Topic Modeling	40	2	5%
	Information Retrieval	600	75	12.5%

Validation by manual analysis

We assessed the validity and usefulness of our method by first conducting a manual qualitative analysis of a sample of 600 posts and comparing the results to the output provided by the algorithms. The number of posts was deliberately limited to make the manual analysis possible. During our manual analysis, the posts were collected and selected without using any scraping or NLP algorithm. This means that we visited

[8] 10 posts per dataset (10*4) times 15 queries.

every account, read every post, and saved them in a Word document. In creating our sample for manual analysis, we did not consider tweets, as only two ecopreneurs from our sample use Twitter. We further reduced the number of posts to be analyzed manually by collecting only six months of posts instead of twelve for Jane and Lucy so as to analyze an equal number of posts per ecopreneur. This produced our final sample of 600 posts.

Collecting the posts manually gave us a general idea of each ecopreneur's online activity in a less accurate way. This was our first attempt to make sense of our online data and understand how the ecopreneurs use social media. In our manual analysis, counting posts proved to be inefficient as we saved all the posts in Word documents, including pictures and replies. We uploaded the 600 posts in an NVivo file to be inductively analyzed. This also proved to be time-consuming as most posts were unrelated to our research question. For instance, we read about product launches, recruitment announcements, and other events. Although it was interesting to learn about the life of their business, it took great effort to select the relevant posts from a vast number of irrelevant ones. Finally, we selected 35 posts that reflect gender stereotypes, all of which were later found using the algorithms, proving that the algorithms give accurate results.

Results of the Illustration

Our results include the analysis of all our data, comprising 103 posts selected using our method and 12 confidential interviews. We conducted nine in-depth interviews and three informal interviews to contextualize our online data. The interviews were analyzed without any algorithm assistance. We transcribed the interviews, which comprised 52,127 words. All our data was processed and analyzed in the original language, French, then translated into English for presentation purposes. We followed the Gioia method (Gioia et al., 2013) to analyze all our data (selected posts and interviews).

The algorithm-based selection process of relevant data made it more efficient to analyze the online communications of women ecopreneurs. From our analysis of the

most relevant posts, we concluded that most of them make gender-neutral statements online (public setting). However, our analysis of the interviews showed that the women entrepreneurs expressed gender beliefs openly during interviews (private setting). Therefore, it is clear that online analysis is a critical element that needs to be integrated to understand gender performativity. Combining the data from the two settings reveals that women ecopreneurs perform gender according to situational settings.

In both settings, we found expressions that sometimes conform to and sometimes reject gender stereotypes. Figure 5 shows our data structure and the source data by ecopreneur (interview and online), which support each first order code.

Rejecting gender beliefs. Our data reveals that some women ecopreneurs perform gender in a subversive way in certain situations, going against established gender beliefs, challenging gender stereotypes during interviews and online. They engage in risk-taking behavior, prioritizing their business over caring for or nurturing others. Their online communications focus on business promotion and business life, avoiding any gendered discourse.

Reaffirming femininity. Our online data and interviews revealed that other women ecopreneurs perform feminine traits as core values for their businesses. They talk about caring and giving as the main components of their business and life, expressed in both settings. They prioritize emotional contact with customers and online audiences. Their online communications reaffirm femininity and connect mainly with a feminine audience.

Conforming to gender beliefs. Our data revealed that most participants conform to gender stereotypes and beliefs in both settings. They reaffirm ideas of women feeling like imposters, being less ambitious and assertive, and prioritizing caring and nurturing for others. These beliefs are predominantly expressed during interviews.

Enacting gender equality. Women ecopreneurs also expressed the desire for change. In our data we found expressions of women's desires to move beyond and change rigid gender stereotypes. They talk about equality and women's ability to be assertive, risk-taking, and performance-driven.

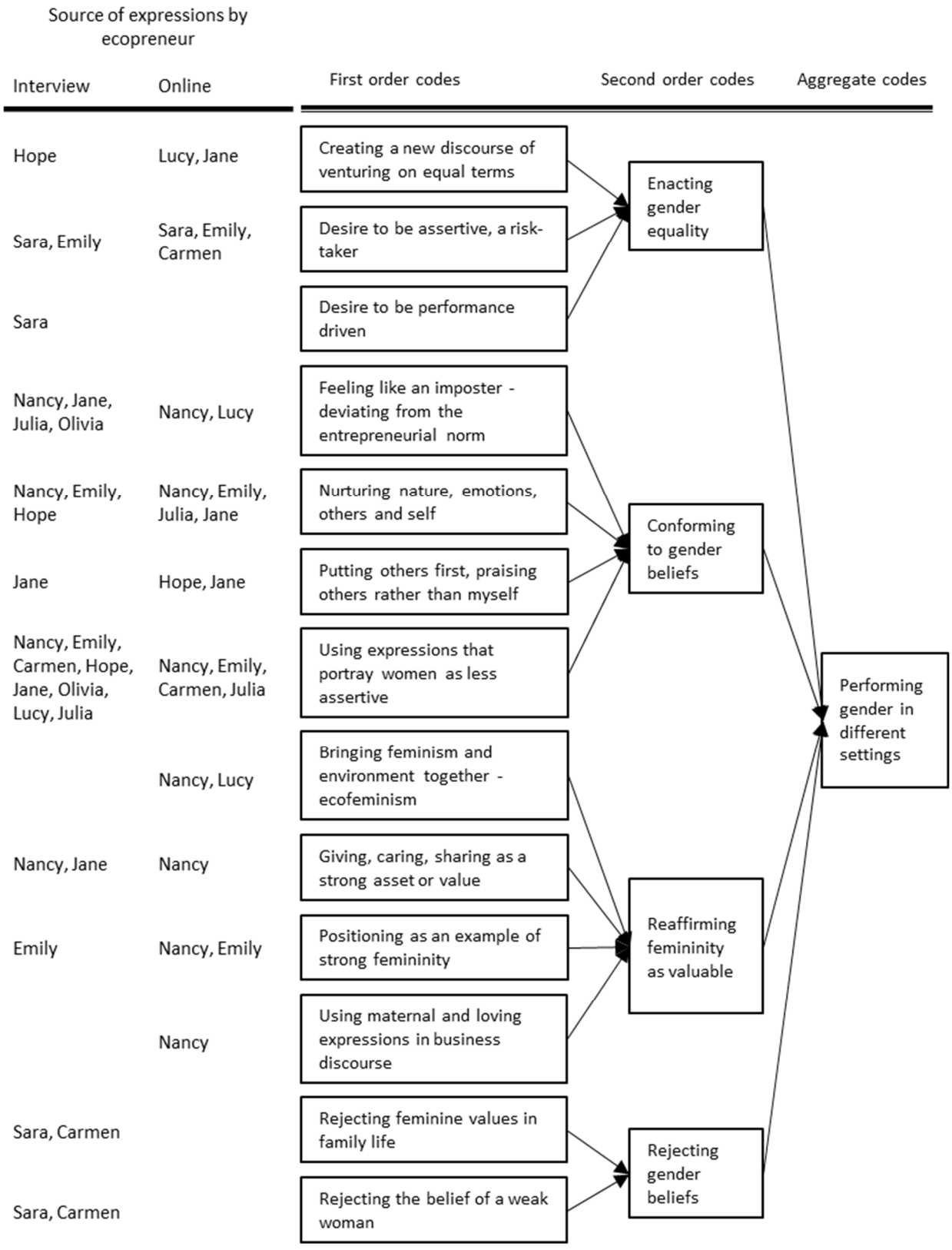

Figure 5 Data structure and data source by ecopreneur.

By looking at the source of the data (first two columns of Figure 5), the ecopreneur, and the setting, we were able to recognize those who mostly conform to and reinforce gender stereotypes and those who reject them. We propose that women ecopreneurs perform gender in four categories: performing dissonance, performing femininity, performing masculinity, and performing androgyny. We found that most of the ecopreneurs have contradictory discourses, which may vary depending on the setting. We call this group "performing dissonance". In the interviews, they mostly conform to gender beliefs and struggle with the effects of gender stereotypes. However, their online communications are sometimes contradictory, varying between conforming, rejecting, or trying to stay gender neutral. At one extreme, are those who perform femininity or masculinity equally in both settings. In the second category, we find those who perform masculinity; they engage in risk-taking behavior, they perceive the environment as a market opportunity, they focus on business growth and avoid caring and nurturing expressions in interviews and online. In our sample, only Sara clearly belongs to this category. The third category – those who perform femininity – is the opposite of the latter. They prioritize caring for nature, customers, business partners, and family. Business growth is not their main goal, and they prefer a small but steady business. In our sample, only Nancy clearly belongs to this category. In the last category, performing androgyny, we find those that are able to balance gender expectations and are less impacted by gender stereotypes, showing less dissonance between their private and public discourse. We recognize Hope as part of this category. Figure 6 shows the four categories in a graphic representation.

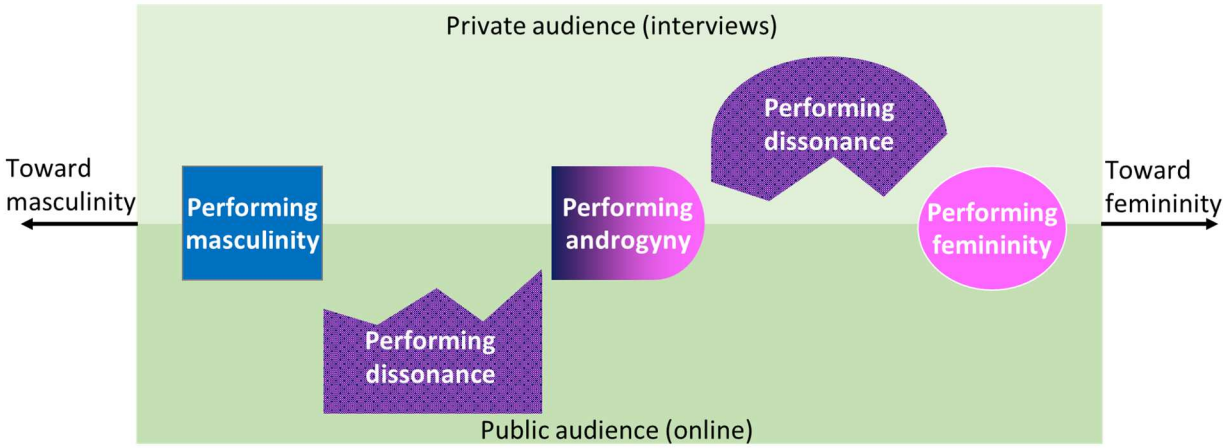

Figure 6 Graphic representation of categories.

Looking at both data sources together (public and private) sheds light on how gender is produced, sometimes reinforcing and sometimes rejecting gender stereotypes, showing that a single individual can have contradictory positions while performing gender.

Discussion

Using different types of data allows us to look at gender performativity in different settings, leading to new insights on how gender is performed. We believe that our method makes it possible to integrate these two settings, increasing our knowledge on how gender is produced and reproduced. Our method could also be used to expand our understanding of other constructs by allowing a combination of large and variable types of datasets while maintaining a qualitative approach to data analysis. We argue that the use of NLP algorithms, including LLM-based, enhances the theorization process, allowing us to derive new insights from sentiments, topics and phrases, and refine our analysis by efficiently finding the data that support it.

At present, NLP algorithms based on LLMs are still rarely used in management research. Moreover, the use of advanced NLP algorithms using ML is harshly criticized by some. For example, Lindebaum and Ashraf (2021) criticize what they call the over optimism of methods relying on ML algorithms, arguing that this leads to ontological neglect and a one-sided vision of theory building. They warn that over emphasizing the prediction capabilities of ML carries a risk of marginalizing the purpose of social science: understanding and explaining social phenomena. Moreover, they point to the positivist paradigm underpinning the algorithms, which restricts the way researchers construct knowledge (Lindebaum & Ashraf, 2021). However, others (e.g., Kang et al., 2020; Leavitt et al., 2021; Obschonka & Audretsch, 2020; Pandey & Pandey, 2019; Shrestha et al., 2021; Teodorescu, 2017) argue that ML algorithms could be used for inductive purposes, using pattern discovery as a basis for theory building.

This dichotomy between researchers who caution us against “methodological monism” in using ML algorithms (Lindebaum & Ashraf, 2021, p. 4) and others (Leavitt et al., 2021; Shrestha et al. 2021) who assert that ML and NLP algorithms can expand

researchers' analytical capabilities and promote them as important methodological tools to advance research, is what spurred us to explore the possibility of uniting these opposing views. As asserted by Tonidandel et al. (2018, p. 534), “the rise of big data has been accompanied by a new epistemological approach that seeks to develop knowledge.” Indeed, scholars have previously suggested that a clear distinction between paradigms no longer holds, as there is no single good way to approach knowledge (Cunliffe, 2011). We believe that new advancements in LLM-based algorithms offer an opportunity for qualitative researchers. The combination of these seemingly opposing approaches can bring significant benefits to qualitative research while preserving its subjectivity. We take advantage of LLMs to capture the thickness and depth of contextual meaning needed for qualitative research (Alvesson & Sköldberg, 2017; Van Burg et al., 2022) and leverage the automation and augmentation capabilities of ML (Raisch & Krakowski, 2021) to analyze a large amount of online data efficiently. However, the work of interpretation is always left to the researcher, regardless of how we approach the data. This method can provide some guidance, but the analysis and interpretation can only be done thanks to the creative and intellectual skills of the researcher.

Therefore, the purpose of this method is to assist in effective data exploration and selection to facilitate the theorization process. By looking at the data from different entry points (sentiments, topics, and phrases), the researcher can find the most relevant information for inductive analysis and interpretation. In particular, Information Retrieval has proven to be an effective search tool for targeted constructs and ideas. It allows an iterative process where the researcher feeds queries into the algorithm, the algorithm retrieves any matching data, from which the researcher selects the most relevant results, and then inductively analyzes and interprets the data to create further queries. Information Retrieval can be fed with as many queries as the researcher deems necessary and used at different moments during the analysis. The iterative process that qualitative analysis relies on – moving between data, emerging theory, and prior literature (Grodal et al., 2021; Neergaard & Ulhøi, 2007) is thus maintained. Our method preserves the “depth and breadth” of qualitative analysis (Alvesson & Sköldberg, 2017, p. 278). We propose to use LLM-based algorithms in an iterative process in which the information retrieved by the algorithms in one step is used to generate codes and queries for the next step. Figure 7 shows the interaction between

the researcher and the machine and how this interaction preserves the subjectivist approach to theorization.

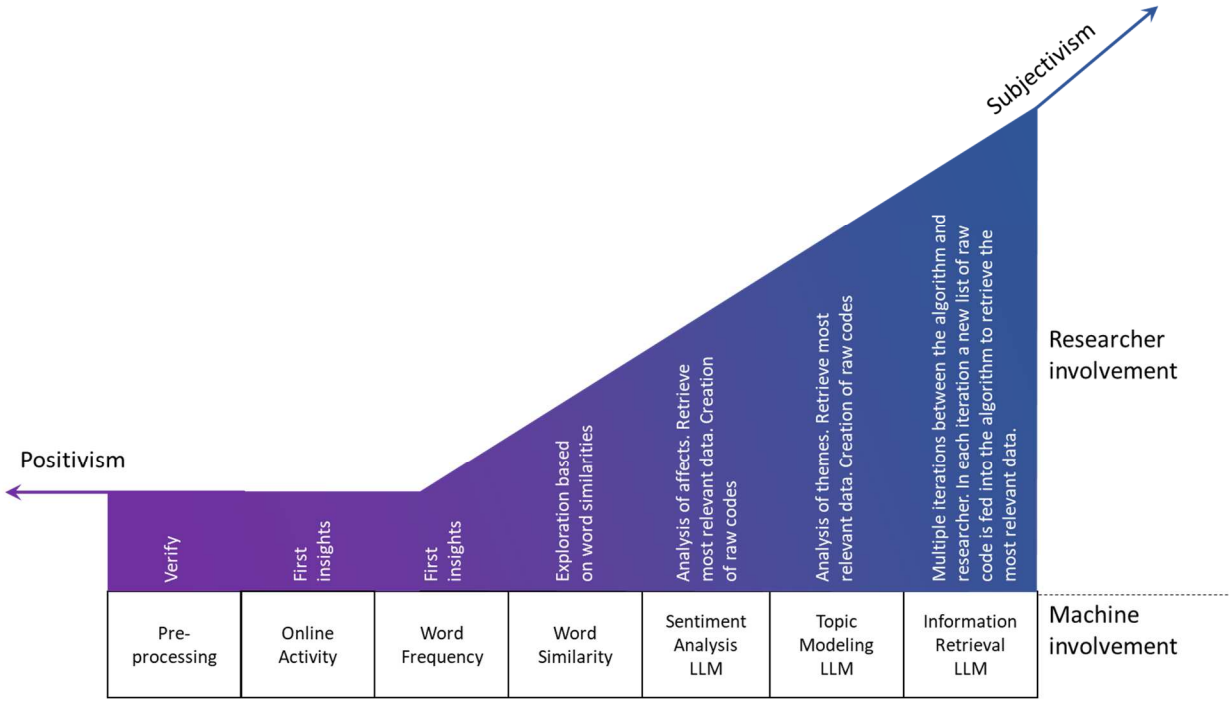

Figure 7 NLP for qualitative research supporting theorization.

Advantages and disadvantages

The main advantage of incorporating NLP algorithms into the process is efficiency. Our manual analysis was laborious and required time-consuming tasks of little interpretative value, such as collecting and counting social media posts. Since social media data is highly dispersed, we spent a significant amount of time reading posts unrelated to our research questions, leading to fatigue and confusion. We avoid all these problems by applying our method and efficiently using our time and resources.

Our method also enhances the researcher's analytical capabilities. Because the method works as an exploratory and search tool, it facilitates and accelerates data exploration and selection, making it possible to analyze large amounts of data. It increases the precision of data analysis as well. Tasks such as counting posts, finding relations, classifications, and finding patterns can be done with high accuracy in seconds. For instance, during our manual analysis, we struggled to label the ecopreneurs' online activity without an accurate count of posts or patterns in the data.

The algorithms can diminish bias and provide new perspectives for data analysis. While manual analysis is guided by the researcher's question and literature review, Topic Modeling discovers implicit patterns within the data, potentially offering fresh insights for exploration and analysis. Sentiment Analysis and Information Retrieval add an extra layer of confidence, providing probabilistic scores that can corroborate inductive findings, thus diminishing bias.

Our method also has some disadvantages. Although it analyzes the data from different entry points (e.g., word counts, sentiments, topics, specific phrases) to maximize coverage, it cannot guarantee that all relevant information is taken into account in the analysis. It also requires some Python knowledge to use it, including uploading data and importing the necessary libraries. At this stage, the code is not adapted for no-code users. The algorithms will also have to be updated as LLM-based algorithms are improving rapidly. ML applied to NLP (e.g., Generative AI) has gained traction in many fields and these types of algorithms are expected to continue to evolve.

This paper aims to provide management scholars with a method to enhance their analytical capabilities in conducting qualitative research when analyzing large amounts of online data. The novelty of our method is to leverage the advantages of LLM-based algorithms as potent exploratory and targeted search tools, while preserving the inductive approach to theorization.

We acknowledge that ML and NLP algorithms are not meant to serve explanatory purposes but as tools to increase the researcher’s scope. As scholars have pointed out, ML algorithms fail to provide explanations for the patterns found (Leavitt et al., 2021; Lindebaum & Ashraf, 2021; Shrestha et al., 2021) since they are based on probabilistic methods to find co-occurrence and not intended for explanatory purposes. In accordance with Lindebaum and Ashraf (2021), we do not claim that our method provides any understanding of the data. Theorization remains an activity that depends on the creative and analytical skills of researchers (Shrestha et al., 2021).

Our method provides important advantages for qualitative research and makes significant contributions. It helps researchers to efficiently explore and analyze online data, enhances their analytical capabilities, enabling them to derive new insights from implicit patterns, and ensures precision in counting and classification. We enlarge the qualitative research methodological toolbox needed to take advantage of the “blue

ocean of text available on the Internet" (Marshall et al., 2022, p. 24). Moreover, we bridge epistemological paradigms by leveraging LLMs' ability to learn the inherent structure of language and take its contextual meaning and nuance into account.

For future research, constantly keeping abreast of the advancements in ML and NLP is necessary as these fields are advancing so rapidly. The integration of multimodal ML models (Morency & Baltrušaitis, 2017) to analyze language, images, and video simultaneously could be explored. However, ethical issues should be considered when incorporating these technologies.

Conclusion

Online data is constantly growing, providing a wide range of opportunities to explore social phenomena. However, it can be of variable quality and difficult to process and analyze due to its heterogeneity. Scholars have highlighted the ability of ML and NLP algorithms to advance knowledge (Kang et al., 2020; Leavitt et al., 2021; Shrestha et al., 2021) and to take advantage of online data (Marshall et al., 2022). At the same time, they have highlighted the importance of the plurality of methods and approaches and have cautioned against "methodological monism" that may inhibit rich theorization (Lindebaum & Ashraf, 2021, p. 4). Our method reconciles these contrasting views by combining three NLP tasks: Sentiment Analysis, Topic Modeling, and Information Retrieval using LLMs. We illustrate our method by analyzing 2444 social media posts by women ecopreneurs. Using an iterative process for data exploration and targeted search of relevant constructs and ideas, we expand the methodological toolbox for qualitative researchers to analyze large amounts of online data efficiently.

Chapter 6 Green Femininities: Studying Gender Performativity on Women Ecopreneurs

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Introduction

The current environmental crisis has imposed significant challenges, and environmental entrepreneurship has emerged as a crucial driver of economic and societal change (Fernhaber & Zou, 2022; Johnson & Schaltegger, 2020; Shepherd & Patzelt, 2011). In addition, research has shown that women entrepreneurs have a greater propensity to establish environmentally oriented ventures than their male counterparts (Hechavarria, 2016). However, previous studies highlight the impact of strong social expectations on women's involvement in entrepreneurship (Gupta & Turban, 2012; Javadian et al., 2021; Yang et al., 2020; Zhao & Yang, 2021). Researchers argue that entrepreneurship is a gendered field describing entrepreneurs as risk-takers, assertive, and competitive (Ahl, 2004; Jennings & Brush, 2013), attributes traditionally associated with masculinity (Tagg & Wilson, 2012; Zhao & Yang, 2021). As a result, women entrepreneurs deviate from their ascribed attributes of nurturing and communality, risking penalization (Eagly & Karau, 2002; Heilman, 2001).

Prior research has advanced our understanding of the impact of gender norms and stereotypes (e.g., Balachandra et al., 2019; Gupta et al., 2009; Gupta & Bhawe, 2007; Gupta & Turban, 2012) by looking at gender from a binary perspective. However, this approach fails to recognize the ability of women entrepreneurs of doing and redoing gender while navigating contradictory gendered expectations (García & Welter, 2013). Additionally, a recent study has found that women entrepreneurs' gender performances can either reinforce or challenge gender norms and stereotypes over time (Branicki et al., 2023), signaling the need to move away from studying gender as a binary concept or a fixed attribute.

Challenging fixed attributes of gender is particularly interesting to investigate in the case of Environmental entrepreneurs or ecopreneurs. Ecopreneurs possess a dual objective: to make a significant ecological impact (Kirkwood & Walton, 2010) and improve market share and growth (Ljungkvist & Andersén, 2021). The juxtaposition of green values and entrepreneurial drive creates a hybrid identity that often leads to a potential conflict between environmental conservation and the pursuit of maximizing profits (York et al., 2016). Hechavarria et al. (2012) propose that gender norms and stereotypes play a vital role in shaping this conflicting identity dynamic. Women ecopreneurs embed this "gender gymnastics" (Byrne et al., 2021, p. 2), balancing their

environmental commitments aligning to their gender attributes (Hechavarria, 2016; Hechavarria et al., 2012) and the entrepreneurial norm of growth and profit (Garcia-Quevedo, 2022). Understanding how women ecopreneurs handle the myriad of conflicting societal expectations is crucial to encourage more environmentally oriented ventures to tackle environmental challenges.

In this study, we investigated the various gender performances that women ecopreneurs enact while managing a dual mission of profit creation and environmental protection. We turned to Butler's performativity theory (Butler, 1988, 1990) to analyze gender from a fluidity perspective, acknowledging that gender is multifaceted and complex. This allows us to go beyond merely perceiving gender as a dichotomy set of traits. Capturing this fluidity means making sense of the subtlety of gender performances, which sometimes conform to societal gender norms and stereotypes and, in other situations, reject them. Our study aims to answer the following research questions: How do women ecopreneurs perform gender in different settings? Do they conform to or reject gender norms and stereotypes?

We gathered data from two distinct settings: private and public. The private data comprised twenty-five qualitative interviews, while the public data comprised 5,314 online posts from LinkedIn, Facebook, and Twitter by the same women ecopreneurs. We utilized the latest advancements in Natural Language Processing (NLP) algorithms based on Large Language Models (LLMs) to effectively analyze such a vast online dataset while remaining close to the data. Consequently, we employed a unique methodological approach based on LLMs algorithms to purposely select the relevant online data while keeping the thickness and depth (Van Burg et al., 2022) of a qualitative approach.

Our results show that women ecopreneurs enact gender performances that blend femininity and masculinity, which we call "green femininities." We found four types of "green femininities" according to the dominance of the trait and the alignment or misalignment of their gender performances in private and public settings: femininity, masculinity, androgyny, and dissonance. These performances are situational and context-dependent. We delve into the multifaceted nature of gender performances, positing that there are distinct inter-subject variations and that not all women can be homogenized.

In the following sections, we present the literature on gender in entrepreneurship and ecopreneurship, followed by an explanation of Butler's performativity theory. Then, we explain our methods and our findings. Finally, we discuss the implications of our study.

Gender norms and stereotypes in entrepreneurship

The concept of gender as a social construct promotes the idea that women and men have different life experiences, career paths, cognitive styles, skills, knowledge, and social capital (Eagly et al., 2000; Fiske, 2017; Ridgeway & Correll, 2004). People's beliefs about gender are formed based on their observations of the roles performed by women and men (Eagly & Karau, 2002; Lindsey, 2013). These beliefs give rise to gender stereotypes, which describe and prescribe behavior (Heilman, 2001). Gender stereotypes depict men as assertive, ambitious, and willing to take risks, while women are seen as nurturing, compassionate, and focused on community (Eagly & Wood, 2012; Zhao & Yang, 2021). Those who conform to traditional gender beliefs and stereotypes are often favored and rewarded, while those who deviate from these norms are penalized (Heilman, 2001). Consequently, certain occupations are perceived as more suitable for either women or men (Eagly & Wood, 2012).

Societal perceptions portray entrepreneurship as a concept strongly associated with stereotypical male traits, with the terms "entrepreneur" and "entrepreneurship" carrying strong masculine connotations (Ahl, 2006; Gupta et al., 2009, 2019; Gupta & Turban, 2012; Jennings & Brush, 2013; Lewis, 2006). Therefore, entrepreneurs are usually seen through a masculine lens (Balachandra et al., 2019; Hamilton, 2013; Lockyer et al., 2018; Swail & Marlow, 2018). Consequently, entrepreneurship is a profession perceived as more suitable for men. Since entrepreneurship is regarded as a masculine endeavor, women who decide to create a venture are penalized for deviating from these gender norms and stereotypes. As these gender stereotypes become internalized, they influence the choices and performance of women entrepreneurs (Ladge et al., 2019; Lopes et al., 2023; Ridgeway & Correll, 2004; Zhao & Yang, 2021) as they juggle between contradictory gendered expectations.

Hechavarria et al. (2012) propose that due to gender norms and stereotypes, women entrepreneurs are less likely to share goals and motivations commonly associated with mainstream entrepreneurs, notably the creation of economic value. They based this argument on the traditional view of mainstream entrepreneurship as an individualistic pursuit focused on maximizing profits. They argue that women entrepreneurs consistently emphasize non-monetary motivations for their entrepreneurial endeavors, aligning with their attributed nurturing and community-focused traits (Hechavarria et al., 2012). In another study based on the Global Entrepreneurship Monitor data, Hechavarria (2016) found that women entrepreneurs are more likely than men to create an environmentally committed venture. She argues that beliefs associated with environmental entrepreneurship are closely related to the gender beliefs and stereotypes ascribed to women. That is, the word "ecology" is derived from the Greek word for "house," suggesting a connection between women and the management of the Earth (Hechavarria, 2016, p. 142).

Furthermore, Dimitriadis et al. (2017) argue that women entrepreneurs are less likely to use commercial activity in their mission-oriented ventures. According to their study, this behavior is shaped by cultural gender beliefs associated with women (Dimitriadis et al., 2017). Similar studies argue that gender-cultural beliefs influence the commercialization of mission-oriented ventures (Grimes et al., 2018; Hechavarría et al., 2017; Uzuegbunam et al., 2021). Other studies have found that women entrepreneurs are rewarded in a crowdfunding setting when aligning with the stereotypic traits associated with women (Anglin et al., 2021; Yang et al., 2020). Thus, women are more likely than men to emphasize social and environmental goals and exhibit a greater pro-social entrepreneurial intention (Lopes et al., 2023).

Women entrepreneurs continually grapple with the pressure to conform to conflicting expectations. They must portray an authentic entrepreneur adhering to masculine traits while embodying feminine traits such as nurturing, caring, and community orientation to avoid penalization. As proposed by Hechavarria (2016), environmental entrepreneurship could be the answer to balance these contradictory gendered expectations.

The hybrid goal of environmental entrepreneurship

Environmental entrepreneurship, also known as ecopreneurship, has been closely related to sustainable entrepreneurship (Cohen & Winn, 2007; Crecente et al., 2021; George & Jones, 2000; Johnson & Schaltegger, 2020; Ljungkvist & Andersén, 2021). By combining entrepreneurship, environmental, and welfare economics theories, Dean and McMullen (2007) propose a definition of sustainable and environmental entrepreneurship, placing the latter as a subfield of the former. They defined environmental entrepreneurship as "the process of discovering, evaluating, and exploiting economic opportunities that are present in environmentally relevant market failures" (Dean & McMullen, 2007, p. 58). Ljungkvist and Andersen (2021) argue that ecopreneurship's primary focus is not solely on sustainability but also on goals such as increasing market share and growth. This distinguishes the concept from sustainable entrepreneurship, which includes nonprofit organizations, communities, social issues, and environmental concerns (Thompson et al., 2011). Scholars have yet to reach a consensus on defining environmental entrepreneurship (Mansouri & Momtaz, 2022; Santini, 2017); thus, for this paper, we refer to ecopreneurship simply as a business venture centered around creating environmental and economic value (Schaltegger & Wagner, 2011). Therefore, we study ecopreneurship as characterized by its commitment to ecological causes and its focus on founders looking to make an environmental impact in addition to a profit (Kirkwood & Walton, 2010; Santini, 2017).

According to Kirkwood and Walton (2010), an ecopreneur is an individual who starts a for-profit business adhering to strong green values. Unlike traditional commercial entrepreneurs, ecopreneurs are associated with creating environmentally responsible communities and are guided by pre-existing green values and a moral dimension (Schaper, 2010; Walley et al., 2010). From this viewpoint, ecopreneur challenges the conventional notion that monetary or economic value is the only measure of success, highlighting the importance of considering the quality of life and the environment in society's definition of a good standard of living (Kirkwood & Walton, 2010; Riandita et al., 2022).

York et al. (2016) argue that ecopreneurs hold hybrid identities embedded with potential conflict logic of profit maximization and environmental care. They argue that ecopreneurs can be categorized into three groups according to the strength of their

motivation of economic efficiency and profit, and environmental protection: "Commercial Dominant," "Ecological Dominant," and "Blended" (York et al., 2016, p. 709). Although York et al. (2016) contend that each ecopreneur deals with a hybrid identity coupled with potential conflicts of contradictory goals, this argument is rooted in the strength of their environmental commitment, disregarding any connection with gender norms and stereotypes.

As explained previously, women ecopreneurs deal with conflicting gendered expectations; thus, we could infer that women ecopreneurs enact hybrid gender identities. One that responds to the masculine traits expected from an entrepreneur of being profit-oriented, and another that responds to the feminine traits expected from their womanhood of being a protector of the environment.

In their study about gender stereotypes in entrepreneurship, Gupta et al. (2019) demonstrated that high-growth entrepreneurs, focusing on profit maximization and growth, are highly associated with masculine traits, while low-growth entrepreneurs are associated with feminine ones. However, social and environmental entrepreneurs are a mix of assertiveness and independence -masculine traits - and cooperation and community - feminine traits. Thus, they suggest that social and environmental entrepreneurs appear more balanced in adhering to ascribed gender attributes (Gupta et al., 2019). Moreover, recent studies argue that the modern perception of an entrepreneur encompasses more androgynous traits, such as passion, a willingness to learn, and creativity (Hmieleski & Sheppard, 2019; Mattner & Sundermeier, 2023). This may indicate an evolution in the social construction of gender stereotypes in entrepreneurship. Furthermore, it is also argued that the advantages or disadvantages an entrepreneur experiences from aligning or not with established gender norms largely depend on the specific expectations and characteristics of the situation (Anglin et al., 2021). These studies suggest that gender expectations depend on the context (type of venture) and are evolving. Thus, it is crucial to understand how gender is shaped by contexts and situations and move beyond the idea of fixed traits and attributes. We turn to gender performativity theory to investigate the blend of femininities and masculinities (Byrne et al., 2021; Lewis, 2014) performed by women ecopreneurs, acknowledging the fluidity of gender.

Gender performativity to study women ecopreneurs

Research has expanded upon Judith Butler's (1988, 1990, 2004) concept of gender performativity, which can be described as the process of how an individual's ideas about gender are shaped by regulatory concepts within a heterosexual system (Kelan, 2010). According to Butler, gender is a sequence of acts that are both "intentional and performative" (1988: 522), which play a significant role in shaping the individual. West and Zimmerman (1987) argue that gender is something that "one does" rather than a set of traits, a variable, or a role (West & Zimmerman, 1987, p. 129). Butler further argues that "gender is not a fact" (Butler, 1988, p. 522). Butler posits that the concept of gender is constructed through various acts; without these acts, gender would cease to exist (Butler, 1990).

Furthermore, Butler contends that the gender binary, namely masculinity/femininity, is perpetuated by the incessant repetition of individual and societal actions that create the illusion of gender's existence. The act of performing gender suggests that gender is constructed through pervasive social interactions, but it can also be deconstructed and undone (Butler, 2004).

Prior research (e.g., Eagly & Karau, 2002; Heilman, 2001; West & Zimmerman, 1987) has highlighted the punitive nature of gender. Butler echoes these findings, asserting that "gender is a performance with clearly punitive consequences," and those who "fail to do their gender right are regularly punished" (Butler, 1988, p. 522). However, Butler (2004) underscores the fluidity of gender, emphasizing its potential for transformation (Butler, 2004). The performative nature of gender suggests that the performance itself can change, providing a new avenue for examining gender performances as either conforming to or rejecting gender norms and stereotypes.

Researchers have advanced our knowledge of a variety of femininities (Schippers, 2007) and proposed different forms (Lewis, 2014). Particularly, Lewis (2014) proposed that women entrepreneurs “inhabit both masculine and feminine realms, juggling the “doing” of both masculinity and femininity” (Lewis, 2014, p. 1852). She proposes four entrepreneurial femininities as a set of performances available to women entrepreneurs: individualized, maternal, relational, and excessive femininity (Lewis, 2014). Those who enact individualized femininity have internalized the gender neutrality and meritocracy of entrepreneurship, while the three others conform to the

expected traits of femininity. Moreover, in their study of CEO succession in family businesses, Byrne et al. (2021) argue that women enact not only Lewis's proposed femininities but also entrepreneurial, authoritarian, and paternalistic masculinity (Byrne et al., 2021, p. 9).

Entrepreneurship scholars have called to recognize gender as a nuanced concept and various forms of masculinity and femininity beyond a static view (Ahl & Marlow, 2012; Henry et al., 2016; Lewis, 2014; Marlow, 2020; Smith, 2021, 2022). To analyze the fluidity of gender, it is necessary to examine gender in multiple situations to appreciate the different gendered practices enacted in different situations. Martin (2003) defined gendered practices as “a class of activities that are available—culturally, socially, narratively, discursively, physically, and so forth—for people to enact in an encounter or situation in accord with (or in violation of) the gender institution” (Martin, 2003, p. 354).

Moving beyond mere gender attributes, gender can be analyzed as a continually produced and reproduced construct adapted toward the "social audience" it is performed to (Butler, 1988, p. 520). Studies that have adopted this approach highlight that gender performativity is not only relational but also culturally and historically situated (Branicki et al., 2023; Bruni et al., 2004; Bruni & Perrotta, 2014; Byrne et al., 2021; García & Welter, 2013). This means that gendered practices and expressions are culturally, historically, discursively, and physically accessible for individuals to utilize in specific contexts (Martin, 2003; Pecis, 2016).

Nentwich and Kelan (2014) propose different avenues of research to conceptualize and operationalize Doing Gender. They argue that Doing Gender can be studied as context-specific, signaling the flexibility component of the concept (Nentwich & Kelan, 2014). Moreover, they highlight the gradually relevant and subverted nature of gender performances. This entails exploring gender when it is performed in less relevant or challenging ways (Nentwich & Kelan, 2014). From this perspective, we can examine women ecopreneurs' gender performances existing within a specific situational background, dissociating them from labels, traits, or attributes.

By analyzing gender as a context-situated performance, we can gain insights into how women ecopreneurs who embrace the masculinities of a for-profit business and the femininities of an environmental mission conform to or reject gender beliefs and

stereotypes through their gendered practices. This perspective could help understand the barriers and advantages of ecopreneurs operating within ecological boundaries and responsibilities, conforming to or rejecting the prevailing entrepreneurial norm of profit maximization and growth. Moreover, examining ecopreneurship through the lens of gender performances can illuminate the transformative potential of gender performativity.

Research Design and Methods

Analyzing gender through the lens of gender performativity theoretical framework presents certain methodological challenges. Operationalizing gender context-specific performances requires capturing a variety of gendered practices (Martin, 2003) that collectively constitute gender, which involves documenting multiple instances where gender is performed. As Butler suggests, gender is not a static concept; individuals adjust their performances based on their audience. Therefore, studying gender performativity necessitates the exploration of various scenes (Butler, 1990) or settings to encapsulate the range of performances tailored to different audiences. To effectively capture the fluid and subtle nature of gender, we employed diverse data collection settings to highlight its fluidity and a qualitative approach to underscore its subtlety.

Sample

To study how women ecopreneurs perform gender while managing their dual mission of profit and environmental value creation, we used theoretical sampling (Charmaz & Thornberg, 2021; Glaser & Strauss, 2006) to identify women entrepreneurs who created a for-profit venture with a strong environmental mission. We visited impactful entrepreneurial fairs and used the authors' personal networks to recruit our first participants. Subsequently, we utilized a snowball sampling technique, requesting our participants to recommend other women ecopreneurs. We retained those who fit our theoretical sample criteria. This approach resulted in our final sample of 20 French

women ecopreneurs. The demographic information of our sample and a description of their ventures, obtained from their respective websites, are presented in Table 9.

Table 9 Demographics and website descriptions

Alias	Age	Married	Children	Co-founder	Business descriptions from websites
Brittany	42	No	Yes	No	Take action to limit children's exposure to toxic substances present in their environment and reduce the impact of our activities on the environment to prepare a healthier environment for tomorrow.
Carmen	40	Yes	Yes	No	[Business Name] saves these (new!) papers from their sad fate to make beautiful and well-made stationery. Carefully chosen, they are assembled and decorated with unique designs on the cover. All by hand, in limited series, always in Île-de-France.
Charley	31	Yes	No	No	No website [Sustainable coffee capsules]
Elvira	32	Yes	Yes	Yes	Trade smarter. Do better for more responsible material sourcing. Let's wake up your dormant stocks! The first service for revaluing dormant fabric stocks.
Emily	27	No	No	No	Website only for online orders [Sustainable sauces and condiments in jars]
Hope	30	No	No	Yes	[Business Name] Towards food resilience. To be part of a more sustainable dynamic, French agriculture today needs to renew itself and secure its food supply. It is urgent to maintain strong and qualitative agriculture locally.
Jacinta	49	Yes	Yes	Yes	[Business Name] recycles and regenerates agricultural plastics in France! A unique solution worldwide for recycling bale nets from agriculture without water. We are committed to an innovative and eco-responsible approach.
Jane	37	Yes	Yes	Yes	SOLUTIONS FOR THE PLANET ARE EMERGING. Our mission is to find and accelerate them. We create inspiring events, accelerate positive impact, and influence actions, changing norms, companies, and individuals.
Jenny	66	No	Yes	No	Harnessing the power of emotions to reach sustainability. [Business Name] guides innovative leaders and their teams into extraordinary performance, higher profit, and net positive impact.
Julia	37	Yes	Yes	Yes	[Business name] is the family that dresses the kids at low prices, with a focus on second-hand clothes. A way to make room for some, to shop at a smart price for others. And to do good for the Planet.
Kelly	41	Yes	Yes	No	No website [Children's books to create environmental awareness]
Lucy	32	No	No	No	[Business Name] supports women entrepreneurs to change the world. Our actions aim to strengthen the freedom and capacity of women to undertake business. We support women in their entrepreneurial adventure and engage an entire ecosystem, their communities, and our partners to create a more inclusive world.
Mary	37	Yes	Yes	Yes	Zero Waste Concept Store. [Business Name] is, first and foremost, a zero-waste online shop offering an exclusive selection of Vegan, zero-waste, eco-responsible, and plastic-free brands, as well as a multitude of tips on how to make a smooth transition to a greener and less polluting life.
Nancy	34	Yes	Yes	No	I AM [name], A FACILITATOR OF ECOLOGICAL CHANGE. I help you increase your impact and catalyze behavioral changes. I went through that too.
Natalie	33	No	No	Yes	Taste our tempeh. Plant proteins. Natural and local. Good for the planet and for you. A responsible approach.
Olivia	31	No	No	Yes	No website [Sustainable hotel and coffee shop]

Samantha	28	No	No	Yes	Making possible volunteering actions in corporations. Accelerate your social and environmental impact by offering your employees solidarity actions with local associations.
Sara	35	Yes	Yes	No	For us, fashion is fun. We believe we can have fun without wasting by recycling and investing in vintage fashion pieces whose value will increase in the coming years. We also think a piece has no meaning if we don't plan what to do with it. It comes to life as soon as it finds its function, usefulness, and place to twist a look, highlighting a personality.
Sophia	49	Yes	Yes	No	[Business name] TRAINING SUPPORT FACILITATION. Are you in transition and looking for balance in your activities? Do you want to embody your values and put meaning into your professional projects? Are you looking for content and tools that put people at the center? Do you want to dream and explore to make your projects a reality? Do you want more joy in life and harmony in your relationships? You are in the right place!
Victoria	51	Yes	Yes	No	Support & Research. Support the systemic development processes of organizations for a regenerative activity of living things.

Data collection

We gathered data from interviews and social media posts, creating two distinct settings to investigate gender context-specific performances (Nentwich & Kelan, 2014). The interviews, conducted by the first author, a woman, represented our private setting. Here, we analyzed gendered practices and expressions within the context of a private, one-on-one female conversation. These interviews were informal and personal, with the researcher fostering an atmosphere of trust and openness (Alvesson, 2003). On the other hand, social media posts represented our public setting, reaching a broad and potentially global audience. Recognized as a vital tool for brand awareness, promotion, and customer relationship building (Secundo et al., 2020), social media serves as an important platform for entrepreneurs' communications. Given that gendered practices permeate all social interactions, including virtual ones (Bamman et al., 2014), the audience on social media embodies our public setting. Though interviews provided rich and vivid narratives of participants recalling past and present events, they were conducted within a secure and personal space. This necessitated incorporating a second setting - online posts, where the individuals present themselves to a broader audience, compelling them to adapt their gender performances to the context.

For the private setting, we conducted 20 in-depth interviews, supplemented by 5 informal interviews. Each interview covered eight topics (entrepreneurial journey, motivation, environmental commitment, difficulties, objectives, work-life balance,

support system, and their gender perception of being a women ecopreneur) adapting the questions according to the life experience of each participant. These interviews were instrumental in gaining insights into the perspectives and experiences of our participants. The interviews were conducted face-to-face and online to accommodate each participant's preference. The interviews lasted between 30 to 90 minutes. They were conducted in the participants' native language, French, and were recorded and transcribed.

For the public setting, we collected the publicly available entrepreneurial communications (online posts) of the same 20 women ecopreneurs from their LinkedIn Personal and Business, Facebook Business, and Twitter[9] Business accounts from June 2021 to August 2023. In total, we collected 5,314 posts from the three social media platforms. Each participant was assigned an alias for anonymity purposes.

Data analysis

Given the distinct nature of our data, we had to adapt our data analysis to suit the characteristics of each. Interviews are designed explicitly by the researcher to address the research question at hand. Conversely, social media posts are generated following individuals' unique agendas. Table 10 summarizes our data analysis process.

Table 10 Summary of the data analysis process.

Online data selection for relevant posts (following Chapter 5 methodology)	**Qualitative inductive and abductive analysis**
Phase 1: Preparation and exploration	Step 1: Inductive analysis of interviews and selected posts
Phase 2: Relevant data selection: Sentiment Analysis, Topic Modeling, and Information Retrieval	Step 2: Abductive analysis – interpreting data
	Step 3: Interpreting data structure by ecopreneur and setting

[9] The online data collection was done before Twitter changed its name to X and increased the number of characters per tweet.

Online data selection for relevant posts

Therefore, online data must be prepared because it is highly dispersed and tends to be of poor quality (Villalobos et al., 2022), making it difficult to analyze. Since individuals' online posting activity follows their own interests and goals, not all content matches the research question. Moreover, some content is repeated across social platforms. Thus, a process to explore and select relevant online data is needed. We followed the methodology explained in Chapter 5 to assist us in analyzing 5,314 posts to explore and select the posts relevant to our research questions: How do women ecopreneurs perform gender in different settings (public and private)? Do they conform to or reject gender norms and stereotypes?

Phase 1: Preparation and exploration. This phase made the data suitable for analysis and provided a general understanding of the data, extracting the first insights. Table 11 presents the online activity per ecopreneur and dataset. We observed that their online activity is variable. Only five participants, Hope, Jacinta, Jane, Kelly, and Lucy, are active on the three platforms. The number of posts and the length (number of words) are also variable, with Kelly being the most active on LinkedIn Personal with 266 posts (24,089 words), Jane with 280 posts (19,798 words) on LinkedIn Business, and Lucy with 156 posts (18,470 words) and 635 tweets (15,109 words) in Facebook and Twitter respectively. Then, we looked at the word frequency per dataset and ecopreneur. We found that the words project, female, and ecology are related to their double mission, confirming their ecopreneurial posture.

Phase 2: Relevant data selection. In this phase, we leveraged LLM-based algorithms, which take semantic context into account when finding sentiments, topics, and ideas. We started by looking at sentiment categorization as gender stereotypes depict women as being more emotionally expressive than men. We then moved to find the implicit topics within the data to identify the themes addressed in their posts. Lastly, we used our knowledge from the literature and first insights to find posts that carry gender expressions. The algorithms helped us confidently select the posts expressing gender beliefs to create a smaller dataset suitable for inductive analysis.

Table 11 Online activity per ecopreneur and dataset.

Alias	Lk perso words	Lk perso posts	Lk perso words per post	Lk Biz words	Lk biz posts	Lk biz words per post	FB biz words	FB biz posts	FB biz words per post	Tw biz words	Tw biz posts	Tw biz words per post
Brittany	4140	59	70	737	5	147	4921	100	49			
Carmen	1123	15	75	514	7	73	1742	35	50			
Charley	922	11	84	941	7	134						
Elvira	8231	110	75	3338	26	128	19717	120	164			
Emily	1039	12	87	146	2	73	9915	131	76			
Hope	798	32	25	2208	31	71	3263	33	99	263	13	20
Jacinta	14465	205	71	907	18	50	1836	60	31	442	32	14
Jane	6482	68	95	19794	280	71	5141	75	69	14137	500	28
Jenny	4323	70	62									
Julia	6236	87	72	1247	25	50	1522	95	16			
Kelly	24089	266	91				10680	99	108	8935	604	15
Lucy	5382	64	84	21238	176	121	18470	156	118	15109	635	24
Mary	2300	23	100				10850	119	91			
Nancy	16703	134	125	841	15	56	11386	90	127			
Natalie	458	14	33	743	11	68	1214	20	61			
Olivia	3449	60	57									
Samantha	6341	82	77	12765	126	101	6692	65	103			
Sara	1288	34	38									
Sophia	6587	88	75				8006	115	70			
Victoria	6917	54	128									
TOTAL	121,273	**1,488**		65,419	**729**		115,355	**1,313**		38,886	**1,784**	

We started our deep exploration of our online data with Sentiment Analysis using an aggregated view of the online data. Table 12 shows the percentage of posts assigned as positive, negative, and neutral sentiments by dataset and ecopreneur. We noticed that across all platforms, most posts are positive, notably on LinkedIn Personal. We then started our detailed view by retrieving the post by sentiment classification. The posts assigned with a neutral sentiment were disregarded as they referred to job opportunities, event gatherings, product sales, or links to another site or event. We noticed that the algorithms assigned high positive scores (above 0.95); hence, we retrieved the first 40 posts per dataset, stopping at scores above 0.80. The negative scores dropped quickly below 0.8, and fewer posts were assigned as negative; thus, we retrieved the first 15 posts per dataset. We retrieved 220 posts and manually selected 61 that we judged expressed gender beliefs.

Topic modeling analysis confirmed their environmental engagement, as this is a recurrent topic in all datasets. We moved into a detailed view by finding topics per

ecopreneur and dataset. We found gender-related topics in LinkedIn personal from Sara, Samantha, Jacinta, Jane, and Lucy; LinkedIn business from Jane and Samantha; Facebook business from Lucy; and Twitter business from Jane and Lucy. The topics selected for retrieval were Feminism, Women's rights, Gender equality, and Women empowerment. We retrieved 149 posts from these topics and selected 42 for further analysis. The complete list of topics per ecopreneur and datasets is in Appendix B.

Table 12 Aggregated Sentiment Analysis.

	LinkedIn Personal			LinkedIn Business			Facebook Business			Twitter Business		
Name	% Neg	% Neutral	% Positive	% Neg	% Neutral	% Positive	% Neg	% Neutral	% Positive	% Neg	% Neutral	% Positive
Brittany	20.3	35.6	44.1	20.0	40.0	40.0	44.0	24.0	32.0			
Carmen	26.7	6.7	66.7	0.0	28.6	71.4	28.6	25.7	45.7			
Charlotte				0.0	14.3	85.7						
Charlyn	0.0	0.0	100.0									
Elvira	10.0	9.1	80.9	7.7	19.2	73.1	6.7	45.0	48.3			
Emily	0.0	8.3	91.7	0.0	0.0	100.0	6.9	22.1	71.0			
Hope	18.8	9.4	71.9	19.4	16.1	64.5	18.2	24.2	57.6	7.7	7.7	84.6
Jacinta	13.7	30.2	56.1	0.0	33.3	66.7	0.0	26.7	73.3	0.0	31.3	68.8
Jane	4.4	5.9	89.7	4.3	41.4	54.3	4.0	40.0	56.0	3.8	38.0	58.2
Jenny	14.3	34.3	51.4									
Julia	3.4	3.4	93.1	8.0	32.0	60.0	6.3	51.6	42.1			
Kelly	14.3	23.7	62.0				14.1	30.3	55.6	5.5	40.6	54.0
Lucy	1.6	17.2	81.3	3.4	36.9	59.7	3.8	31.4	64.7	2.7	37.5	59.8
Marie							10.9	13.4	75.6			
Mary	26.1	21.7	52.2									
Nancy	20.1	8.2	71.6	0.0	6.7	93.3	17.8	7.8	74.4			
Natalie	7.1	7.1	85.7									
Nathalie				0.0	9.1	90.9	0.0	10.0	90.0			
Olivia	5.0	10.0	85.0									
Samantha	14.6	8.5	76.8	5.6	13.5	81.0	6.2	20.0	73.8			
Sara	20.6	26.5	52.9									
Sophia	3.4	5.7	90.9				5.2	8.7	86.1			
Victoria	18.5	18.5	63.0									

The last step of the Relevant data selection phase is Target Search based on the Sentence Similarity algorithm for Information Retrieval. For this final step, we created phrases using our knowledge from the literature and in Vivo quotes from the interviews. These phrases were chosen as they express gender beliefs or women entrepreneurs' supposed shortcomings (Ahl, 2006; Balachandra et al., 2019; Lockyer et al., 2018). For each phrase (query), we retrieved the first 15 posts with the higher

similarity score per dataset. We continued this process of using phrases and retrieving posts until we stopped finding new posts. At this point, we knew that we had found the most relevant posts for our research questions. The lists of phrases (queries) used are presented in Table 13. Using the ten queries, we retrieved 600 posts and selected 162 posts to be further analyzed.

Lastly, we created Word documents with the selected posts from Sentiment Analysis, Topic Modeling, and Information Retrieval. In total, we selected 265 posts to be analyzed inductively by the researcher following the Gioia qualitative analysis method (Gioia et al., 2013).

Table 13 List of queries.

	Query (Translated from French)
1	The environment as a value of my company.
2	Women are more sensitive and risk-averse than men.
3	Women create small and less ambitious businesses.
4	I don't want to be helped because I'm a woman. I have the impression that it leads me to a situation of weakness, to say, I am a poor woman, I need help.
5	The woman's role is the protective mother, it is logical and therefore, you want to minimize the risk.
6	It's very classic entrepreneurship, classic business. My idea is not to make millions.
7	I didn't feel legitimate at all. I felt that I was suffering from the famous imposter syndrome much more than male entrepreneurs.
8	Regaining a little confidence in myself and telling myself that I am as capable as a man of accomplishing and creating
9	Share with them the love of their profession and discover their working methods.
10	But your success also makes it your responsibility to participate in changing the system, in depth. Being a player in the circular economy means having an environmental impact but also a social one.

Qualitative inductive and abductive analysis combining private and public data

To analyze the fluidity of gender, it is necessary to examine gender in multiple situations, in our case, in two different settings: private (interviews) and public (online posts). This way, we could appreciate gendered practices adapted to each setting, capturing gender fluidity. Therefore, we looked at how women enact gender beliefs manifested in acts or expressions through their discourse in interviews and their online communications.

Step 1: Inductive analysis of interviews and selected posts. We started by uploading in an NVivo file all our documents, which comprised 20 transcribed interviews, personal notes and observations from our informal interviews, insights from the two

previous phases (Preparation and exploration and Relevant data selection), and 265 selected posts. At this moment, we started the inductive analysis of all our data. We created our first-order codes following our first insights guided by the Gioia method (Gioia et al., 2013). During the creation of first-order codes, we separated the expressions by their origin: interview and online. This created a large number of first-order codes but allowed us to find similarities in their private and public discourses. We then associated the first-order codes with similar ideas from each setting. In this way, we could integrate both settings and refine our analysis, reducing the number of first-order codes and keeping track of their origin.

Step 2: Abductive analysis – interpreting data. We then moved to an abductive process of refining our first-order codes, enabling us to integrate existing theories into our data analysis and theory development. This process took several iterations as we moved from a detailed view of each gendered practice to a broader picture of the ecopreneur as an individual embedded in a context (setting) and moved by personal goals, interests, and gendered expectations. As we progressed in the data analysis process, we noticed some common themes, such as the expressions that subvert gender stereotypes, forming the aggregate dimension of 'Rejecting gender beliefs.' We also revisited theory and recognized their dual motivation as ecopreneurs having an "environmental dominant," "blended," or "commercial dominant" motivation (York et al., 2016, p. 709) creating the second-order codes of 'Protection,' 'Balance,' and 'Opportunity.' We reached theoretical saturation when no new theoretical insights emerged from the data. The data structure is found in Figure 8.

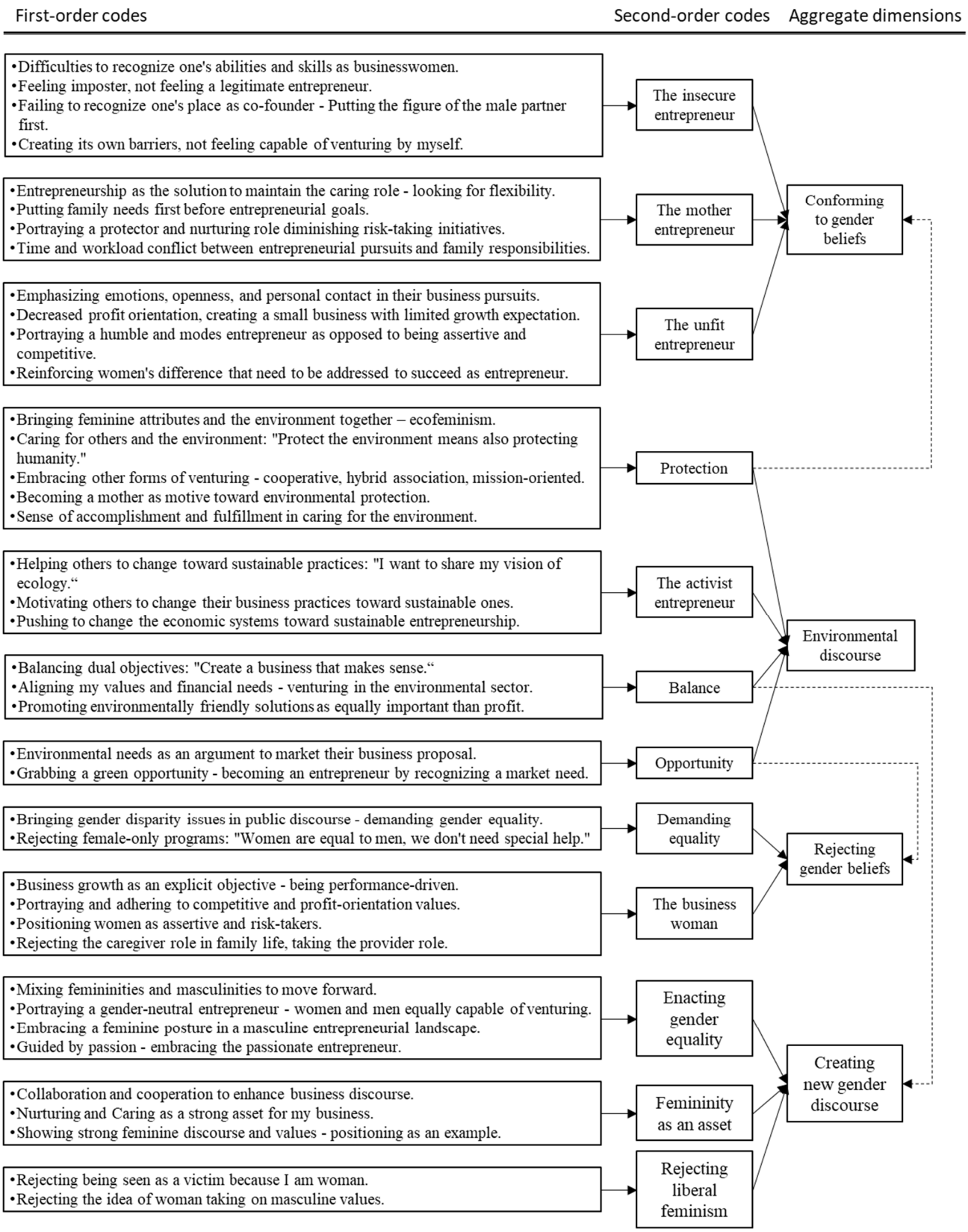

Figure 8 Data Structure - Gender performances in entrepreneurial life

Step 3 – Interpreting data structure by entrepreneur and setting. To do this, we looked at the source of each verbatim that originated the first-order code. For each verbatim, we tracked the author (ecopreneur) and the source (interviews or online posts). This way, we could find the different performances enacted by women ecopreneurs according to the setting (context-specific). Table 14 summarizes the ecopreneurs and sources that originated each first-order code.

Table 14 Summary of gendered acts per ecopreneur and setting.

			Brittany		Carmen		Charley		Elvira		Emily		Hope		Jacinta		Jane		Jenny		Julia		Kelly		Lucy		Mary		Nancy		Natalie		Olivia		amantha		Sara		Sophia		Victoria	
			Priv	Pub	Priv	Pub	Priv	Pub	Priv	Pub	Priv	Pub	Priv	Pub	Priv	Pub	Priv	Pub	Priv	Pub	Priv	Pub	Priv	Pub	Priv	Pub	Priv	Pub	Priv	Pub	Priv	Pub	Priv	Pub	Priv	Pub	Priv	Pub	Priv	Pub
Conforming to gender beliefs	The insecure entrepreneur	Difficulties to recognize one's abilities and skills as business women	X						X		X	X											X		X	X				X							X		X	
		Feeling imposter, not feeling a legitimate entrepreneur					X										X				X	X			X				X	X		X						X		
		Failing to recognize one's place as co-founder - Putting the figure of the male partner first						X					X				X	X																				X		
		Creating its own barriers, not feeling capable of venturing by myself	X				X		X	X	X										X				X				X								X			
	The mother entrepreneur	Entrepreneurship as the solution to maintain the caring role - looking for flexibility	X				X																X				X										X	X		
		Portraying a protector and nurturing role diminishing risk-taking initiatives											X		X														X											
		Putting family needs first before entrepreneurial goals					X																				X		X	X								X		
		Time and work load conflic between entrepreneurial pursuits and family responsabilities	X		X		X																																	
	The unfit entrepreneur	Emphasizing emotions, openness, and personal contact in their business pursuits					X		X	X	X						X								X				X	X	X						X	X		
		Decreased profit orientation, creating a small business with limited growth expectation	X		X		X																X				X		X	X							X			
		Portraying a humble and modest entrepreneur as opposed to being assertive and competitive							X		X						X								X				X		X		X				X	X	X	
		Reinforcing women's difference that need to be addressed to succeed as entrepreneur																					X		X				X											
Environmental discourse	Protection	Bringing feminine attributes and the environment together - ecofeminism											X												X				X											
		Caring for others and the environment: "Protect the environment means also protecting humanity"	X						X		X		X				X	X							X				X	X			X				X			
		Embrazing other forms of venturing - cooperative, hybrid association, mission-oriented	X									X									X				X				X											
		Becoming a mother as motive toward environmental protection	X														X																							
		Sense of accomplishment and fulfillment in caring for the environment													X			X												X	X							X			
	The activist entrepreneur	Helping others to change toward sustainable practices: "I want to share my vision of ecology"	X																				X						X	X	X								
		Motivating others to change their business practices toward sustainable ones																					X		X							X	X							X
		Pushing to change the economic systems toward sustainable entrepreneurship							X						X								X																	
	Balance	Balancing dual objectives: "Create a business that makes sense"							X		X		X				X		X		X								X	X					X	X		X		
		Aligning my values and financial needs - venturing in the environmental sector					X		X								X				X																X			
		Promoting environmentally friendly solutions as equally important than profit																X	X										X	X			X						X
	Opportunity	Environmental needs as an argument to maket their business proposal																			X												X						
		Grabbing a green opportunity - becoming an entrepreneur by recognizing a market need			X				X	X											X	X					X						X	X	X		X			
Rejecting gender beliefs	Demanding equality	Bringing gender disparity issues in public discourse - demanding gender equality							X						X		X								X								X		X				
		Rejecting female-only programs: "Women are equal to men, we don't need special help"			X																												X		X	X			
	The businesswoman	Business growth as an explicit objective - being performance driven																															X	X	X				
		Portraying and adhering to competitive and profit-orientation values	X												X																				X				
		Positioning women as assertive and risk-takers			X						X																		X										
		Rejecting the caregiver role in family life, taking the provider role	X		X																														X				
Creating new gender discourse	Enacting gender equality	Mixing femininities and masculinities to move forward															X	X							X								X						
		Portraying a gender-neutral entrepreneur - women and men equally capable of venturing	X		X		X						X								X												X		X				
		Embracing a feminine posture in a masculine entrepreneurial landscape					X					X	X				X	X								X		X					X				X		
		Guided by passion - embracing the passionate entrepreneur							X									X					X							X					X					
	Femininity as a business asset	Collaboration and cooperation to enhance business discourse					X												X							X		X		X							X		
		Nurturing and caring as a strong asset or value for my business															X	X	X	X	X							X	X				X				X		
		Showing strong feminine discourse and values - positioning as an example									X	X						X	X										X					X	X					
	Rejecting liberal	Rejecting being seen as a victim because I am woman			X		X																														X			
		Rejecting the idea of woman taking on masculine values					X						X																								X			

Findings

Our findings are presented in two sections. First, we explain the different gendered practices performed by our participants, grouped in four aggregate dimensions that emerged from our data: 'Conforming to gender beliefs,' 'Environmental discourse,' 'Rejecting gender beliefs,' and 'Creating new gender discourse' (see Figure 8). We illustrate our claims with selected quotes from the participants' stories or "power quotes" (Pratt, 2009, p. 860) to capture "comprehensiveness" and "vividness" (Rockmann & Vough, 2023, p. 9) supporting our explanations.

Second, we explain our theoretical model based on the women ecopreneurs' gender performances, showing how these gendered practices are intertwined. We present the 'Green femininities,' which are gender performances that blend femininity and masculinity enacted by women ecopreneurs. Women ecopreneurs enact green femininities adapted to contexts, goals, and values embedded in personal and professional experiences. From these green femininities, we found four types of performances: femininity, masculinity, androgyny, and dissonance.

Gendered acts in entrepreneurial life

Conforming to gender beliefs

Most have been said in the literature on women's entrepreneurship about the difficulties that women face created by social norms and stereotypes. Thus, it is unsurprising that we found many expressions conforming to those gender beliefs. We depicted three types of practices: 'The insecure entrepreneur,' 'The unfit entrepreneur' and 'The mother entrepreneur.' These categories loosely follow Lewis' (2014) entrepreneurial femininities. 'The insecure entrepreneur' and 'The unfit entrepreneur' contain elements of Lewis' excessive and relational entrepreneurial femininity, and 'The mother entrepreneur' recalls the maternal entrepreneurial femininity.

'The insecure entrepreneur' refers to those practices where the woman ecopreneur shows her insecurities and hesitancy about being an entrepreneur. The first code refers to her difficulties in recognizing her abilities as an entrepreneur and business owner, as expressed by Emily in the interview: "*I never thought I was capable; I would*

never have believed that I could have accomplished this kind of thing" and online "*It's happily and trembling that I announce the opening of pre-orders*." 'Creating its own barriers' is closely related. However, this code refers to expressions of needing a partner to venture: "*I had really wanted to set up my company for a long time, but I didn't feel capable of doing it alone*" (Britanny's interview) and online posts that reinforce gender stereotypes of woman's lacking confidence to venture "*This [entrepreneurial] program allowed us to gain confidence in ourselves [referring to herself and her female business partner]"* (Elvira's post). 'The insecure entrepreneur' also refers to the much-explored imposter syndrome expressed by Charley in the interview: "*I don't really have the typical profile (…) I said to myself I don't have the legitimacy; I'm not going to make it*." It includes expressions when the woman puts her male partner first, giving him much of the credit, somehow diminishing her position as co-founder. In the interview, Jane said, "*I think we were visionaries in this project. I think it has much to do with [name of male partner], he is a visionary*." Even though she previously explained that they created the business vision together as a "*deeply humanist vision bringing together and helping all those who want to build a better world.*"

'The unfit entrepreneur' refers to those practices that oppose the stereotypical ideal of a heroic, assertive, competitive, and risk-taker male entrepreneur (Ahl, 2006; Javadian et al., 2021; Lockyer et al., 2018; Swail & Marlow, 2018; Zhao & Yang, 2021). Emphasizing emotions, openness, and personal contact in their business pursuits reinforces the idea of women being adrift of an entrepreneur's expectations. We found many expressions, notably online. An example is Nancy: "*Not creating a personal contact and not knowing my network is not conceivable for me. [When approaching others] I'm not looking to sell, I'm interested in what they do*". It also refers to women creating a small business with limited growth expectations: "*I told myself it was going to be a small project*" (Charley's interview) and a lower profit orientation: "*I don't want to earn a lot of money. I just need to be able to pay myself a salary. I don't want anything more luxurious than paying myself the minimum wage*" (Carmen's interview). Other expressions portray a humble and modest entrepreneur as opposed to being assertive and competitive when referring to venture capitalists and business presentations. In the interview, Samantha expressed that a "*female entrepreneur will generally be much more humble. So, even if she has very strong ambitions, she will*

often announce less than she knows she can do." She shared her experience during her fundraising campaign. She was told to have a "*female business plan*" and advised to "*present three times more*" of what she thinks she will do because "*it's how others do.*" We found expressions online that reinforce women's differences needed to be addressed to succeed as entrepreneurs. For instance, the following post: "*Women are not entrepreneurs like others. This is why we created this toolbox to support their leadership*" (Lucy's post).

'The mother entrepreneur' refers to the gendered practices involving the motherhood role. Some of the women ecopreneurs expressed that entrepreneurship allows them the flexibility to care for their families. Britanny explained in the interview: "*My place as a mother, my role, for me spending time with my child is super important so I really organize my working times [...] entrepreneurship can be really good because it allows you to have this flexibility or this adaptability*." It encompasses the notion that the protector role diminishes risk-taking initiatives needed in business venturing, as expressed by Hope in the interview: "*The woman role is a security role, the protective mother, thus her goal is to diminish risks*." It means putting family first before business goals. Nancy explained in the interview that she stopped her activity during her pregnancy and after childbirth. We found a post referring to "*a maternity pause"* (Nancy's post). In interviews, mothers expressed their struggles balancing their time between family responsibilities and business commitments. These difficulties are also expressed online, notably during the pandemic, as posted by Kelly: *"Definitely a great conversation to have! Especially in the last two years, it has been more difficult for women regarding the pandemic, homeschooling, and looking after children*."

Environmental discourse

This aggregate dimension encompasses their dual mission as profit-oriented and environmentally engaged entrepreneurs. Our findings align with those of York et al. (2016) about their entrepreneurial and environmental motivations. However, we do not build our arguments on environmental motivation but on how the women ecopreneurs perform gender: 1) Following female traits – 'Protection,' 2) Adhering to male traits – 'Opportunity,' or 3) A mix of both – 'Balance.' The code 'The activist ecopreneur' gathers expressions encompassing venturing and environmental activism.

As stated above, 'Protection' refers to those gendered practices and expressions that reinforce the current belief that women are prone to environmental care (Hechavarria, 2016; Hechavarria et al., 2012), putting the environment before profit. This second order code is thus connected with the previous aggregated dimension ‘Conforming to gender beliefs.’ ‘Bringing feminine attributes and the environment together’ points out ideas linked to ecofeminism. Ecofeminism states that women are more environmentally oriented than men because of their caring and nurturing role: "*Feminism is a global idea closely linked to the respect and protection of the planet*" (Lucy's post). It gathers expressions of caring for others and the environment as equally important: "*Protect the environment means also protecting humanity*" (Jenny's interview). This second-order code also includes expressions about other forms of entrepreneurship, such as establishing cooperatives or hybrid associations, which are notably less profit-oriented. They invite others to "*embody an ecological and societal approach by managers and teams, [so] the company is virtuous in all aspects*" (Nancy's post). Some participants expressed that being a mother pushed them toward creating an environmental business. Reinforcing the belief that protecting the environment aligns with their motherhood role, as expressed by Brittany in the interview: "*I said to myself if I could go and be in the corner of nature [with my daughter] where there is nothing else apart the truth of nature, the simplicity of nature, I would intuitively feel that I do my role as a mother well*." They also talked about their sense of accomplishment and fulfillment in caring for the environment: "*I take care of Nature and do not waste its precious gifts because, after all, it takes little to be happy!*" (Nancy's post).

'Balance' refers to creating environmental and economic value. ‘Balancing dual objectives’ aligns as equally crucial environmental protection and profit orientation. Jenny named it "*co-optimized*"; she stated in the interview: "*You have to keep it in balance and flowing all the time. We must be profitable, but it cannot be a fixed idea, and it must be Co-optimized with the other parts of the system, the other human beings, the other animals, the rest of nature, and the planet*." 'Balance' also refers to aligning one's values and financial needs. Julia explained in the interview: "*It's difficult to have a business where you're not aligned with your values. I will think [of being] aligned with oneself […] and trying to find the best possible combination where profitability and responsibility can go together.*" Lastly, 'Balance' includes posts that

promote environmentally friendly solutions as equally important than profit: "*Be determined to bring about another economic model […] to experience powerful moments of emergence and ecological redirection and […] to learn to re-embed our activity within planetary boundaries*." (Victoria's post). This second-order code pushes the boundaries of what it means to be a successful entrepreneur, thus connected with the aggregated dimension ‘Creating new gender discourse’ discussed later in the section.

We did not purposely select environmental activist entrepreneurs; however, during our interviews and online post analyses, we discovered that some participants actively engage in environmental groups. 'The activist entrepreneur' refers to those expressions that merge their activist activities and entrepreneurial life. Some women ecopreneurs are deeply engaged in environmental protection, and these strong commitments are essential to their entrepreneurial journey. Therefore, they want to help others to change toward sustainable practices. This is the case of Natalie, who became vegetarian to "*diminish my carbon footprint*." She explained in the interview: "*I wanted to be consistent and carry out a project in line with my commitments*." For them, motivating others to change their business practices to more sustainable ones is essential. For instance, Kelly explained in the interview that she uses social media primarily to create environmental awareness.

‘Opportunity’ is looking at the environment as a market opportunity. Even though our participants were more inclined toward environmental protection than commercialization, we uncovered mixed motivations. Samantha and Julia constantly used environmental regulations and public pressure to promote their services and products through social media. This highlights a significant difference between the mentioned ecopreneurs and the others who primarily utilize their posting activity to raise awareness about environmental issues. ‘Grabbing a green opportunity’ refers to those who became ecopreneurs by recognizing a market need. Carmen explained her choice in the interview:

"*I jumped at the opportunity and put all my energy into creating this project. I set goals for myself quickly in terms of timing. It was urgent for two reasons. One, because I thought it was a good idea, […] and [two] no one had done it so far, so I wanted to do*

it quickly before someone else did it. […] It was more a question of opportunity. I'm not green at heart."

‘Opportunity’ relates to the following aggregate dimension ‘Rejecting gender beliefs,’ which exemplifies women going against expected gender beliefs.

Rejecting gender beliefs

'Rejecting gender beliefs' gathers the practices and expressions where women go against the prevailing gender norms and stereotypes. It was expected that these women would somehow subvert gender beliefs as they are founders deviating from gendered expectations (Dimitriadis et al., 2017). We uncovered two types of practices: 'Demanding equality' and 'The businesswomen.'

'Demanding equality,' as its name indicates, refers to private and public expressions that display disagreement and indignation about current gender norms and stereotypes. The code 'Bringing gender equality issues in public discourse' gathers these expressions where Samantha and Lucy are particularly vocal. In a post, Samantha said:

“*59 days Unpaid! Why? 😰Am I unemployed? No. Am I on an unpaid leave? No. Am I in a bankrupt company? No, no, and no! I have a stable job. I carry out all my projects with great commitment. I am dedicated to my company. I am just... A WOMAN! 😡🤬59 days is 16% of a year. 16% salary difference between men and women. 👩‍🎨Assuming that the year 2021 started on January 4...Well done ladies, today is our FIRST DAY of the year! 🎉*”

They also showed their disagreement with special aid for women rejecting female-only programs: "*Women are equal to men, we don't need special help. This gives me the impression that I am a weak human like I am a poor woman*" (Carmen's interview).

'The Businesswoman' denotes the instances and expressions when women adopt traditionally masculine traits associated with business growth, such as competitiveness, risk-taking, assertiveness, and the role of a provider. This second-order code recalls Byrne et al.’s (2021) entrepreneurial masculinity identity. Some participants expressed business growth as an explicit objective. Sara said in the interview: "*What drives me is growth*." 'Portraying and adhering to competitive and profit-oriented values' and 'Positioning women as assertive and risk-takers' are closely

related as both express women embracing masculine attributes. For instance, in a post, Emily talked about her entrepreneurial posture: "*In a way, that's also why I chose to test this path [entrepreneurship]. Like a kind of challenge to myself. To prove to myself that you can do it, and say afterward, 'You see, you were capable of it.*'" Lastly, some reject the caregiver role in family life by taking the provider role. In the interview, Sara said: "*The right work-family balance is not to think about the children and the house from 8 a.m. to 7 p.m. if you want to start a business*."

Creating new gender discourse

Our data show that our participants also enact gender combining feminine and masculine attributes. This aggregate dimension gathers practices and expressions where our participants enact gender equality, put femininity as a business asset, and reject old liberal feminist fights against subordination.

'Enacting gender equality' goes beyond a fight for equality. It means putting femininity and masculinity as equally important. ‘Mixing femininities and masculinities to move forward’ to create a better world is well expressed by Jane in the interview: "*I deeply believe in the importance of having feminine and masculine sensibilities expressed together, to imagine a balanced, harmonious world*." They also believe that having the right feminine posture, embracing one's femininity, and portraying masculine values when needed are essential. Charley explained in the interview: "*I really try to create this personality which is adapted to the business world regardless of being a woman or a man. I try to free myself from this woman-man idea and tell myself that there is a posture to have when you are in business.*" Some describe an entrepreneur as a gender-neutral individual. For Hope, an entrepreneur is "*an individual that wants to bring to live an idea, so it doesn't matter if you are a woman or a man.*" They also believe that an entrepreneur is guided by passion (Mattner & Sundermeier, 2023). For Natalie becoming an ecopreneur was to put "*my time and energy into my passion*."

Some participants promote feminine attributes – collaboration, cooperation, nurturing, and caring as important business assets and position themselves as examples. This can be related to Lewis’ (2014) relational femininity (the female entrepreneur). 'Collaboration and cooperation to enhance business discourse' gathers expressions where "*the heart leads the head*" (Jenny's interview) as a valuable business posture. The code 'Nurturing and caring as a strong asset' is closely related. Samantha uses

this argument when promoting her business offering online: "C*reating a world where each individual can support each other.*" In the interviews and online, some share their stories about their journeys from conventional careers to engaged entrepreneurs. For example, Jane discussed leaving her managerial role to align her professional and personal values. Nancy shared her career change from a biomedical engineer to helping others transition to a sustainable lifestyle. They showed strong feminine discourse and values and positioned themselves as inspiring examples.

Our data revealed that some participants are against old liberal feminism ideals where women were seen as subordinated individuals needing to fight for equal rights and embrace a competitive posture. They reject the idea of being seen as a victim and being in a constant fight just because they are a woman. Charley, in the interview, stated: "*I try to put all that aside because it's too much, it's polluting my mind*." Moreover, they reject the idea of embracing masculine traits to acquire equality. Sophia explained in the interview:

"*It is typically the Athena archetype. That is a goddess dependent on the masculine because Athena was born of Zeus and will therefore conform to the masculine. They will have great careers, etc. They will crush other women, and they will compete with other women, crushing other women. Those women are really the righthand of the patriarchy*".

Our participants champion equality by putting the entire spectrum of gender performances at equal value. Hope stated in the interview, "*There will always be differences between women and men. However, we must have fair treatment for all.*"

Women ecopreneurs' gender performances

Having detailed the various gendered practices our participants undertake in their entrepreneurial lives, we now focus on the interplay of these practices deriving green femininities. We suggest visualizing these aggregate dimensions as interconnected, as depicted in Figure 10.

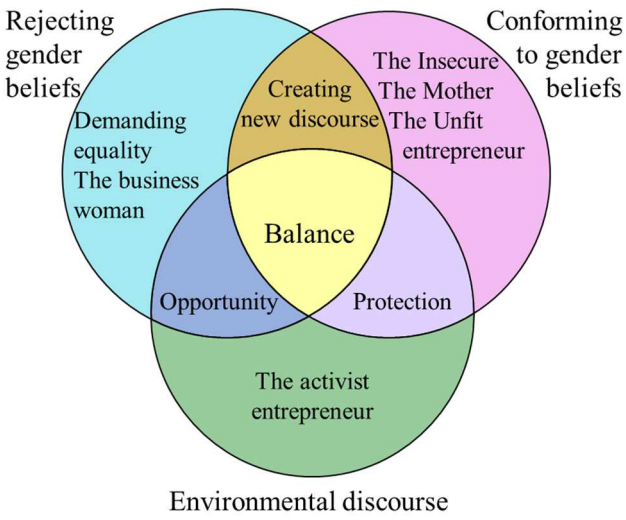

Figure 9 Interconnection of gender performances

The left circle symbolizes 'Rejecting gender beliefs' and its two second-order codes. The right circle signifies 'Conforming to gender beliefs' and its three second-order codes. The bottom circle represents ‘Environmental discourse,’ represented by the second-order code 'The Activist Entrepreneur.' The overlap between the upper circles symbolizes the aggregate dimension of 'Creating new gender discourse,' as it merges elements of femininity and masculinity. For instance, a woman ecopreneur enacting gender equality would balance assertiveness and caring. The intersection of ‘Conforming to gender beliefs’ and ‘Environmental discourse’ corresponds to the second-order code 'Protection,' indicating the intertwining of femininity and environmental concerns. For instance, a women ecopreneur who is conforming to gender beliefs, like putting the mother role in the first place, would base her environmental discourse on protective arguments. The overlap between ‘Environmental discourse’ and ‘Rejecting gender beliefs’ corresponds to the second-order code 'Opportunity,' primarily associated with ecopreneurs who prioritize growth and profit, aligning with masculine traits. Lastly, the convergence of all three circles symbolizes the second-order code 'Balance,' encapsulating the concept of equal importance given to environmental protection, femininity, and masculinity. A woman ecopreneur enacting competitiveness and communality, balancing business profitability and environmental protection would be situated in this intersection.

In reality, the convergence between declared gender beliefs and gendered environmental discourse highly depends on the context where discourses are enacted

by each woman ecopreneur. This is why we argue to incorporate different settings to capture the variety of gender performances highlighting the fluidity of gender. By situating these varied gendered practices within interconnected dimensions (as depicted in Figure 9), we can better understand the context in which these practices occur in private and public settings. By examining the setting of these practices, whether private or public, and the nature of the performance as categorized within the 40 first-order codes (refer to Table 14), we can discern the fluidity of gender deriving 'Green femininities.' We defined 'Green femininities' as the gender performances that blend femininity and masculinity enacted by women ecopreneurs according to the context. Therefore, we illustrate gender beyond a mere attribute, being context-dependent and closely tied to personal values, aspirations, and goals. This is further illustrated in the following four cases.

Green femininities

Using Figure 9 and Table 14, we graphically represent the gender performances of our 20 women ecopreneurs, representing how women ecopreneurs construct and deconstruct gender through Green Femininities. Here, we discuss four of them. The other figures are found in Appendix B.

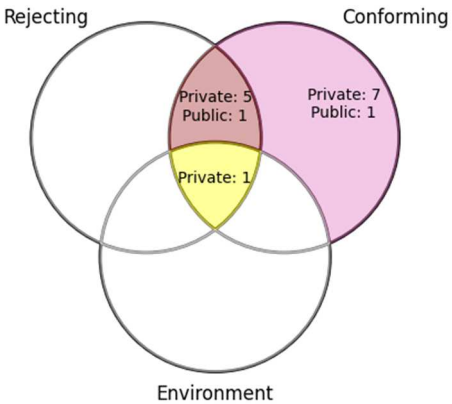

Figure 10 Charley's gender performances

Charley is a married young woman without children. However, she wants to become a mother and adapt her business to motherhood. At the time of the interview, she was market-proving her environmentally friendly coffee bags. Charley also helps her husband to develop his business. She is a co-founder, but she does not give herself any credit. Even though Charley does all the administrative paperwork and the negotiations in French because her husband is not a French speaker, she only refers to her husband's accomplishments in her posts. Being a mother and caring for her family is paramount for Charley. However, she wants to create her business because she wants to have "*my own thing,*" but family comes first. She struggles with the societal expectations of women taking a leadership stand and being aggressive and

competitive. Figure 10 shows Charley's gender performances mostly situated in the conforming circle.

Sara is a married woman with two young children. She has multiple businesses in the retail sector, one being the retail of secondhand women's clothing. She is not an environmentalist. Her passion is to create businesses, as she said in the interview, "*I think I was born for that [being an entrepreneur].*" Sara believes that women are equal to men in all aspects. One of her main products is a uniquely designed women's jumpsuit that unfastens at the center, allowing women to conveniently use the restroom without removing their clothes, just as men do. She said in a post, "*This is feminism in action*." She struggles with motherhood as she feels compelled to follow societal child-rearing expectations. She wanted to grow her businesses, but the family demands were incompatible, particularly as her husband could not assist her with the children. Ultimately, she chose to hire a full-time nanny. That was the best solution for her, and she expressed being happy with that. Figure 11 shows Sara's gender performances mostly situated in the rejecting circle.

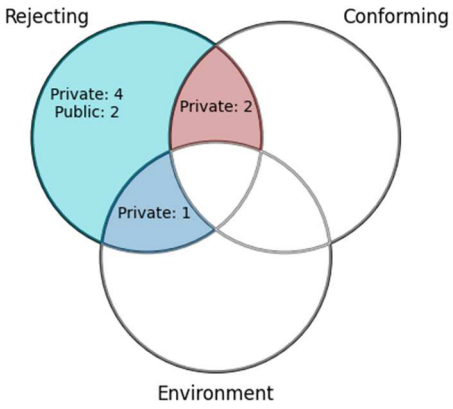

Figure 11 Sara's gender performances

Jenny is a divorced, mature woman with two grown-up children. She has worked in the environmental sector all her career. She had the opportunity to collaborate with the United Nations when the first attempts at defining sustainable development were made. Jenny considers herself a leader and a pioneer in the environmental sector. Thus, her business offerings are addressed to leaders to guide them toward sustainable businesses (see Table 9 to read her website business description). She has grand ambitions for her business as she visualizes a global company. Although she embodies a balance between femininity and masculinity, she expressed that her feminine side is stronger. Her posts discuss the importance of sustainable development and leadership in driving change.

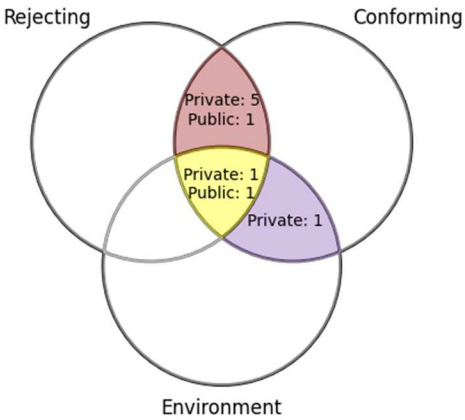

Figure 12 Jenny's gender performances

Jenny is the only participant situated primarily on the intersection of 'Creating new gender discourse' and 'Balance' as shown in Figure 12.

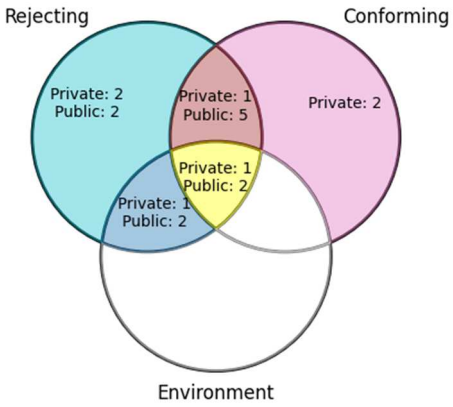

Figure 13 Samantha's gender performances

Samantha, a single young woman with no children, holds a master's degree in finance. Initially, she aspired to establish a career in the financial industry, attracted by its reputation for high salaries. After gaining some experience in the sector, she took a sabbatical to pursue charitable work in South Asia. However, an earthquake in the region compelled her to return, leading her to delve again into the financial world. Lacking "*sense*," she started a mission-driven business. Only in the interview did she voice the challenges women face due to gender-related issues. Nevertheless, she was quick to transition to an ambitious and profit-oriented discourse. Samantha is very vocal about gender disparity issues online. She constantly positions her company as an example of gender equality, notably when she pushed for gender parity during her VC funding. Samantha is a young woman who has embraced the ideals of women assuming leadership roles. However, she grapples with the challenges of this position. She often engages in discussions about gender equality, occasionally employing a sarcastic tone. Samantha's gender performances are found in Figure 13.

Reinforcing and Subverting gender stereotypes through green femininities

While representing real individuals, the preceding four cases can be interpreted as distinct types of gender performances presenting the wide spectrum of green femininities that reinforce and challenge gender norms and stereotypes. By assessing the dominance of a gender trait and the alignment or misalignment of their gender performances in private and public settings, we propose four types: performing femininity, performing masculinity, performing androgyny, and performing dissonance. These types of performances are visually depicted in Figure 14. The lower circle of the 'Environmental discourse' representing 'The activist entrepreneur' has been omitted for simplification purpose. By looking at the graphic representations of our 20 participants (see Appendix B), we concluded that one mostly performs masculinity (Sara), six mostly perform femininity (Charley, Hope, Kelly, Natalie, Olivia, and

Victoria), one mostly performs androgyny (Jenny), and twelve mostly perform dissonance (Britanny, Carmen, Elvira, Emily, Jacinta, Jane, Julia, Lucy, Mary, Nancy, Samantha, and Sophia).

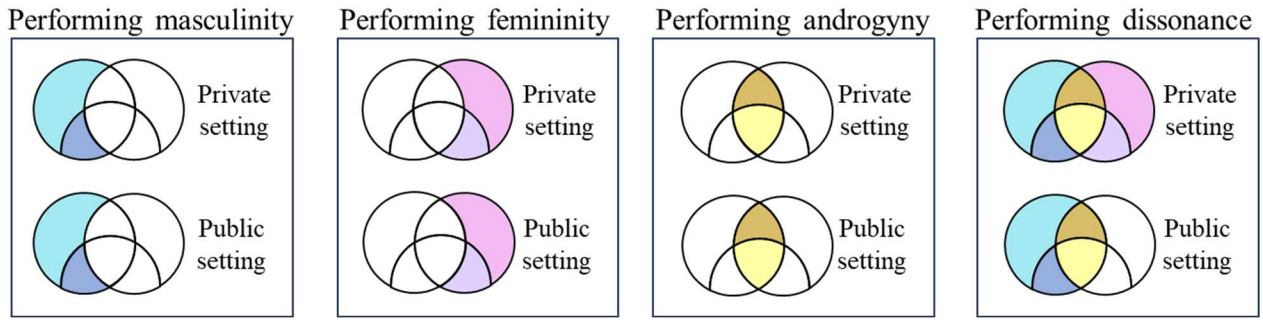

Figure 14 Types of performances.

Performing masculinity challenges gender norms and stereotypes. However, performing masculinity puts women at risk of punishment for deviating from gendered expectations. Moreover, these performances demonstrate a strong internalization of the expected behaviors of an "ideal" entrepreneur (Shane & Venkataraman, 2000). These performances align with Byrne et al.'s (2021) entrepreneurial masculinity, as they imply having an entrepreneurial vision of seizing and exploiting opportunities. The women who mostly situate their gender performances in this type have internalized the meritocracy ideal of entrepreneurship, believing in its supposed gender neutrality. In this sense, performing masculinity contains some elements of the individualized entrepreneurial femininity proposed by Lewis (2014).

On the contrary, performing femininity refers to those gendered practices mostly conforming to gender norms and stereotypes, constantly reinforcing and perpetuating these beliefs, and keeping women as "the others" (Jennings & Brush, 2013; Lockyer et al., 2018). Although performing femininity protects women from undesired repercussions of non-conforming with gendered expectations, gender norms and stereotypes are reinforced, keeping women in subordinate positions. Women who mostly situate their performances in this type enact some form of maternal, relational, and excessive femininity proposed by Lewis (2014), thus reinforcing gender beliefs.

Performing dissonance, where most of our ecopreneurs are found, refers to performing gender incongruently from one practice to the next. Most of our women

ecopreneurs are performing dissonance because they must juggle two competing demands: business profitability and environmental care. Moreover, this shows that women have internalized strong societal expectations of business success and womanhood, juggling between gendered practices to fulfill those expectations. Understandably, they fight for gender equality, as being in this position requires efforts of adaptation and enduring misalignment with the real self (Garcia-Quevedo, 2022). Thus, performing dissonance conforms to and challenges gender norms and stereotypes depending on a specific situation.

Finally, performing androgyny comes as an ideal type, which refers to the ability to articulate both traits well. However, as demonstrated in our data, women do not easily achieve this type of performance. Those who perform androgyny, or close to it, have acquired a deep awareness of the damage that gender norms and stereotypes can cause and have taken steps to minimize them. Jenny, for instance, shared in the interview that when she discovered the concept of the Ying and Yang "*helped me see the world better […] Yang being the masculine principle, and Ying being the feminine principle […] I believe human beings, whether you are man or woman, there is union inside of you because Ying and Yang are everywhere*." Performing androgyny challenges the entrepreneurial norm and definition of an ideal entrepreneur revalorizing feminine traits as equally valuable as masculine ones.

We recognize gender as fluid and context-dependent. These four types of performances are not intended to be a rigid categorization but a flexible theoretical model to facilitate a nuanced study of gender. It seeks to challenge the presumption of uniformity about gender among all women, as our analysis has demonstrated that such a notion is far from accurate.

Discussion

We have demonstrated that gender performances span a broad spectrum, ranging from masculine to feminine, and are context-dependent. We argue that women ecopreneurs enact 'Green femininities,' which are gender performances that blend femininity and masculinity. Through their green femininities, women ecopreneurs

perform gender adapting to contexts, goals, and values embedded in personal and professional experiences. These performances can be distinct and separate from one another, highlighting the fluidity of gender. We have derived four types of performances according to the dominance of the gender trait and the alignment or misalignment of their gender performances in private and public settings: femininity, masculinity, androgyny, and dissonance. We argue that women ecopreneurs, through their green femininities, conform to and reject gender stereotypes according to the type of performance. Therefore, by blending femininity and masculinity adapted to situations and audiences, women ecopreneurs challenge rigid gender beliefs.

We have purposely selected profit-driven women entrepreneurs who uphold strong green values to account for the dual expectations regarding venture growth and environmental care. This is, they strive for financial growth – associated with masculine traits while maintaining a commitment to environmental protection – associated with feminine traits (Hechavarria, 2016; Hechavarria et al., 2012). These women navigate a unique intersection of societal expectations: They embody the traditionally feminine role of environmental guardianship while demonstrating their competence as entrepreneurs. This blend of expectations, both feminine and masculine, proved to be helpful in studying gender performativity. We propose that the study of gender should recognize its fluidity, transcending the binary perspective that invariably positions women as the other subject (Lockyer et al., 2018; Marlow, 2020). Our findings reaffirm previous insights about a mix of gender attributes when analyzing environmental entrepreneurs (Anglin et al., 2021; Gupta et al., 2019). However, we took a step forward in understanding how individuals construct gender by grasping its various performances adapted to different situations.

To explore gender fluidity, we suggest incorporating multiple spaces or settings. While examining a single setting, such as interviews, can reveal different performances, it restricts our ability to understand the multifaceted and layered construct of gender fully. Therefore, we contend that using a second setting, in our case, social media data, has enriched our findings and enhanced our comprehension of gender performativity. We have proposed a theoretical model based on four types of performances: femininity, masculinity, androgyny, and dissonance. This approach moves beyond a static view of gender and considers the variations within individuals rather than using women as

a proxy for gender. This model, grounded in Butler's theory of gender performativity, could be applied to more extensive studies involving both women and men.

Contributions

Our study contributes to advancing our understanding of gender in entrepreneurship. Notably, we provide a model to study gender accounting for its fluidity aspect. We enlarge our understanding of the enactment of multiple femininities and masculinities (Branicki et al., 2023; Byrne et al., 2021; Lewis, 2014) by incorporating the environmental aspect. We explored how gender norms and stereotypes impact women ecopreneurs, enlarging our knowledge of environmental entrepreneurship. Studying the nuance of gender performativity provides a better understanding of women's barriers and difficulties. Our findings indicate that women do not uniformly experience the same barriers, have the same ambitions, or share the same economic and environmental objectives. Consequently, more than a one-size-fits-all solution is needed for promoting women's entrepreneurship. We argue that there is no safe haven for women. Each type of performance brings benefits and challenges. For instance, performing masculinity conforms to the authentic characteristics of an entrepreneur. However, this projects a less feminine image, risking penalization for deviating from their expected behavior. The opposite is true. When a woman performs femininity, she is perceived as an authentic woman but less fit for entrepreneurship, reaffirming the stereotype that women create small and less ambitious businesses. It is tempting to believe that performing androgyny is a safe option; however, this is not that simple. It requires acute knowledge of gender role play rooted in awareness, practice, and support. It requires reflexivity, solidarity, and a safe space of expression that can be found in collective movements like green or feminist groups. Failing to play well can increase feelings of being an imposter, work-family balance issues, and may lead to burn-out, being those who perform dissonance at higher risk.

This study also contributes to the broad management field through its innovative methodology incorporating new techniques for large data analysis. In particular, we have proven that using LLM-based algorithms to study subtle narratives can enhance our analytical capabilities. We propose that these techniques can be further

incorporated into qualitative studies as they allow the analysis of larger datasets while maintaining the depth of a qualitative approach.

Practical Implications

Given our current climate challenges, it is crucial to understand how gender norms and stereotypes influence the growth of environmentally focused ventures. While some women ecopreneurs may view the ongoing climate crisis as a market failure opportunity, those primarily motivated by environmental concerns face unique challenges beyond gender concerns. They are to promote environmentally friendly solutions to help society transition to a sustainable world. Given that women ecopreneurs carry the burden of juggling gendered expectations and helping society transition to environmentally friendly practices, supporting them in their endeavors is paramount.

These insights can help educators, policymakers, and entrepreneurial programs to tailor their offerings. By understanding the distinct inter-subject variations, we can better support women entrepreneurs acting in the environmental sector. Acknowledging that gender norms and stereotypes are both subverted and reinforced by women, it is paramount to tailor better programs that account for these variances. Understanding that a cumulus of gender performances constructs gender beliefs, and these performances are sometimes contradictory, we can help women alleviate the pressure of gendered expectations and promote equality.

Limitations and Future Research

This study only considers the narratives of women to create our model. However, we acknowledge that men, in their gender performances, could also conform to or subvert gendered expectations. Thus, we propose for future research to test our model on men ecopreneurs to validate its replicability. Moreover, with the current advancements in LLMs, videos and images can also be analyzed to enrich our findings. We argue that to study gender fluidity, it is necessary to include different audiences or spaces in the analysis to capture its variety of performances.

Conclusion

Women ecopreneurs deal with contradictory gendered expectations embedded in their dual mission of profit orientation aligned with masculine traits and their environmental engagement aligned with feminine ones. We argue that women ecopreneurs enact gender performances blending femininity and masculinity. These performances can be distinct and separate from one another, highlighting the fluidity of gender. We have distilled four types of performances according to the dominance and alignment or misalignment in private and public settings: femininity, masculinity, androgyny, and dissonance. We suggest incorporating multiple spaces to explore gender fluidity and move beyond studying gender as a dichotomous set of traits.

Chapter 7 Discussion

General Discussion

This dissertation aims to understand how women entrepreneurs shape gender norms and stereotypes in entrepreneurship through their entrepreneurial endeavors. By studying two distinct cohorts of women entrepreneurs, namely growth-oriented and environmental-oriented, I demonstrate that gender norms and stereotypes are simultaneously reinforced and subverted through their entrepreneurial actions. Gender norms and stereotypes are pervasive and negatively impact women entrepreneurs (Gupta & Bhawe, 2007; Gupta & Turban, 2012). This research corroborates previous findings, arguing that perceived gender beliefs negatively impact women and their businesses. These gender beliefs affect different aspects of the venture environment, including customers, competitors, and investors, and influence women's behaviors and decisions. However, these norms and beliefs do not remain unchallenged. Women entrepreneurs simultaneously conform to and reject them through their gender performances, adapting to different contexts.

I advocate for a nuanced understanding of gender, as exemplified by the gender performances of women ecopreneurs. I argue that women entrepreneurs enact different masculinities and femininities, adapting to different situations and expectations, thus aligning with previous research (Branicki et al., 2023; Byrne et al., 2021). In this research, I first explored the entrepreneurial norm that adheres to masculine values of risk-taking and competition, followed by growth-oriented women entrepreneurs. The research reveals how women elaborate a delicate balance between gender expectations of femininity (caring, warm, small business, no-tech) and entrepreneurial expectations of growth and performance. Moreover, this dissertation introduces the concept of 'Green femininities,' which are gender performances that blend femininity and masculinity according to contexts, goals, and values embedded in personal and professional experiences. I argue that women ecopreneurs blend masculinity and femininity to both conform to and reject rigid gender beliefs, thereby showing the fluidity of gender.

Women entrepreneurs' gender performances are situational and contextual, rooted in their personal and professional experiences. Chapter 6 identifies four types of green femininities based on gender trait dominance and their alignment or misalignment in private and public settings: femininity, masculinity, androgyny, and dissonance. By

recognizing the fluid nature of gender performances, this dissertation proposes a new approach to study gender that moves beyond the gender binary. I suggest studying gender considering its situational, contextual, and individual variations.

Additionally, this dissertation proposes a unique methodological approach to enhance qualitative analysis. It allows a combination of large and variable datasets while maintaining a qualitative approach to data analysis. I argue that the use of NLP algorithms, in particular LLM-based algorithms, enhances the theorization process, allowing researchers to derive new insights from sentiments, topics, and phrases. This innovative approach increases researchers' analytical scoop by efficiently finding relevant online data.

This research engages with existing literature in diverse ways and proposes several significant contributions, which are discussed in the following sections.

Contributions to Gender in Entrepreneurship Research

This research answers the call of Henry et al. (2016) and Marlow (2020) by following a feminist epistemology based on a post-structuralist ontology. Henry et al. (2016) called for a paradigm shift grounded in feminist epistemology, necessitating the adaptation of methodological approaches to studying gendering processes. This research is "bolder" and "more innovative" (Henry et al., 2016, p. 24) as it is leveraging new technologies for qualitative analysis with the goal of including new contexts to study gender fluidity. Furthermore, in this research, I made a conscious effort to move from a functionalist paradigm, as suggested by Marlow (2020), toward a subjective ontology, moving beyond the gender binary and fixed unchallenged stereotypes.

Following the recent shift to studying the variability of gender stereotypes, I demonstrate that women entrepreneurs reinforce and subvert gender stereotypes simultaneously, as shown by the multiple performances depicted in Chapter 6. Moreover, I argue that women entrepreneurs also bring androgynous characteristics to the qualities of an entrepreneur, as demonstrated by "performing androgyny." These findings support Mattner and Sundermeier's (2023) claims that an entrepreneurial

career requires not only masculine traits but also androgynous ones like passion and being a team player. They argue that the dimensions captured in established scales need to account for this overlap. I further argue that expanding the definition of an entrepreneur using androgynous terms is vital. As shown in Chapter 6, only one woman ecopreneur is able to successfully blend masculine and feminine gender performances fulfilling entrepreneurial and societal expectations. Therefore, entrepreneurship discourse must be adapted to truly reflect feminine traits as equally valuable as masculine ones.

I propose that gender norms and stereotypes need to be studied in context. As Welter (2011, 2020) suggests, it is vital to consider the context in which entrepreneurship takes place (Welter, 2011). Following Welter's call to explore the gender aspect of special contexts, I explored gender norms and stereotypes by looking at different cohorts of entrepreneurs with two distinct datasets. Going beyond interviews to study gender performativity opens new avenues to explore other contexts, like social media conversations, where the researcher's agenda is not involved. This approach can bring new insights as demonstrated in Chapter 6.

Based on its empirical results, this research provides an approach to studying gender beyond a binary perspective. It suggests analyzing gender by looking at the combination of gendered practices, acknowledging that individuals continually conform to and reject rigid gender beliefs through their gender performances. As Diaz Garcia and Welter (2011) have stated, women entrepreneurs construct their gender identity through gendered practices by doing and redoing gender. This research deepens our understanding of gender within the field of Entrepreneurship. I proposed an approach combining two types of data that aids the understanding of gender from a fluid perspective. By doing so, I delve beyond conventional ways of studying gender. I offer a nuanced study of how gender norms and stereotypes are both challenges and maintained by women entrepreneurs. Understanding the subtleties of gender performativity gives us valuable insights into the unique struggles and barriers faced by women.

In line with Byrne et al. (2021) and Lewis (2014), I consider the multiple masculinities and femininities performed by women. As the findings show, relational, maternal, excessive, and individualized femininities (Lewis, 2014), as well as entrepreneurial

masculinity (Byrne et al., 2021), are enacted by the women ecopreneurs. However, instead of limiting the analysis to interviews, I incorporated a second type of data (online posts) where multiple masculinities and femininities are also enacted. This allows for a more nuanced comprehension of the multiple gender performances enacted by environmental-oriented women entrepreneurs. Women ecopreneurs may perform gender in contradiction according to the situation, as demonstrated by "performing dissonance." I argue that these multiple performances simultaneously conform to and challenge gender stereotypes according to the woman's entrepreneurial orientation, values, and goals.

Adhering to Branicki et al. (2023), I empirically demonstrate that women entrepreneurs' gender performances construct and deconstruct gender in ways that either reinforce or challenge gendered expectations about entrepreneurship. However, instead of exploring gender performativity in a film, I explored real-life experiences of women entrepreneurs supporting these claims. Branicki et al. (2023) suggest that Joy (the main character in the film) simultaneously reinforces and subverts gender stereotypes, thus reflecting a continuous tension between progressive (feminist) and regressive (neo-conservative) gender regimes. This continuous tension is well represented by "performing dissonance" of the majority of the women ecopreneurs, suggesting that women entrepreneurs have consciously or unconsciously embodied this tension. This leads to further question the impact of this tension and the double expectations placed on women entrepreneurs to conform to societal and entrepreneurial expectations.

Following the findings of Hytti et al. (2023) on entrepreneurial masculinities in Finnish tech men entrepreneurs, the approach suggested in this dissertation can be used to study men's gendered performances. Hytti et al. (2023) argue that even when men display traditionally feminine characteristics as fathers, they are incorporated into a reconfigured form of dominant masculinity, maintaining unequal gender relations within the household and at work. Likewise, the study presented in Chapter 6 could be extended to men ecopreneurs to enrich the findings as men ecopreneurs take into feminine characteristics by caring for the planet beyond fatherhood responsibilities. For example, men ecopreneurs may have a strong environmental discourse while at the same time maintaining a strong discourse on innovation and growth. This suggests

a potent internalization of the masculine entrepreneurial norm while leveraging feminine traits to fit the expectations of an environmental-oriented entrepreneur.

I advocate for a study of gender that acknowledges its fluidity, moving beyond the binary perspective that consistently categorizes women as the 'other' or lacking something (Ahl & Marlow, 2012; Lockyer et al., 2018; Marlow, 2020). This nuanced comprehension enables us to examine, in detail, the various obstacles women face, aiding an understanding that women do not all experience identical challenges. Their ambitions vary widely, and their respective economic and environmental goals are far from uniform. As the two different cohorts have shown, not all women entrepreneurs have small ambitions, and not all put environmental protection first. A more tailored approach, rather than a one-size-fits-all solution, is necessary to foster women's entrepreneurship.

Contributions to Research on Gender

Gender is a complex concept. Studies that analyze gender as a binary concept are predominant in management research. However, some scholars advocate for a more nuanced way to study gender emphasizing its dynamic process (Kelan, 2010; Martin, 2003, 2006). Despite the interest in studying gender from this dynamic perspective, the notion of Doing Gender is far from homogeneous (Nentwich & Kelan, 2014). Thus, this research attempts to make a contribution to the field of gender studies in organizations from the perspective of gender performativity. Situated in the Doing Gender research and framed within the field of entrepreneurship, this dissertation studies how gender norms and stereotypes are maintained and subverted by women entrepreneurs. It studies two distinct types of data to account for possible gender variations according to the context.

Therefore, this research is situated in the “fluidity and context specific” and “gradually relevant and subverted” themes put forward by Nentwich and Kelan (2014, p. 125). Nentwich and Kelan (2014) advocate that gender should be studied by focusing on how individuals adopt and create subject positions, signaling the importance of the context-specificity of Doing Gender. In the study presented in Chapter 6, I attempt to

study gender from this context-specificity, highlighting its fluidity by analyzing two contrasting contexts: private conversations (interviews) and public discussions (social media posts). By incorporating two distant contexts, I propose to expand our understanding of gender performances beyond interviews and observations commonly used in these types of studies. I argue that social media offers a rich context to study gender performativity. In this case, the researcher's bias is not present when creating the data, yet the societal expectations from the global audience play an important role. Thus, social media offers a rich context to study how gender is performed when enacted to a wide and impersonal audience.

As proposed by Nentwich and Kelan (2014), gender should be studied when its construction is made less relevant or in challenging ways. By looking at the variety of performances enacted by the women ecopreneurs in distant situations, I highlight how they do and undo gender in different ways. Sometimes, they reinforce the gender order and sometimes subvert it, highlighting their agency and capacity to recreate the social order. By signaling the variety of performances, sometimes in contradiction, as highlighted by "performing dissonance," I argue that gender is done and undone in multiple and contradicting ways. This research empirically demonstrates how women entrepreneurs adapt their gender performances according to the context and audience, highlighting the fluid nature of gender. Moreover, it emphasizes the individual's agency to make gender relevant or subvert it. For example, some environmental-oriented women entrepreneurs accentuate their feminine traits of being protectors of the planet to emphasize their business's position as environmentally friendly. Conversely, some growth-oriented women entrepreneurs position themselves as ambitious and competitive, subverting gendered beliefs.

I propose that a combination of datasets, notably online data, can expand our understanding of gender. Numerous studies focusing on Doing Gender have relied on interviews and ethnographic accounts (e.g., Bruni et al., 2004; Byrne et al., 2021; García & Welter, 2013; Pecis, 2016). This research offers a new avenue to studying gender performativity, incorporating large datasets while still maintaining its nuances and subjectivity.

Contributions to Research Methods

I leverage advanced technologies using LLM-based algorithms for Sentiment Analysis, Topic Modeling, and Information Retrieval. I propose an innovative approach that enhances the researcher's analytical capabilities while preserving an interpretive approach toward theorization. I answered the call of Leavitt et al. (2021), Shrestha et al. (2021), and Tonidandel et al. (2018) by looking into new technologies to increase researcher methodological tools. Meanwhile, I acknowledge the arguments of Lindebaum and Ashraf (2021) concerning the significant importance of epistemological paradigms and, at the same time, the need for complementarity of approaches when analyzing big data (Leavitt et al., 2021; Shrestha et al., 2021; Tonidandel et al., 2018).

I caution that Machine Learning (ML) and Natural Language Processing (NLP) techniques serve to increase the researcher's scope but fail to provide explanations for the patterns found, as they are inherently probabilistic in nature (Lindebaum & Ashraf, 2021; Shrestha et al., 2021). Therefore, the method does not claim to provide data understanding. Instead, I see theorization as a product of researchers' creative and analytical skills. I applied the method to analyze a large dataset but remained close to the data by following a rigorous approach to data analysis. This approach considers the objectivist nature of the algorithms and the subjectivist nature of qualitative analysis, thus bridging two distant paradigms. Furthermore, I proposed a step-by-step process to deal with this epistemological tension, considering these steps as a mindful process for the researcher to navigate this tension. The method helped to deepen our understanding of gender performances (Chapter 6) by allowing me to incorporate two distinct settings, proving that incorporating LLM-based algorithms into qualitative research is possible and beneficial.

The methodological contribution of this dissertation to the qualitative research community is a procedure to effectively explore and select relevant online data for qualitative analysis. This method can be applied to any qualitative analysis of large online datasets. For instance, it could be applied to study entrepreneurial identity through online discourses. Beyond the field of entrepreneurship, for example, it could be applied to understand organizations' and individuals' green transitions through the analysis of their online communications including reports and blogs. This

methodological procedure is a helpful ally to answering research questions that necessitate large amounts of online data but require a qualitative approach. As such, this dissertation introduces an innovative approach to enhance theorization within Entrepreneurship and Management research. It allows researchers to explore and analyze online data efficiently, enhances their analytical capabilities, enables them to derive new insights from implicit patterns, and ensures precision in counting and classification.

With this work, I enlarged the qualitative research methodological toolbox needed to take advantage of big data for qualitative researchers. Moreover, this method bridges academic paradigms by harnessing the capabilities of LLMs to learn the intrinsic structure of language, incorporating its contextual meaning and nuances. The method proves beneficial in extending our comprehension of diverse constructs by facilitating the merging of large and variant types of datasets while maintaining a qualitative approach to data analysis. I argue that using NLP algorithms, including LLM-based, enhances the theorization process, allowing the research community to derive new insights from sentiments, topics, and phrases and refine our analysis by efficiently finding the data that supports it. In utilizing LLMs, I grasp the rich, contextual understanding essential for qualitative research (Alvesson & Sköldberg, 2017; Van Burg et al., 2022) and leverage the automation and augmentation capabilities of ML (Raisch & Krakowski, 2021) to efficiently analyze substantial volumes of online data.

Practical Implications

Women entrepreneurs must be aware that their endeavors are shaped not only by their determination, knowledge, and effort but also by societal expectations and gender stereotypes. These expectations may not be within their control, but awareness of their implicit effects can be beneficial. As illustrated in the study presented in Chapter 4, the more experienced entrepreneurs, especially those who have been confronted with gender stereotypes, are more aware of their negative influence and have developed strategies to cope with them. They have acquired the

feeling of controlling the situation, of being strategically adaptable, and having the openness of choice that allows them to play with the norms.

This suggests that promoting awareness of the implicit effects of gender norms and stereotypes is beneficial and necessary to diminish their effects. However, we should avoid targeting women as the sole responsible for taking the road of awareness, as these beliefs are formed by all the members of society alike. Thus, programs and policies should target not only women entrepreneurs but also men entrepreneurs, educators, investors, and mentors, regardless of their gender.

As women entrepreneurs gain increased awareness of external perceptions, they possess the capacity to effectively modify their gender performances. For instance, in Chapter 6, I presented the case of Jenny. Her extensive personal and professional experiences have allowed her to develop a deep understanding of the gender norms governing society. Jenny, thus, situates her gender performances highlighting the strength of feminine and masculine traits. By doing so, she comfortably enacts femininity and masculinity as the situation requires. This enables the development of an entrepreneurial identity that aligns with her goals and values, thereby mitigating unnecessary stress. I suggest that policymakers, educational institutions, investors, and entrepreneurs need to acknowledge that gender norms and stereotypes in entrepreneurship pose a significant constraint. They have a role in raising awareness but also in helping to shape new beliefs and behaviors. I could say that they are "performativity enablers," allowing all types of entrepreneurs to enact feminine and masculine traits comfortably.

I propose several potential strategies to move entrepreneurship toward a gender-aware field. Entrepreneurship Education programs could emphasize self-awareness and controlling personal biases. Institutions could establish rules encouraging individuals to counteract unconscious stereotypes, such as during recruitment or investment juries. Entrepreneurship education programs, incubators, and media should also promote a diversity of role models and actively encourage women business owners to take the lead. Moreover, understanding the distinct inter-subject gender variations can help educators, policymakers, and entrepreneurial programs tailor their offerings to support women entrepreneurs better. By acknowledging that gender norms and stereotypes are both subverted and reinforced by women,

programs can be better designed to account for these variances. Recognizing that a cumulus of gender performances constructs gender beliefs, and these performances can sometimes be contradictory, can help alleviate the pressure of gendered expectations and promote equality.

Promoting non-binary norms about entrepreneurship could benefit society as a whole, as more studies have highlighted the importance of incorporating feminine attributes in venture creation (Gupta et al., 2019; Mattner & Sundermeier, 2023). This would not only open entrepreneurship careers to self-censored girls but also reduce unnecessary suffering due to stereotype threat or impostor syndrome, which are unrelated to effective capabilities and only obstruct venture creation.

This dissertation underlines the importance of acknowledging the impact of gender norms and stereotypes in entrepreneurship. It highlights the need to shift focus from using women as a proxy for gender to analyzing the myriad of gender performances that simultaneously conform to and reject rigid gender beliefs. I hope to encourage further exploration of these performances to foster a more inclusive, gender-neutral environment for venture creation.

Limitations of the research

This dissertation has several limitations. The number of participants is small, notably in the empirical study of Chapter 4. This limitation does not allow for the generalization of the findings. As such, the findings must be correlated with further studies. Furthermore, the participants are at different stages of their business; some are at an early stage, and others are in a stable business. These variations may have implications in the way these entrepreneurs do gender. Experience may play a pivotal role in how gender performances unfold. Those who have been in the field longer may have developed a better understanding of the influence of gender norms and stereotypes, which has not been considered.

Even though the participants were selected following specific growth or environmental orientation criteria, the sector in which they operate was disregarded. However, each sector may have sector-specific gender norms and stereotypes. For instance, it has been established that women face more barriers when operating in STEM sectors

(Achtzehn et al., 2023). Yet, due to the small sample, the analysis did not consider this sector-related difference between participants. Nevertheless, the analysis considers the gender-related experiences of each participant as they perceived them in the sector in which they operate.

From the gender studies perspective, this research focuses exclusively on women entrepreneurs, thus limiting our ability to capture the full spectrum of gender performances within organizations.

The method proposed in this dissertation also presents some limitations. It was built on the first open-source LLM-based algorithms, requiring good programming knowledge. Even though today, new LLM algorithms are non-coder friendly, this is not the case with the method presented here. Moreover, the method focuses exclusively on text, disregarding the richness of video and images of online data. Therefore, this method needs to be updated continually as this technology evolves rapidly.

In the next section, I address these limitations, proposing future research that can expand upon the studies presented in this dissertation.

Future research

This work has opened different research avenues. First, it allows me to explore gender performativity in the field of entrepreneurship. In particular, the methodology employed in Chapter 6 can be used to analyze men entrepreneurs to capture the full spectrum of gender performances. Considering the societal changes pushing toward gender equality and the environmental crisis faced today, I advance that dominant entrepreneurial masculinity (Hytti et al., 2023) could be challenged by men ecopreneurs' gendered performances of environmental care. Moreover, other types of entrepreneurs can be studied following the approach presented in Chapter 6. For instance, social entrepreneurs could also be explored as they may subvert gender stereotypes through their entrepreneurial endeavors. As other studies have shown, social and environmental entrepreneurs enact masculine and feminine traits (Dimitriadis et al., 2017; Gupta et al., 2019; Yang et al., 2020). Expanding on other types of entrepreneurship could be of interest to study how gender norms and stereotypes in entrepreneurship are reinforced, challenged, or rejected. We may find

that entrepreneurs mostly conform to the norms in certain situations, for example, during crowdfunding campaigns, as found in the study of Anglin et al. (2021).

I studied gender performativity utilizing two distinct contexts. However, time could be employed for future research to capture gender fluidity. As mentioned in the previous section, experience could play a significant role in shaping gender performances. However, this necessitates capturing the acquisition of various experiences over time. Longitudinal studies could be created to capture the fluidity of gender by following the same individual in the long run. This could be done by collecting archival online data to uncover changes in their gender performances over time. For example, individuals who have cultivated a significant online presence over the years have generated substantial volumes of data. Variations may be observed in their gender postures and beliefs over time, as diverse life experiences could shape individuals' perceptions of gender norms and stereotypes. Branicki et al. (2023) have attempted to accomplish this, following Joy's entrepreneurial journey over the years. However, they are limited by the fictional representations portrayed in the film without relying on real-life accounts. Moreover, some participants have mentioned during interviews how their perceptions have changed over time. In particular, those who have been in the field longer. I believe that this is an interesting avenue to explore deeper. How do the different life experiences affect their gender perceptions? Could gender performances change over time?

Going beyond the study of gender stereotypes in entrepreneurship, gender performativity could be studied within online entrepreneurial communities, taking advantage of the method proposed in Chapter 5. For example, social network analysis of specific communities could be made following a qualitative approach to understand the gender relations in the network. It could be of interest to analyze the online interactions of entrepreneurial networks. Does gender impact these networks? Are there specific topics that belong to women's networks, mixed networks, or men's networks? Are these networks interconnected? If yes, how? Moreover, other forms of entrepreneurship could be empirically studied. For instance, online environmental-oriented communities could be analyzed to explore the particularities of this type of entrepreneurship. As of today, there is no clear definition nor a clear difference between environmental entrepreneurship and other types of entrepreneurship

(Mansouri & Momtaz, 2022; Santini, 2017); thus, this line of research could yield interesting outcomes.

In the context of our current climate challenges, understanding how gender beliefs influence the growth of environmentally focused ventures is crucial. Women ecopreneurs face unique challenges. They promote environmentally friendly solutions to facilitate society's transition to a sustainable world. This dual burden of managing gendered expectations and promoting environmental sustainability underscores the importance of supporting these women in their endeavors. Going a step further, considering the damage caused to our environment by the beliefs of endless growth (Stiegler & The Internation Collective, 2021), studying how the environmental crisis challenges the gender order could yield exciting results. Ecopreneurs could be analyzed at the forefront of a broader shift in societal values. They are revalorizing feminine traits opposing the masculine norm of growth and dominance. They represent a significant potential for subversion, in line with the critique of the Anthropocene (Stiegler & The Internation Collective, 2021). This line of research could make significant contributions to sustainability research, sustainable entrepreneurship, and the management field.

Concerning the field of research methods, I continue testing new algorithms to improve the performance of the results yielded by the three NLP techniques (Sentiment Analysis, Topic Modeling, and Information Retrieval) that constitute the method. I suggest incorporating the newest algorithms that capture image, audio, and video into the method to expand the analysis of gender performativity. As most of the online content is found today in the form of videos and images, future research could benefit from this content to create richer and more complete datasets beyond text discourses. For instance, these new algorithms can describe gestures, attires, and scenes in video and images. These descriptions represent corporal gender performances, which enrich our analysis and understanding of gender fluidity.

Leveraging new technologies for methodological purposes opens vast possibilities. This method allows me to access vast amounts of data and can be easily applied far beyond gender and entrepreneurship research. For instance, in the field of sustainability, I have already tested the method to explore individuals' ecological transitions and their online influence. In this project, I am interested in studying the life

trajectory of environmentally engaged individuals. This could help us understand the factors that facilitate the ecological transition as well as those that inhibit it. With the need to accelerate the ecological transition, understanding people's perceptions, feelings, and positions is crucial. Consequently, this dissertation paves the way for extensive future research, primarily due to its innovative method.

Conclusion

The gender gap in entrepreneurship remains a significant issue despite ongoing efforts to address it. Women entrepreneurs often grapple with gendered expectations and stereotypes that position entrepreneurship as a masculine field. I seek to advance our understanding of gender norms and stereotypes by examining the nuanced experiences of women entrepreneurs and their capacity to challenge and reinforce these rigid beliefs. This dissertation focuses on two types of women entrepreneurs: growth-oriented and environmental-oriented. The former allows me to explore how gender stereotypes are reinforced and subverted in the context of growth performance, while the latter allows me to study the different gender performances that simultaneously conform to and reject gender norms and stereotypes. Analyzing these contrasting groups allows a more comprehensive understanding of how women entrepreneurs shape gender norms and stereotypes within different contexts. Furthermore, I argue that women entrepreneurs challenge these norms through a blend of femininity and masculinity, demonstrating the fluidity of gender. This fluidity is expressed through four types of performances: femininity, masculinity, androgyny, and dissonance.

To further understand gender fluidity, I have utilized Large Language Model algorithms to analyze a large volume of online data, particularly social media posts. This methodological approach has reconciled contrasting views and enriched our theoretical understanding. Therefore, this dissertation proposes a new method to enhance qualitative analysis by incorporating LLMs, opening new avenues for qualitative researchers.

The findings underscore the need for a shift in focus on gender as a binary construct to study gender as a sum of gendered practices that sometimes conform to or reject gender norms and stereotypes. By looking at gender as constantly done and undone, we avoid positioning women as a substitute for gender and foster a more inclusive entrepreneurial environment that genuinely values gender diversity and equality.

My personal and professional experiences and my desire to help other women entrepreneurs drove me to embark on this amazing doctoral journey. What I take with me is the satisfaction of creating knowledge that can help other entrepreneurs achieve their goals. Understanding the pervasive and subtle presence of gender stereotypes is the first step to diminishing their grip.

Discovering other ways to create knowledge through my ontological and epistemological path has been an exciting journey that I wish to continue. As such, I see my future research as a continuum of the two main areas that I developed during my doctoral program: gender in entrepreneurship and qualitative methods. Even though the topic of gender has been widely explored, there is still a long way to go to make all gender expressions equally valuable. Moreover, with the new advances in AI, there is much to explore and understand to achieve a safe, ethical, and productive way of using these technologies. Therefore, this dissertation is just the beginning of an exciting academic journey.

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Appendix A

Phyton code

```
# Words and symbols to filter out
nltk.download('stopwords')
nltk.download('words')
punctuation = set(string.punctuation)
stopwords = list(fr_stop) + list(en_stop)
emoj = re.compile("["
    u"\U0001F600-\U0001F64F"  # emoticons
    u"\U0001F300-\U0001F5FF"  # symbols & pictographs
    u"\U0001F680-\U0001F6FF"  # transport & map symbols
    u"\U0001F1E0-\U0001F1FF"  # flags (iOS)
    u"\U000024C2-\U0001F251"
    u"\U0001f926-\U0001f937"
    u"\U00010000-\U0010ffff"
    u"\u2600-\u2B55"
    u"\u200d"
    u"\u23cf"
    u"\u23e9"
    u"\u231a"
    u"\ufe0f"  # dingbats
    u"\u3030"
    u"\u200c"
                "]+", re.UNICODE)

def remove_emojis(data):
    return re.sub(emoj, '', data)

def count_emojis(data):
    return sum([len(n) for n in re.findall(emoj,data)])


def normalize_text(x: str) -> str:
    # Normalize unicode to ASCII (e.g., italic, bold text)
    # x = unicodedata.normalize('NFKC', x)
    # Verify that hyperlinks, emails, phone numbers, etc. are removed
    regex_str = (r'https?://[^\s\n\r]+|www.[^\s\n\r]+|bit.ly[^\s\n\r]+|'
                 r'[a-z0-9]+[\._]?[a-z0-9]+[@]\w+[.]\w{2,3}|'
                 r'\d{2}.\d{2}.\d{2}.\d{2}.\d{2}|'
                 r'\d+|…|\u200d|»|«|“|•|°|->|…')
    pattern = re.compile(regex_str)
    x = pattern.sub('', x)
    # Replace other characters with spaces before tokenization
    pattern = re.compile(r"\n|\xa0|'|’|@|\.|#\w+\s*")
    x = pattern.sub(' ', x)
    return x
```

```
def cleanup(x: str) -> List:
    """ Clean up, tokenize and lemmatize an input string.

    Arguments:
        x (str): The text to clean-up, tokenize and lemmatize.
    Return:
        list[(str, str)]: List of pairs. Each pair is a token from the original
                    text: <not-lemmatized, lemmatized>
    """
    x = normalize_text(x)
    # Remove emojis
    x = remove_emojis(x)

    # Lemmatize tokens and remove stop words
    tokens = [
        (t.text, t.lemma_) for t in nlp(' '.join(tokenizer.tokenize(x)))
        if t.lemma_ not in stopwords and   # stopwords_fr
          t.lemma_ not in punctuation and
          # t.lemma_ not in words_en and
          t.lemma_ not in misc_blocked
    ]
    return tokens

def retrieve_docs(fpath):
    csv_data = glob.glob(fpath)
    df_raw = pd.DataFrame()
    for f in csv_data:
        df_raw = pd.concat([df_raw, pd.read_csv(f, usecols=colsli, encoding='utf-8')])
    df_raw.reset_index(drop=True, inplace=True)

    # Cleanup, tokenize and lemmatize each post's text
    df_raw['tokens'] = df_raw.apply(lambda x: cleanup(str(x['text'])), axis=1)
    # Count emojis
    df_raw['count_emojis'] = df_raw.text.map(lambda x: count_emojis(x))
    # Count words (exclude emojis)
    df_raw['count_words']      =      df_raw.text.map(lambda      x:      len(x.split('      ')))      -
df_raw['count_emojis']

    # List of tokenized posts (each one as a string)
    all_sentences_text = [[l[0] for l in l1] for l1 in df_raw.tokens.values]
    df_raw['str_tokens'] = [' '.join(l) for l in all_sentences_text]

    # List of tokenized and lemmatized posts (each one as a string)
    all_sentences_lemma = [[l[1] for l in l1] for l1 in df_raw.tokens.values]
    df_raw['str_lemma'] = [' '.join(l) for l in all_sentences_lemma]
    df_raw.rename(columns=namemap, inplace=True)
   return df_raw
# Instantiate tokenizer class
tokenizer = TweetTokenizer(preserve_case=False, strip_handles=True,
                           reduce_len=True)
```

```
# User activity analysis (LinkedIn and Facebook)
def aggregate(df, tag):
    c = ['count_emojis', 'count_words']
    agg_col = ['author', 'owner', 'user_alias', 'owner_alias', 'group']
    # display(df.head(1))
    df_agg = pd.concat([
        df.groupby(agg_col)[c].agg('sum'),
        df.groupby(agg_col).count_words.count()
    ], axis=1).reset_index()

    df_agg.columns = agg_col + c + ['count_posts']
    df_agg['words_per_post'] = df_agg['count_words'] / df_agg['count_posts']
    df_agg['pct_of_words'] = 100*df_agg['count_words']/df_agg['count_words'].sum()
    df_agg['pct_of_posts'] = 100*df_agg['count_posts']/df_agg['count_posts'].sum()
    display(df_agg.sort_values('count_posts',            ascending=False).drop(columns=['author',
'owner']))

# Word embeddings and cosine similarity
all_sentences_lemma = [L.split(' ') for L in list(df_data[m].str_lemma)]
model = FastText(vector_size=100)
# Build the vocabulary
model.build_vocab(all_sentences_lemma)
# display(model.epochs, model.corpus_count, model.corpus_total_words)
# Train the model
model.train(
    all_sentences_lemma, epochs=model.epochs*100,
    total_examples=model.corpus_count, total_words=model.corpus_total_words,
)

# Sentiment analysis
colssa = ['user_alias', 'group', 'text', 'sentiment', 'sentiment_score']  # user_alias

def generate_sa(df_sa, datatype):
    # data type values: 'text', 'tokens' or 'lemma'
    docs = list(df_sa[datatype])
    sentiment = pd.DataFrame(sentiment_task( docs ))
    sentiment.rename(
        columns={'label': 'sentiment', 'score': 'sentiment_score'},
        inplace=True
    )
    # Add 'sentiment' and 'sentiment score' to each post
    df_sa = pd.concat([df_sa, sentiment], axis=1)
    return df_sa

# Topic modeling (BERTopic)
colstm = ['user_alias', 'text', 'Topic_ID', 'Topic_Prob', 'Topic_Name', 'Topic_Prob_distribution']
# 'author'
def generate_tm(df_tm, datatype, topic_size=5):
```

```
    metadata = {}
    # data type values: 'text', 'str_tokens' or 'str_lemma'
    docs = list(df_tm[datatype])
    # Create model
    umap_model = UMAP(random_state=50) # Use this to get a repeatable output
    model = BERTopic(
        language="French",
        min_topic_size=topic_size,
        nr_topics=10,
        umap_model=umap_model
    )
    # Fit the model
    topics, probabilities = model.fit_transform(docs)
    # Hierachical topics
    hierarchical_topics = model.hierarchical_topics(docs)  # , topics=topics
    # Per-post topic distribution
    Topic_Prob_Distribution, _ = model.approximate_distribution(docs)
    # Add topic information to each post
    topic_info = model.get_topic_info()
    topic_info.columns = ['Topic_ID', 'Topic_Count', 'Topic_Name']
    df_tm['Topic_ID'] = topics
    df_tm['Topic_Prob'] = probabilities
    df_tm['Topic_Prob_distribution'] = list(Topic_Prob_Distribution)
    # Add Topic_Count and Topic_Name to each post
    df_tm = pd.merge(df_tm, topic_info, how='left', on='Topic_ID')
    metadata['model'] = model
    metadata['topic_info'] = topic_info
    metadata['hierarchical_topics'] = hierarchical_topics
    return df_tm, metadata #topic_info, model, hierarchical_topics

# Sentence similarity model
model_ss =  SentenceTransformer("dangvantuan/sentence-camembert-large")
def top_similar_sentences(query, df_posts, n=None):
    qe = [model_ss.encode(query)]
    cs = cosine_similarity(qe, list(df_posts['text_embedding']))[0]
    df_posts['cosine_similarity'] = cs
    df_posts = df_posts.sort_values('cosine_similarity', ascending=False)
    return df_posts.head(n) if n else df_posts
```

List of word frequency

LinkedIn Personal

	Word (FR)	Word (EN)	Count
1	formation	Training	95
2	changement	change	91
3	pouvoir	power	85
4	écologique	ecological	64
5	transition	transition	59
6	vouloir	want	57
7	impact	impact	53
8	savoir	know	48
9	heure	time	48
10	mettre	set	46

LinkedIn Business

	Word (FR)	Word (EN)	Count
1	empow	empow	189
2	projet	Project	180
3	femme	female	168
4	changenow	changenow	162
5	impact	impact	144
6	solution	solution	131
7	pari	bet	113
8	heure	time	99
9	world	world	98
10	france	france	98

Facebook Business

	Word (FR)	Word (EN)	Count
1	femme	female	198
2	heure	time	190
3	projet	Project	184
4	empow	empow	184
5	atelier	Workshop	156
6	pouvoir	power	139
7	women	women	128
8	programme	Programme	113
9	festival	festival	108
10	septembre	September	90

Aggregated list of topics for each dataset and entrepreneur

LinkedIn personal profiles

alias	Topic_Name	Carmen	Emily	Hope	Jane	Julia	Lucy	Nancy	Olivia	Sara	Total
0	power hour transition change	1	4	2	20	11	5	28	2	2	75
2	formation change ecology intervention	0	0	0	9	2	2	21	0	0	34
3	put want change posture	1	0	0	0	4	0	13	2	0	20
4	power companionship health friday	0	0	1	1	1	1	7	0	0	11
6	workshop go change power	0	1	0	1	0	1	7	1	0	11
1	woman event festival	0	0	0	3	0	4	1	0	0	8
5	base fantastic bet	1	0	0	0	2	2	1	0	0	6

LinkedIn professional profiles

alias	Topic_Name	Carmen Business	Emily Business	Hope Business	Jane Business	Julia Business	Lucy Business	Nancy Business	Total
0	projet change-now france empower	4	2	17	110	11	44	2	190
1	solution change-now planet world	0	0	0	102	0	10	2	114
2	festival september woman Saturday	0	0	0	9	1	37	1	48
3	sist here bet	2	0	1	9	8	13	3	36
4	projet launch wish empower	0	0	0	10	0	16	2	28
5	women program initiative act	0	0	0	10	0	15	0	25
6	here podcast podcaster ecolo	1	0	1	8	4	6	5	25
7	organic soil percent food	0	0	12	6	0	0	0	18
8	solution planet change-now world	0	0	0	16	0	0	0	16

9	empower woman projet Africa	0	0	0	0	0	15	0	15
10	projet daughter bet	0	0	0	0	1	13	0	14

Facebook professional profiles

alias	Topic_Name	Carmen Business	Emily Business	Hope Business	Jane Business	Julia Business	Lucy Business	Nancy Business	Total
0	workshop project power hour	10	58	16	48	24	39	66	261
1	festival empower hour september	0	0	0	1	12	52	1	66
2	women woman program projet	0	0	0	4	0	50	0	54
3	can workshop space job	0	39	1	3	2	1	0	46
4	youtube_com clip	0	1	0	1	35	0	1	38
5	pickle recipe aperitif box	0	29	0	0	2	0	0	31
6	paper dirty note notebook	25	1	0	0	0	0	0	26
7	soil agriculture organic food	0	2	16	1	0	0	5	24
8	ecological change health training	0	1	0	7	0	0	16	24
9	solution issue wechange planet	0	0	0	10	0	13	0	23
10	album clip hour everywhere	0	0	0	0	20	1	1	22

Appendix B

List of topics per ecopreneur and dataset

LinkedIn Personal topics

topic_name	topic_description	user_alias
Fashion	Posts related to fashion, clothing, and style	Sara
Startups	Posts related to startups and entrepreneurship	Sara
Marketing	Posts related to marketing and digital marketing	Sara
COVID-19	Posts related to the impact of COVID-19 on the fashion industry	Sara
Vintage	Posts related to vintage clothing and second-hand fashion	Sara
Feminism	Posts related to feminism and women's rights	Sara
Mode	Posts related to fashion and style	Sara
Business	Posts related to business and entrepreneurship	Sara
Art	Posts related to art and creativity	Sara
Job Opportunities	Posts related to job opportunities in the fashion industry	Sara
Développement web	Posts related to learning and pursuing a career in web development	Emily
Cuisine	Posts related to cooking, recipes, and food-related businesses	Emily
Job search	Posts related to searching for job opportunities	Emily
Events	Posts related to attending or participating in events	Emily
Technology	Posts related to technology and innovation	Emily
Marketing	Posts related to marketing and promotional activities	Emily
Start-up	Posts related to start-up companies and their innovations	Emily
Networking	Posts related to networking and seeking opportunities through connections	Emily
Personal growth	Posts related to personal growth and self-improvement	Emily
Retail	Posts related to the retail industry and job opportunities in that field	Emily
Communication	Posts related to communication and graphic design	Natalie
Agroécologie	Posts related to agroecology	Natalie
Biodiversité	Posts related to biodiversity	Natalie
Alimentation	Posts related to food and nutrition	Natalie
Startup	Posts related to startups and entrepreneurship	Natalie
Tempeh	Posts related to tempeh, a food product	Natalie
Plant-based	Posts related to plant-based diets and products	Natalie
ESS	Posts related to social and solidarity economy	Natalie
Proteins	Posts related to proteins	Natalie
Cuisine végétale	Posts related to vegan cuisine	Natalie
climate change	Posts discussing the impact of climate change and the need for action	Jenny
sustainability	Posts advocating for sustainable practices and development	Jenny
biodiversity	Posts highlighting the importance of biodiversity conservation	Jenny
leadership	Posts discussing the role of leadership in driving change	Jenny
emotional intelligence	Posts emphasizing the importance of emotional intelligence in decision-making	Jenny
nature	Posts celebrating and appreciating nature	Jenny
technology	Posts discussing the role of technology in sustainability	Jenny
mental health	Posts addressing the link between mental health and nature	Jenny

economic development	Posts discussing the relationship between sustainability and economic development	Jenny
personal development	Posts focusing on personal growth and self-improvement	Jenny
Upcycling	Discussion about the concept of upcycling and its importance in the fashion industry	Elvira
Sustainable fashion	Posts about the need for sustainable practices in the fashion industry	Elvira
Stocks dormants	Discussion about using dormant stocks of fabrics in fashion production	Elvira
Fashion industry	General discussions about the fashion industry and its impact on the environment	Elvira
Entrepreneurship	Posts about starting and running a business in the fashion industry	Elvira
Circular economy	Discussions about the concept of a circular economy and its application in the fashion industry	Elvira
Fashion trends	Discussions about current fashion trends and their impact on sustainability	Elvira
Social responsibility	Posts about the importance of social responsibility in the fashion industry	Elvira
Innovation	Discussions about innovative ideas and practices in the fashion industry	Elvira
Collaborations	Posts about collaborations between different brands and organizations in the fashion industry	Elvira
Engagement associatif	Mettre ses compétences au service d'une cause	Samantha
Solidarité	Aider les autres et contribuer à un monde plus solidaire	Samantha
Bien commun	Réconcilier croissance et bien commun	Samantha
Intelligence collective	Travailler ensemble pour trouver des solutions	Samantha
Entrepreneuriat social	Entreprendre pour faire avancer des projets qui font sens	Samantha
Recrutement	Rechercher des talents pour rejoindre l'équipe	Samantha
Responsabilité sociale des entreprises (RSE)	Intégrer des valeurs sociales et environnementales dans les entreprises	Samantha
Égalité des genres	Promouvoir l'égalité entre les hommes et les femmes	Samantha
Transition écologique	Agir pour l'environnement et la durabilité	Samantha
Accompagnement entrepreneurial	Aider les entrepreneurs dans leur projet	Samantha
Journées Européennes des Métiers d'Art	Identité visuelle de la nouvelle édition des Journées Européennes des Métiers d'Art	Carmen
Dirty Notes	La marque de papeterie 100% upcyclée en France	Carmen
Newsletter	Abonnement à la newsletter de Dirty Notes	Carmen
Carnets personnalisables	Offrir des carnets personnalisables aux clients et collaborateurs	Carmen
Appel à papier	Collecte de papier pour le transformer en articles de papeterie	Carmen
E-shop	Lancement de l'e-shop de Dirty Notes	Carmen
Fabrication artisanale	Conception de produits sur-mesure en petites séries pour valoriser les papiers récupérés	Carmen
Journée mondiale du recyclage	Réutilisation directe de la matière première sans transformation industrielle	Carmen
Partenaires de Dirty Notes	Imprimeurs, façonniers et fabricants de papier qui partagent les valeurs de Dirty Notes	Carmen
Préventes sur KissKissBankBank	Lancement de la campagne de préventes sur KissKissBankBank	Carmen
Ferme maraîchère biologique	Discussion sur la création d'une ferme maraîchère biologique	Hope
Cultures et Compagnies	Mentions de l'entreprise Cultures et Compagnies et de ses activités	Hope
Claudio Muskus	Mentions de Claudio Muskus, associé de Cultures et Compagnies	Hope
Agriculture urbaine	Discussion sur l'agriculture urbaine et ses avantages	Hope

CIC Business Awards	Participation de Cultures et Compagnies aux CIC Business Awards	Hope
Résilience alimentaire	Discussion sur la résilience alimentaire des territoires	Hope
Transition écologique	Discussion sur le rôle des entreprises dans la transition écologique	Hope
Vote	Appel à voter pour Cultures et Compagnies	Hope
Think tank Terra Nova	Discussion sur les recommandations du think tank Terra Nova	Hope
Bourse French Tech	Obtention de la Bourse French Tech pour le projet d'innovation sociale de Cultures et Compagnies	Hope
Shark conservation	Posts about efforts to stop the shark fin trade and protect sharks	Kelly
Climate change	Posts about the impact of climate change on biodiversity and the environment	Kelly
Artivism	Posts about using art as a form of activism to raise awareness about environmental issues	Kelly
Fish Free February	Posts promoting the campaign to reduce fish consumption in February	Kelly
Plastic pollution	Posts about the negative impact of plastic pollution on the oceans	Kelly
Ocean conservation	Posts advocating for the protection of the oceans and marine life	Kelly
Environmental education	Posts about educating children and raising awareness about environmental issues	Kelly
Global treaties on plastic pollution	Posts about the need for a global treaty to address plastic pollution	Kelly
Circular economy	Posts promoting the concept of a circular economy to reduce waste and promote sustainability	Kelly
Sustainable living	Posts advocating for sustainable lifestyle choices and reducing environmental impact	Kelly
Viande et élevage	Discussion sur les impacts environnementaux de la production animale et les alternatives végétariennes	Mary
Agriculture alternative	Débat sur les difficultés et les avantages de l'agriculture alternative respectueuse de l'environnement	Mary
Pesticides	Préoccupations concernant l'utilisation des pesticides et les alternatives	Mary
Défense de l'agriculture bio	Mobilisation pour soutenir l'agriculture biologique et dénoncer le mépris du gouvernement	Mary
Réparation et recyclage	Promotion de la réparation et du recyclage des produits pour réduire les déchets	Mary
Harcèlement scolaire	Discussion sur le harcèlement scolaire et l'importance des arts martiaux pour l'estime de soi	Mary
Emplois et recrutement	Opportunités d'emploi dans les domaines de la vente, du service client et du marketing	Mary
Données de paiement	Réflexion sur l'utilisation des données de paiement	Mary
Marketing mobile	Discussion sur les nouvelles opportunités offertes par le marketing mobile	Mary
Automatisation et interaction humaine	Réflexion sur l'équilibre entre l'automatisation et l'interaction humaine dans le service client et le marketing	Mary
Plastic pollution	Discussion about the negative impact of plastic on the environment and efforts to reduce plastic waste	Jacinta
Recycling	Focus on the importance of recycling and promoting recycling initiatives	Jacinta
Women's rights	Discussion about the impact of feminist laws and the fight for women's rights	Jacinta
Normandy	News and updates about events, projects, and achievements in the Normandy region	Jacinta
Industrial development	Announcements and updates about industrial projects and investments	Jacinta
Agricultural waste recycling	Efforts and initiatives to recycle agricultural waste, such as plastic nets and strings	Jacinta
COVID-19	Information and guidelines related to the COVID-19 pandemic	Jacinta

Natural disasters	Discussion about strategies and prevention measures for natural disasters, such as earthquakes and tsunamis	Jacinta
Innovation	Highlighting innovative projects and technologies in various industries	Jacinta
Job opportunities	Announcements and discussions about job opportunities and recruitment	Jacinta
Seconde main	Posts related to buying and selling second-hand items	Julia
Inclusion	Posts related to promoting inclusivity and supporting children with special needs	Julia
Economie circulaire	Posts related to circular economy and sustainability	Julia
Entrepreneuriat	Posts related to entrepreneurship and starting a business	Julia
Recyclage	Posts related to recycling and repurposing items	Julia
Environnement	Posts related to environmental conservation and sustainability	Julia
Podcast	Posts related to podcast interviews and appearances	Julia
Emploi	Posts related to job openings and recruitment	Julia
Association	Posts related to partnerships and collaborations with non-profit organizations	Julia
Entreprise à mission	Posts related to being a mission-driven company	Julia
Développement économique	Posts related to economic development and job creation	Olivia
Economie circulaire	Posts related to circular economy and sustainable consumption	Olivia
Entrepreneuriat	Posts related to entrepreneurship and business development	Olivia
Tourisme durable	Posts related to sustainable tourism	Olivia
Insertion professionnelle	Posts related to professional integration and job opportunities	Olivia
Responsabilité sociétale des entreprises	Posts related to corporate social responsibility	Olivia
Formation professionnelle	Posts related to professional training and education	Olivia
Impact investing	Posts related to impact investing and socially responsible investments	Olivia
Recrutement	Posts related to job recruitment and hiring	Olivia
Réseaux sociaux	Posts related to social media and online networking	Olivia
Sustainable Coffee	Developing sustainable ways of consuming coffee	Charley
Entrepreneurship	Starting and growing businesses	Charley
Culinary Education	Democratizing access to quality culinary art education	Charley
Middle East Cuisine	Promoting and valuing Middle Eastern cuisine	Charley
Startups	Being part of startup programs and incubators	Charley
Education	Promoting quality food education	Charley
French Chefs	Connecting with French chefs for teaching opportunities	Charley
BPI Emergence	Kick off of the BPI Emergence program	Charley
Diversity and Tech	Supporting diversity in the tech industry	Charley
HEC Foundation	Supporting innovation in business education	Charley
Climate change	Discussions about the impact of climate change and the need for action	Jane
Water scarcity	Concerns about water shortage and the need to preserve water resources	Jane
Biodiversity loss	Discussions about the loss of biodiversity and the need for conservation	Jane
Plastic pollution	Concerns about plastic pollution and its impact on the environment	Jane
Women empowerment	Discussions about the role of women in creating positive change	Jane
Sustainable development	Discussions about sustainable development and its importance	Jane

Job opportunities	Announcements and discussions about job opportunities with a focus on positive impact	Jane
Youth engagement	Discussions about the involvement of young people in creating positive change	Jane
Event organization	Discussions about the organization of ChangeNOW event	Jane
Education for sustainability	Discussions about the role of education in promoting sustainability	Jane
Women empowerment	Discussions about empowering women in various fields	Lucy
Entrepreneurship	Discussions about starting and running businesses	Lucy
Gender equality	Discussions about achieving equality between genders	Lucy
Social impact	Discussions about creating positive social change	Lucy
Feminism	Discussions about advocating for women's rights and equality	Lucy
Professional development	Discussions about personal and professional growth	Lucy
Inclusion	Discussions about promoting diversity and inclusivity	Lucy
Sustainable development	Discussions about achieving development goals while preserving the environment	Lucy
Community engagement	Discussions about actively participating in and supporting communities	Lucy
Fundraising	Discussions about raising funds for organizations and projects	Lucy
Facilitation graphique	Utilisation du dessin pour clarifier, faciliter et transmettre	Sophia
Intelligence collective	Utilisation de la pensée visuelle et de la collaboration pour des temps d'équipes efficaces	Sophia
Rêve et alignement	Utilisation du rêve et de la visualisation pour clarifier ses valeurs et passer à l'action	Sophia
Changement et transition	Accompagnement des personnes en quête de sens et en transition	Sophia
Énergie et créativité	Retrouver de l'énergie, de la créativité et du sens dans ses projets professionnels	Sophia
Formation et accompagnement	Proposition de formations et d'accompagnements pour développer des compétences professionnelles	Sophia
Écologie et transition	Réflexion sur l'écologie et la transition dans le monde professionnel	Sophia
Joie et bienveillance	Importance de la joie, de la bienveillance et de la coopération dans le travail	Sophia
AMU (Assistance à Maîtrise d'Usages)	Formation et accompagnement dans le domaine de l'assistance à maîtrise d'usages des bâtiments	Sophia
Communication et relation	Réflexion sur la communication et les relations professionnelles	Sophia
Transition écologique	Mentions de la transition écologique, de la permaculture, de la biodiversité, de la régénération de la biodiversité, de la décarbonation	Victoria
Convention des Entreprises pour le Climat	Mentions de la Convention des Entreprises pour le Climat, de la sélection de dirigeants, de la redirection écologique des entreprises	Victoria
Formation et éducation à l'environnement	Mentions de la création des Grandes Écoles de la Transition, de la nécessité d'une éducation et de formations aux enjeux environnementaux et sociaux	Victoria
Effondrement et risques systémiques	Mentions des risques d'effondrement de la société, des crises socio-écologiques, des limites de notre modèle de développement	Victoria
Comptabilité et mesure des impacts environnementaux	Mentions des comptabilités écologiques, des métriques environnementales, de la mesure des impacts environnementaux	Victoria
Réflexion sur le modèle économique	Mentions de la nécessité de changer de modèle économique, de construire une économie régénérative, de repenser les modèles d'affaires	Victoria
Formation et sensibilisation	Mentions de formations, de séminaires, de rencontres pour sensibiliser et former les dirigeants et les acteurs économiques	Victoria

Conscience des enjeux environnementaux	Mentions de la prise de conscience des enjeux environnementaux, de la gravité des risques liés aux dégradations de la planète	Victoria
Rébellion et action	Mentions de la rébellion face aux enjeux environnementaux, de la nécessité de passer à l'action	Victoria
Vie en pleine nature	Mentions de la vie en pleine nature, de la reconnexion à la nature, de la recherche d'espace et de bien-être	Victoria

LinkedIn Business topics

topic_name	topic_description	owner_alias
Sustainability	Discussions about reducing carbon footprint, decarbonization, clean energy, circular economy, and sustainable fashion	Jane
Climate Change	Discussions about the impact of climate change, eco-anxiety, and climate action	Jane
Women Empowerment	Celebrating women leaders and their contributions to sustainability and equality	Jane
Circular Economy	Promoting a shift towards a circular economy to reduce waste and promote resource efficiency	Jane
Innovation	Highlighting innovative solutions and technologies for sustainability	Jane
Impact Investing	Encouraging investment in impactful projects and businesses	Jane
Youth Engagement	Empowering the younger generation to take action and make a positive impact	Jane
Clean Water	Addressing the issue of water pollution and promoting water purification technologies	Jane
ESG	Discussions about environmental, social, and governance factors in business and investing	Jane
Sports for Change	Exploring the role of sports in driving positive change and sustainability	Jane
Startups	Posts mentioning Cookler as a startup and its achievements	Charley
Culinary Education	Posts discussing the importance of culinary education and Cookler's mission to democratize access to culinary art education	Charley
French Tech	Posts mentioning Cookler's recognition as a French Tech Laureate and its collaboration with French culinary schools and producers	Charley
Middle East	Posts highlighting Cookler's focus on the Middle East market and its mission to introduce French cuisine savoir-faire in the region	Charley
EDHEC Entrepreneurs	Posts mentioning Cookler's collaboration with EDHEC Entrepreneurs and its achievements during the first week	Charley
Ramadan	Posts discussing the significance of Ramadan and Cookler's message of expressing love through food during the holy month	Charley
Self-Love and Food	Posts emphasizing the connection between self-love and food, and Cookler's mission to enable people to experience self-love through knowing what they eat	Charley
Technology and Food	Posts mentioning Cookler's use of technology to educate people about food production, buying, transformation, and conservation	Charley
French Cuisine	Posts highlighting the importance of French culinary art and Cookler's mission to promote French cuisine worldwide	Charley
Collaboration Opportunities	Posts inviting individuals and organizations to collaborate with Cookler in achieving its mission	Charley
Résilience alimentaire	Solutions pour renforcer l'autonomie alimentaire et la résilience des territoires	Hope
Agroécologie	Principes et techniques de l'agroécologie pour une agriculture durable	Hope
Fermes maraîchères	Projets de création de fermes maraîchères bio	Hope

Transition alimentaire	Changer les modes de production et de consommation alimentaire	Hope
Autonomie alimentaire	Réduire la dépendance aux importations alimentaires	Hope
Gaspillage alimentaire	Mesures pour limiter le gaspillage alimentaire	Hope
Agriculture biologique	Promotion et développement de l'agriculture biologique	Hope
Sols et biodiversité	Préservation des sols et de la biodiversité agricole	Hope
Développement urbain	Intégration de l'agriculture urbaine dans les projets de développement	Hope
Souveraineté alimentaire	Produire localement pour assurer l'autonomie alimentaire	Hope
Développement durable	Sensibilisation à la protection de l'environnement et à l'agriculture durable	Samantha
Engagement associatif	Soutien aux associations et aux causes sociales	Samantha
Solidarité	Aide aux populations touchées par des catastrophes et soutien aux associations humanitaires	Samantha
Ressources humaines	Gestion des talents, engagement des collaborateurs et bien-être au travail	Samantha
Mécénat de compétences	Utilisation des compétences professionnelles pour soutenir des associations	Samantha
Féminisme	Promotion de l'égalité des sexes et des droits des femmes	Samantha
Cancer du sein	Sensibilisation et soutien aux personnes touchées par le cancer du sein	Samantha
Labels RSE	Certifications et labels pour les entreprises engagées dans la responsabilité sociétale	Samantha
Entrepreneuriat féminin	Soutien et mise en valeur des femmes entrepreneures	Samantha
Handicap mental	Sensibilisation et inclusion des personnes en situation de handicap mental	Samantha
Economie circulaire	Discussions et événements autour de l'économie circulaire	Carmen
La Saison Circulaire	Programme d'incubation et d'accompagnement de projets d'économie circulaire	Carmen
Dirty Notes	Entreprise ou projet lié à Dirty Notes	Carmen
Cadeaux éco-responsables	Discussion sur les cadeaux éco-responsables	Carmen
Recrutement	Offre d'emploi ou recherche de candidat	Carmen
Camille Poulain	Discussion sur Camille Poulain et ses connaissances sur le papier et les bonnes pratiques	Carmen
Greenwashing	Discussion sur le greenwashing dans l'industrie graphique	Carmen
Newsletter	Promotion de la newsletter de Dirty Notes	Carmen
Papeterie	Discussion sur la papeterie et le papier	Carmen
Upcycling	Discussion sur l'upcycling et le réemploi	Carmen
Empow'Her campaign	Campaign to empower women in entrepreneurship and reduce gender inequalities	Lucy
BoostHer workshop	Workshop organized by Empow'Her for women empowerment	Lucy
Cartier Women's Initiative	Information session about Cartier Women's Initiative	Lucy
Empow'Her France on Widoobiz	Article about Empow'Her France and its Women Dare program	Lucy
Toolbox for female entrepreneurship	Launch of a toolbox for supporting female entrepreneurs	Lucy
Empow'Her Festival	Announcement and details about the Empow'Her Festival in Niger	Lucy
Job opportunities at Empow'Her	Job openings and internships at Empow'Her	Lucy
Women Act Boost program	Program for supporting women entrepreneurs with high social and environmental impact projects	Lucy
Digital project manager position	Job opening for a digital project manager at Empow'Her	Lucy

Girl Power project	Project focused on empowering young women through social entrepreneurship	Lucy
Santé environnementale	Discussion sur les problèmes de santé liés à l'environnement et les actions à prendre	Brittany
Pesticides	Demande d'interdiction et de réglementation des pesticides	Brittany
Agroécologie	Promotion d'un modèle agricole durable	Brittany
Qualité de l'air intérieur	Projet visant à surveiller la qualité de l'air dans les établissements accueillant les bébés et les enfants	Brittany
Campagne/pétition	Appel à l'engagement en faveur d'une politique de santé environnementale	Brittany
Collectif Inter-associatif pour la Santé Environnementale	Présentation et actions du collectif	Brittany
Webinaire	Annonce d'un webinaire sur la santé environnementale	Brittany
Journée mondiale de la Santé	Référence à la journée mondiale de la Santé et aux engagements pris	Brittany
Charte	Signature d'une charte pour faire de la santé environnementale un pilier du système de santé	Brittany
GIEC de la santé environnementale	Appel à la création d'un groupe d'experts sur la santé environnementale	Brittany
FoodTech	Discussions about innovative food technologies and startups in the food industry.	Natalie
Tempeh	Mentions of tempeh, a fermented soy-based protein alternative.	Natalie
Sustainable Food	Discussions about sustainable and responsible food production and consumption.	Natalie
Local Food	References to locally sourced and produced food.	Natalie
Vegetarian/Vegan	Mentions of vegetarian and vegan diets and food options.	Natalie
Innovation	Discussions about innovative food products and ideas.	Natalie
Startups	References to food-related startups and entrepreneurship.	Natalie
Events	Mentions of food-related events and exhibitions.	Natalie
Social Impact	Discussions about the social and environmental impact of food choices.	Natalie
French Cuisine	References to French cuisine and French food products.	Natalie
L'atelier PEP	Posts related to L'atelier PEP, a brand or business	Emily
Feedback	Posts mentioning feedback or reviews	Emily
Holiday season	Posts related to the holiday season and pre-orders	Emily
Recipes	Posts mentioning recipes or cooking	Emily
Gifts	Posts mentioning gifts or presents	Emily
Local products	Posts mentioning local products or businesses	Emily
Sustainability	Posts related to sustainability or development	Emily
Initiatives	Posts mentioning initiatives or projects	Emily
Entrepreneurship	Posts related to entrepreneurship or business ventures	Emily
Seasonal ingredients	Posts mentioning seasonal ingredients or dishes	Emily
Festival de l'Apprendre	Participation et intervention au Festival de l'Apprendre	Nancy
Santé environnementale	Projet de sensibilisation sur les 1000 premiers jours à destination de futurs parents non sensibilisés	Nancy
Formation en santé environnementale	Formation donnée aux élèves de l'IFSEN	Nancy
Formation de futurs catalyseurs du changement	Sessions de formation pour devenir catalyseur du changement	Nancy

Masterclass pour les acteurs de la transition écologique	Masterclass pour développer l'impact et les interventions dans la transition écologique	Nancy
Projet de podcast en co-création	Projet de podcast en partenariat avec Laetitia BLONDEL	Nancy
Table ronde du Greener festival	Participation à la table ronde du Greener festival	Nancy
Formation professionnelle	Formation professionnelle pour progresser dans sa posture professionnelle et avoir plus d'impact sur les changements de comportement	Nancy
Interview sur la transition et l'avenir des entreprises	Interview sur la transition et l'avenir des entreprises	Nancy
Formation en cours	Formation en cours avec 4 places restantes	Nancy
RecyOuest project in Argentan	Industrialization of RecyOuest project in Argentan	Jacinta
Circular economy and sustainability	RecyOuest's investment in a new machine for eco-designed collection bags	Jacinta
Visits and meetings	Visits from officials, teams, and professionals from various organizations	Jacinta
PRSE2023 event	RecyOuest's participation in the PRSE2023 event	Jacinta
Recycling of agricultural plastics	RecyOuest's technology for recycling agricultural nets and plastics	Jacinta
Media coverage	Coverage of RecyOuest's recycling line and activities in the media	Jacinta
Collaboration with ADIVALOR	Collaboration with ADIVALOR for recycling solutions	Jacinta
International collaboration	Collaboration with AgriRÉCUP Canada and Agrecovery New Zealand	Jacinta
New year wishes	New year wishes from the Recyouest team	Jacinta
Client visit	Visit from clients of Banque Populaire Grand Ouest to learn about RecyOuest's recycling solution	Jacinta
Déménagement	SMALA déménage dans de nouveaux locaux	Julia
Mode responsable	SMALA parle de mode responsable et économie circulaire	Julia
Recrutement	SMALA recherche des graphistes, responsables de site logistique, développeurs, chargés d'opérations, responsable CRM & Datas clients	Julia
Sport	SMALA transforme ses bureaux en salle de sport	Julia
Podcast	Aude Viaud est invitée dans le podcast Le Panier Podcast	Julia
Dressing solidaire	SMALA organise des dressings solidaires pour soutenir des associations	Julia
Avis clients	SMALA reçoit de bons avis de ses clients	Julia
Mode enfant	IL ETAIT PLUSIEURS FOIS organise une vente seconde main de vêtements pour enfants	Julia
Ambassadrices	SMALA a des ambassadrices qui se déplacent chez les parents	Julia
E-commerce	SMALA recherche un Head of e-commerce pour développer son activité en ligne	Julia
Nouveau site et nouvelle plateforme en ligne	Uptrade a lancé un nouveau site et une nouvelle plateforme en ligne avec de nouvelles fonctionnalités.	Elvira
Réflexion sur le modèle d'Uptrade	Uptrade a pris du recul et réfléchi à son modèle avec les retours des utilisateurs.	Elvira
Offre de stage en communication/marketing	Uptrade propose un stage en communication/marketing.	Elvira
Webinaire sur l'éco-responsabilité et la rentabilité	Uptrade organise un webinaire sur l'éco-responsabilité et la rentabilité dans la mode.	Elvira
Nouveau projet d'Hopaal : REPURPOSE	Hopaal lance un nouveau projet de revalorisation de tissus abandonnés.	Elvira

Citation d'Uptrade dans un article sur l'upcycling	Uptrade est cité dans un article sur l'upcycling aux côtés d'autres initiatives du luxe.	Elvira
Uptrade mentionné à la télévision	Uptrade est mentionné à la télévision dans une émission.	Elvira
Offre d'emploi pour un développeur Full Stack	Uptrade recherche un développeur Full Stack.	Elvira
Programme d'accompagnement Antropia ESSEC	Uptrade a été accompagné par le programme Antropia ESSEC pour modéliser son offre et valider son concept.	Elvira
Cahier de tendances dédié à l'upcycling	Uptrade a publié un cahier de tendances dédié à l'upcycling pour la saison Printemps/Été 2024.	Elvira

Facebook Business topics

topic_name	topic_description	owner_alias
ChangeNOW2022	The annual event focused on positive impact solutions and global collaboration	Jane
Women for Change	Initiative highlighting the actions and voices of women driving positive change	Jane
Circular Economy	Promoting sustainable production and consumption through the reuse and recycling of materials	Jane
Climate Action	Efforts to mitigate and adapt to climate change	Jane
Impact Entrepreneurship	Entrepreneurs creating businesses with a positive social or environmental impact	Jane
Smart Cities	Cities that use technology and data to improve efficiency, sustainability, and quality of life	Jane
Ocean Protection	Efforts to conserve and protect the world's oceans	Jane
Sustainable Fashion	Promoting ethical and environmentally-friendly practices in the fashion industry	Jane
Biodiversity Conservation	Efforts to protect and preserve Earth's biodiversity	Jane
Impact Investing	Investing in companies and projects that generate positive social and environmental impact	Jane
agroécologie	Promotion de l'agriculture respectueuse de l'environnement et des écosystèmes	Hope
circuit court	Encouragement des circuits courts pour une consommation locale et durable	Hope
autonomie alimentaire	Préoccupation concernant la dépendance de l'alimentation à l'extérieur	Hope
ferme maraîchère bio	Promotion de l'agriculture biologique et des fermes maraîchères	Hope
pertes hydriques	Réduction des pertes d'eau dans l'agriculture	Hope
érosion hydrique	Préoccupation concernant l'érosion des sols et ses conséquences	Hope
agriculture biologique	Promotion de l'agriculture biologique et de ses bienfaits	Hope
souveraineté alimentaire	Importance de produire localement pour assurer l'autosuffisance alimentaire	Hope
gaspillage alimentaire	Préoccupation concernant le gaspillage alimentaire et les solutions pour le réduire	Hope
phytoremédiation	Utilisation de la phytoremédiation pour dépolluer les sols contaminés	Hope
Day One	Information about the organization Day One and its activities	Samantha
Associations	Information about various associations and their actions	Samantha
Engagement	Encouraging people to get involved and take action	Samantha

Social Impact	Highlighting the positive impact of social initiatives	Samantha
Mécénat de compétences	Promoting skills patronage and its benefits	Samantha
Environnement	Actions and initiatives related to the environment and sustainability	Samantha
Solidarité	Promoting solidarity and supporting those in need	Samantha
Cancer du sein	Raising awareness and supporting initiatives related to breast cancer	Samantha
Ukraine	Supporting initiatives and actions related to the conflict in Ukraine	Samantha
Printemps des Asso'	Promoting the Spring of Associations event and its focus on the environment	Samantha
New Back to School Products	Discussion about the release of new back to school products	Carmen
Dirty Notes Mission	Explanation of Dirty Notes' mission to value discarded paper and launch novelties when they have collected and selected the most beautiful papers	Carmen
End of Summer	Mentions of the end of summer and enjoying the last bit of sunshine	Carmen
E-shop	Promotion of products available on the e-shop	Carmen
Paper Upcycling	Highlighting the process of transforming discarded paper into stationery items	Carmen
Vacations	Excitement about going on vacation	Carmen
Dirty Notes Products	Description and promotion of Dirty Notes' products	Carmen
Eco-friendly Practices	Discussion about eco-friendly practices and zero waste	Carmen
Design and Patterns	Appreciation for the design and patterns of Dirty Notes' products	Carmen
Made in France	Proudly stating that Dirty Notes products are made in France	Carmen
Festival Empow'Her	Information about the Empow'Her festival and its programming	Lucy
Women empowerment	Discussions and activities related to empowering women	Lucy
Gender equality	Discussions and initiatives promoting gender equality	Lucy
Feminism	Discussions and content related to feminism	Lucy
Entrepreneurship	Discussions and support for women entrepreneurs	Lucy
Climate change	Discussions and initiatives related to climate change	Lucy
Tech and innovation	Discussions and activities related to technology and innovation	Lucy
Education	Discussions and initiatives related to education	Lucy
Art and culture	Discussions and activities related to art and culture	Lucy
Social impact	Discussions and initiatives focused on creating positive social impact	Lucy
Nature et pédagogie	Articles et formations sur l'utilisation de la nature comme socle pédagogique	Brittany
Gel hydroalcoolique	Recette de gel hydroalcoolique de l'OMS et son utilisation	Brittany
Interdiction des paillettes	Interdiction des paillettes dans les enseignes britanniques	Brittany
Repas sains pour les enfants	Interview de Cantine Sans Plastique France sur les repas sains pour les enfants	Brittany
Pollution de l'air	Impact de la pollution de l'air sur la santé lors de la circulation en véhicule	Brittany
Cancers chez les enfants	Préoccupation concernant les cancers chez les enfants	Brittany
PFAS dans les produits	Présence de PFAS dans les emballages alimentaires et les jouets en plastique	Brittany
Produits chimiques dans les textiles	Présence de substances chimiques dans les textiles	Brittany
Hygiène dans les crèches	Mesures d'hygiène à prendre dans les crèches	Brittany
Pesticides et produits chimiques	Préoccupation concernant l'utilisation de pesticides et de produits chimiques dans l'environnement	Brittany

CITES	Discussion about the adoption and passing of proposals at CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora)	Kelly
Change Now Summit	Promotion and anticipation of the Change Now Summit event	Kelly
Plastic Pollution	Concerns and efforts to combat plastic pollution in the ocean	Kelly
Artivism	The use of art to raise awareness and advocate for environmental causes	Kelly
Protecting Marine Life	Efforts to protect and raise awareness about marine creatures and their habitats	Kelly
Sustainable Fashion	Promotion of sustainable and recycled fashion, particularly swimwear	Kelly
Climate Change	Discussion about the impact of climate change on the poles and the need for action	Kelly
Sea Turtles	Focus on sea turtles, their conservation, and their importance in the ecosystem	Kelly
World Ocean Day	Celebration and promotion of World Ocean Day	Kelly
Deep Sea Mining	Concerns and opposition to deep sea mining and its potential environmental consequences	Kelly
Fermentation	Posts about fermentation, fermented foods, and their health benefits	Natalie
Microbiote	Posts about the importance of taking care of the microbiome	Natalie
Tempeh	Posts about tempeh, its availability, recipes, and health benefits	Natalie
Alimentation	Posts about plant-based and vegan diets, sustainable food choices	Natalie
Journée de la Terre	Posts related to Earth Day and environmental awareness	Natalie
Santé	Posts about health and well-being	Natalie
Circuit-court	Posts about supporting local producers and buying locally	Natalie
Ecoscore	Posts about the Ecoscore label and sustainable food choices	Natalie
Producteur local	Posts about being a local producer and being available in specific stores	Natalie
Prix	Posts about awards and recognition received by Kedelaï	Natalie
Recettes de cuisine	Posts mentionnant des recettes de cuisine, notamment des pickles de radis, du baba ghanoush, du houmous de betteraves, etc.	Emily
Coworking	Posts mentionnant l'Atelier de la Pep' en tant qu'espace de coworking, avec des informations sur les installations et les services offerts.	Emily
Événements et actualités de l'Atelier de la Pep'	Posts mentionnant des événements, des actualités et des réalisations de l'Atelier de la Pep', tels que des inaugurations, des réunions, des décorations de Noël, etc.	Emily
Entrepreneuriat et création d'entreprise	Posts mentionnant des conseils, des réflexions et des expériences liés à l'entrepreneuriat et à la création d'entreprise.	Emily
Produits locaux et éco-responsables	Posts mentionnant l'utilisation de produits locaux, éco-responsables et biologiques dans les recettes et les cadeaux proposés par l'Atelier de la Pep'.	Emily
Bien-être au travail	Posts mentionnant des réflexions sur le bien-être au travail et des informations sur des services d'accompagnement professionnel.	Emily
Décoration et ambiance de l'Atelier de la Pep'	Posts mentionnant la décoration, l'ambiance et les installations de l'Atelier de la Pep', notamment lors d'événements spéciaux.	Emily
Collaborations et partenariats	Posts mentionnant des collaborations et des partenariats avec d'autres entreprises et organisations, tels que Need Sun et Orient'action.	Emily
Promotion des produits et services de l'Atelier de la Pep'	Posts mentionnant la promotion des produits et services de l'Atelier de la Pep', tels que les coffrets de recettes et la location de salles de réunion.	Emily
Fêtes et célébrations	Posts mentionnant des fêtes et des célébrations, telles que Pâques, Noël et le Nouvel An.	Emily
Seyté	Posts related to Seyté and his music	Julia

La Smala	Posts related to the music group La Smala	Julia
Bruxelles	Posts related to the city of Brussels	Julia
Lasmala	Posts related to the hashtag #Lasmala	Julia
Music projects	Posts related to various music projects and albums	Julia
New releases	Posts related to new music releases	Julia
Concerts	Posts related to upcoming concerts and performances	Julia
Clips	Posts related to music video clips	Julia
Rizla	Posts related to the artist Rizla	Julia
Senamo	Posts related to the artist Senamo	Julia
Changement climatique	Discussions sur le réchauffement climatique, les émissions de gaz à effet de serre et leurs conséquences	Nancy
Plastique	Préoccupations concernant la pollution plastique et les solutions pour réduire son utilisation	Nancy
Transition écologique	Actions individuelles et collectives pour promouvoir un mode de vie plus respectueux de l'environnement	Nancy
Consommation responsable	Réflexions sur la consommation, l'achat éthique et les alternatives durables	Nancy
Communication non violente	Approche de communication basée sur l'empathie et la compréhension mutuelle	Nancy
Formation et accompagnement	Programmes de formation et d'accompagnement pour catalyser le changement écologique	Nancy
Santé environnementale	Liens entre l'environnement et la santé humaine, préoccupations concernant la pollution et les perturbateurs endocriniens	Nancy
Déconsommation	Réflexions sur la réduction de la consommation et l'adoption d'un mode de vie plus minimaliste	Nancy
Écologie intérieure	Prendre soin de soi et trouver son équilibre dans un monde en transition	Nancy
Agroécologie	Approche agricole durable qui favorise la biodiversité et la préservation des ressources naturelles	Nancy
Recycling of agricultural plastics	Discussion about the recycling of agricultural plastics, including granules and recycled materials used by manufacturers	Jacinta
Visits and events	Mentions of visits from officials, media coverage, and participation in events	Jacinta
Team and company updates	Updates about the team members, company milestones, and achievements	Jacinta
Job opportunities	Announcements about job opportunities and recruitment	Jacinta
Environmental issues	Discussions about environmental problems and sustainable development	Jacinta
Social media and press coverage	Mentions of social media posts, interviews, and articles in the press	Jacinta
Community engagement	Engagement with the local community, including surveys and events	Jacinta
Partnerships and collaborations	Mentions of collaborations with other organizations and companies	Jacinta
Recognition and awards	Announcements of awards, nominations, and recognition received by RecyOuest	Jacinta
Innovation and technology	Discussions about innovative solutions, technology, and processes used by RecyOuest	Jacinta
Financement de projets éthiques	Discussion sur les différentes façons de financer des projets éthiques	Sophia
Transition écologique	Échanges sur la transition et les transitions écologiques	Sophia
Argent	Réflexion sur le rapport à l'argent	Sophia
Imaginaire	Exploration des imaginaires liés à l'argent et à la transition	Sophia
Coopération	Discussion sur la coopération et la solidarité	Sophia
Rêves	Évocation des rêves et des projets qui tiennent à cœur	Sophia

Accompagnement au changement	Réflexion sur l'accompagnement au changement et l'importance de prendre le temps	Sophia
Écologie	Discussion sur l'écologie et les actions à entreprendre	Sophia
Minimalisme	Réflexion sur le minimalisme et ses bienfaits	Sophia
Créativité	Exploration de la créativité et de son rôle dans les projets	Sophia
Emballage alimentaire écologique	Bee wraps, alternative naturelle au film plastique et au papier aluminium	Mary
Cosmétiques naturels	Déodorants naturels, shampoings et après-shampoings solides	Mary
Mode de vie zéro déchet	Produits réutilisables, sans plastique, sans déchet	Mary
Produits pour bébés et enfants	Anneaux de dentition, couverts pour enfants, coffrets repas	Mary
Sport et santé	Alimentation végétale, cosmétiques naturels, mode de vie sain	Mary
Éponges naturelles	Éponges naturelles de la mer Égée	Mary
Plogging	Course utile pour la limitation de la pollution	Mary
Accessoires de cuisine	Couteau et planche à découper pour enfants, corbeille à pain	Mary
Brosses à cheveux durables	Brosses en bois de hêtre, d'olivier ou de poirier	Mary
Organisation et rangement	Sacs à vrac, porte-savon, ramasse-miettes	Mary
Upcycling	The posts mention the concept of upcycling, which involves repurposing and reusing materials to create new products.	Elvira
Trends	The posts discuss fashion trends for upcoming seasons, including color trends and style inspirations.	Elvira
Textile	The posts mention various types of fabrics and textiles, including their qualities and sourcing.	Elvira
Sustainable Fashion	The posts highlight the importance of sustainable and ethical fashion practices.	Elvira
Revalorisation Textile	The posts emphasize the revalorization of textile materials and the reduction of environmental impact.	Elvira
Fashion Industry	The posts discuss various aspects of the fashion industry, including production, pricing, and marketing.	Elvira
Circularity	The posts mention the concept of circularity in fashion, which involves creating a closed-loop system for materials and reducing waste.	Elvira
Traceability	The posts highlight the importance of traceability in the fashion industry, including knowing the origin and composition of fabrics.	Elvira
Supplier	The posts mention the search for fabric suppliers and the criteria for becoming a supplier for uptrade.	Elvira
Showroom	The posts mention the availability of a showroom for customers to visit and explore fabric options.	Elvira

Twitter Business topics

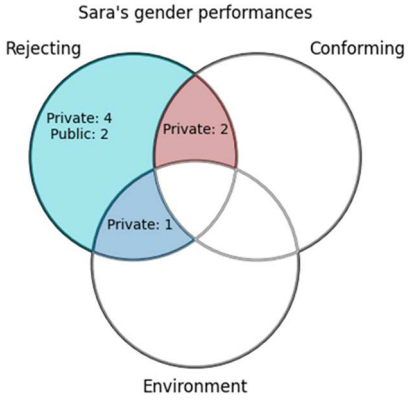
topic_name	topic_description	owner_alias
Job offers	Job opportunities and career reflections	Jane
Climate Justice	Importance of a human-centered approach in climate justice	Jane
Diversity in Politics	Promoting diversity and inclusion in politics	Jane
NGO Impact	Influence of NGOs in driving change and redefining investment standards	Jane
Women Empowerment	Empowering women and breaking gender barriers	Jane

Agricultural Productivity	Improving agricultural productivity for small-scale farmers	Jane
Environmental Education	Integrating environmental and societal issues into school curriculums	Jane
Positive Impact in Business	Combining performance, innovation, and sustainability in business	Jane
Circular Economy	Promoting circular economy as a solution to climate change	Jane
Plastic Pollution	Addressing plastic pollution and finding solutions	Jane
Agriculture urbaine	Posts discussing urban agriculture and its benefits	Hope
Biodiversité	Posts discussing the restoration of biodiversity	Hope
Circuits courts	Posts discussing the promotion of short supply chains	Hope
Qualité de vie au travail	Posts discussing initiatives to improve work-life balance	Hope
Développement de projets	Posts discussing the acceleration and development of projects	Hope
Retraite des agriculteurs	Posts discussing the retirement of farmers and opportunities for new farmers	Hope
Permaculture	Posts discussing permaculture and its principles	Hope
Fermes urbaines	Posts discussing urban farms and their impact	Hope
Nature en ville	Posts discussing the integration of nature in urban environments	Hope
Startups	Posts discussing startups and innovation in agriculture	Hope
Festival Empow'Her	Information about the Empow'Her festival, including dates, speakers, and activities.	Lucy
Women empowerment	Discussions and initiatives related to empowering women.	Lucy
Entrepreneurship	Discussions and events related to entrepreneurship, especially for women.	Lucy
Gender equality	Discussions and initiatives related to achieving gender equality.	Lucy
Social impact	Projects and initiatives focused on creating positive social impact.	Lucy
Art and culture	Events and discussions related to art and culture.	Lucy
Climate change	Discussions and initiatives related to climate change and its impact.	Lucy
Inclusion and diversity	Efforts and discussions related to promoting inclusion and diversity.	Lucy
Youth leadership	Initiatives and discussions focused on empowering youth and developing their leadership skills.	Lucy
International collaboration	Efforts and discussions related to international collaboration and partnerships.	Lucy
Overfishing	Campaign to end subsidies that drive overfishing	Kelly
Marine Conservation	Discussions and events related to ocean conservation	Kelly
Artivism	Art as a means of activism for environmental causes	Kelly
Plastic Pollution	Efforts to combat plastic pollution in the ocean	Kelly
Shark Conservation	Campaigns and discussions about protecting sharks	Kelly
Marine Protected Areas	Discussions about the importance of marine protected areas	Kelly
Climate Change	Discussions about the impact of climate change on the ocean	Kelly
Wildlife Conservation	Efforts to protect marine wildlife	Kelly
Ocean Noise Pollution	Discussions about the impact of noise pollution on marine life	Kelly
Sustainable Business	Discussions about sustainable business practices in relation to the ocean	Kelly
Recycling of agricultural plastics	Discussions about the recycling of plastic materials used in agriculture	Jacinta
Adivalor	Mentions and discussions about Adivalor, an organization involved in recycling	Jacinta
Recyouest	References to Recyouest, a company or initiative related to recycling	Jacinta
Plastic recycling	Discussions about the recycling of plastic materials in general	Jacinta
Economy circular	Discussions about the circular economy and its implementation	Jacinta

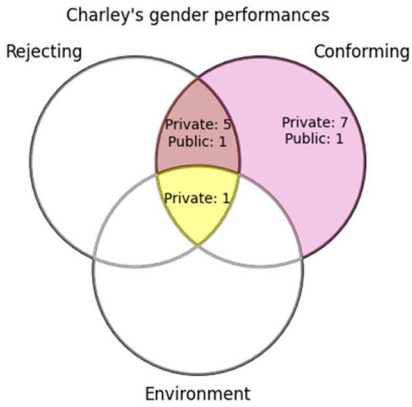
Innovation	References to innovative solutions or technologies	Jacinta
Normandie	Mentions of the region Normandie	Jacinta
INPI	References to the National Institute of Industrial Property	Jacinta
Normandin'nov	Mentions of the event Normandin'nov	Jacinta
Social media	Interactions and mentions related to social media platforms	Jacinta

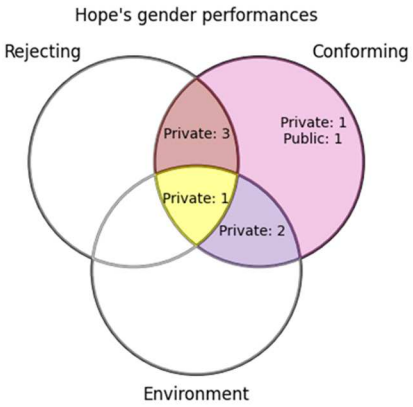
Women ecopreneur's gender performances

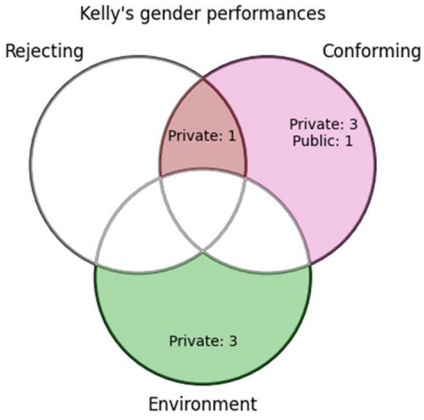
Performing Masculinity

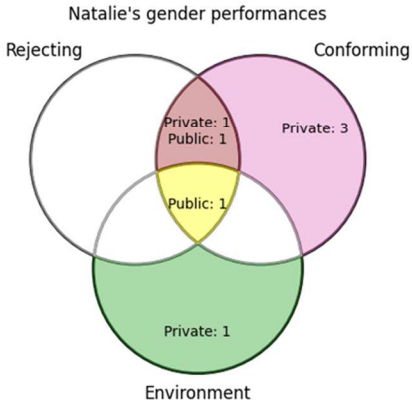


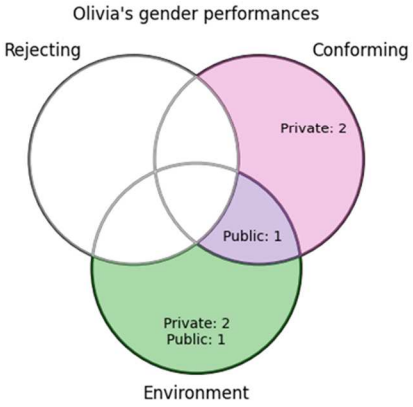
Performing femininity

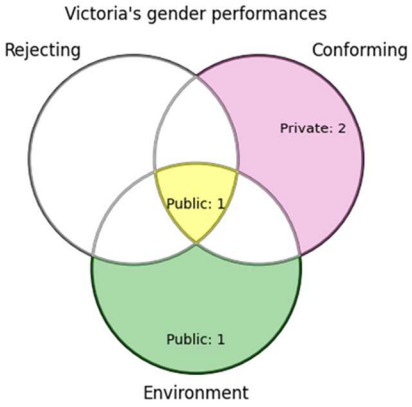




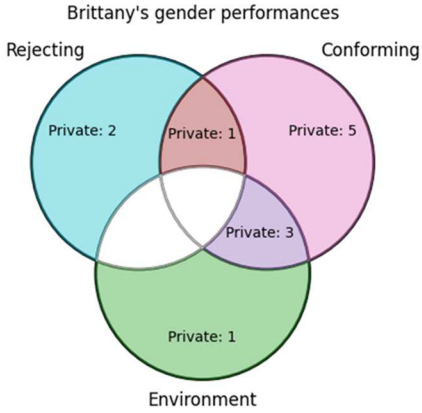


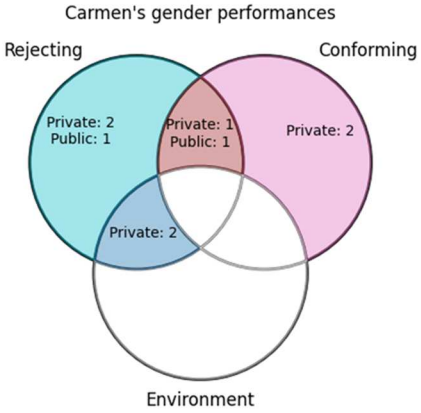


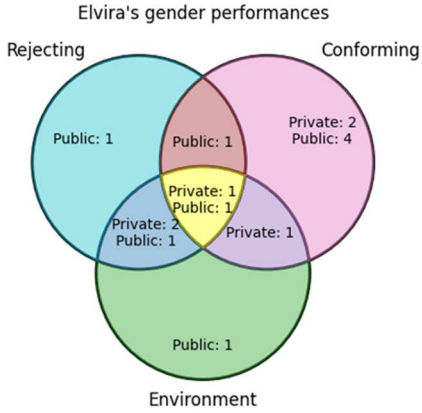


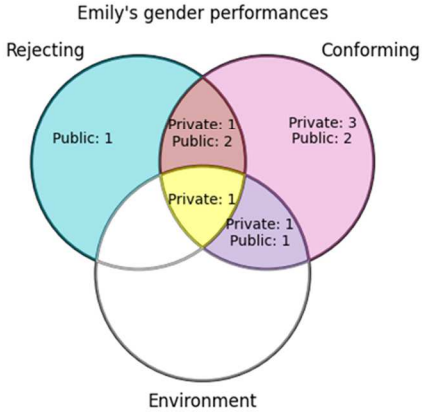


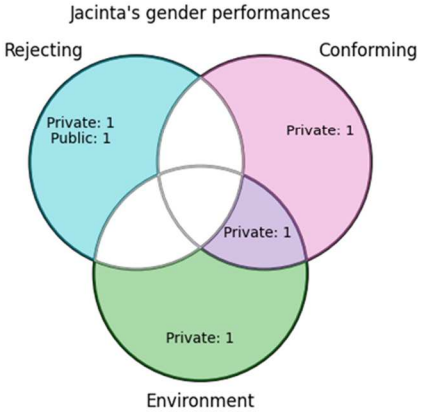
Performing dissonance

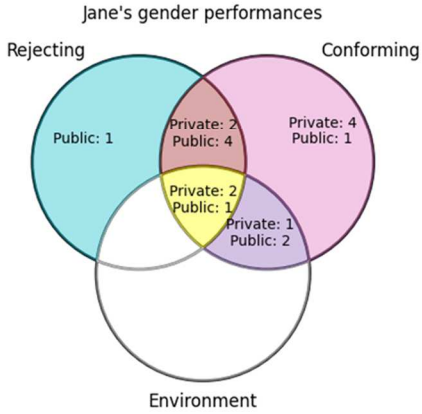


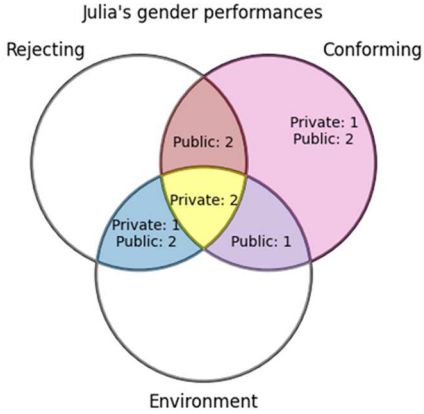


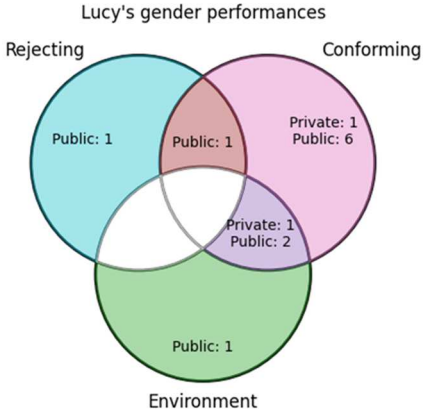


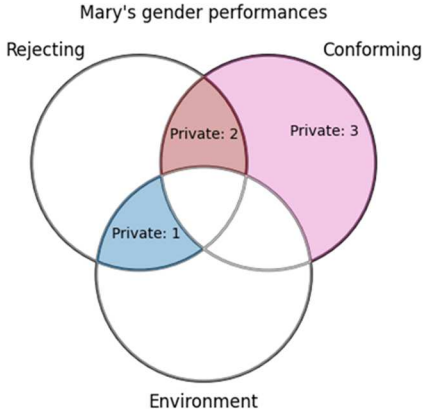


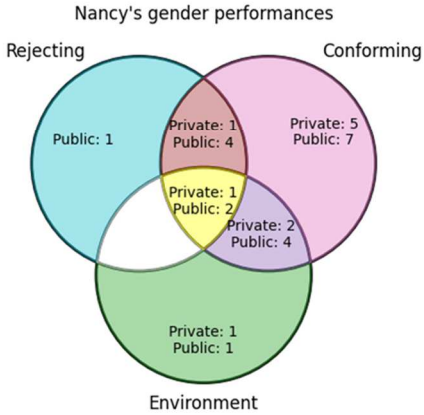


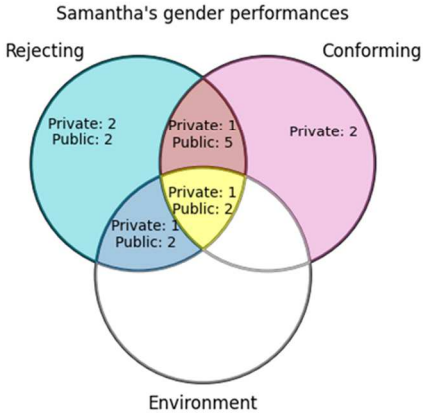


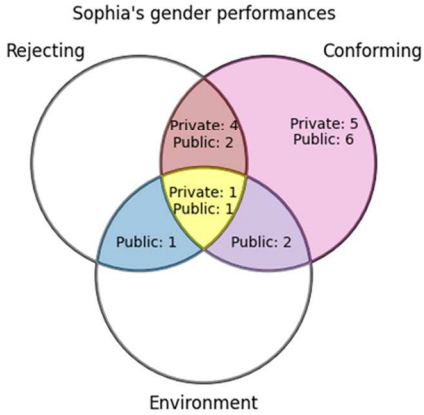




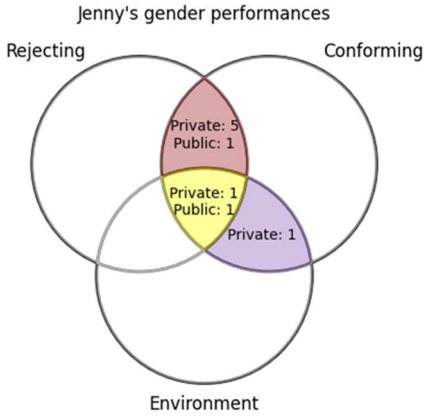








Performing androgyny



Appendix C - Guille d'entretien (interview guide)

Nom/age/domain entreprise/année de fondation/numbre d'employes/status marital/enfants

Parcours → quel est votre parcours ?

L'*histoire* de la création de l'entreprise → Quel est l'histoire de création de votre entreprise ?

Difficultés rencontrées → Quelle sont les difficultés que vous avez rencontre pendant le création et le développement de votre entreprise ?

Motivation d'entreprendre et motivation d'entreprendre dans l'environnement → Quel est votre motivation de créer une entreprise ? →Pourquoi créer une entreprise dans l'environnement ?

Objectives de *croissance* → Quel sont les objectives de croissance ?

Digital → Est-ce que vous développez la présence de l'entreprise dans le web et social networks ? Comment faite vous ? Avez-vous rencontrez des difficultés ?

Genre → Est-ce vous pensez qu'il y a une différence entre un *entrepreneur homme/femme* →est-ce que tu crois qu'il y a une différence entre un *entrepreneur social vs entrepreneur* qui cherche que les profits ?

Définition d'un entrepreneur → Comment définissez vous un entrepreneur ?

Temps lie à l'urgence climatique →? Comment gérez vous *le temps dans votre journée* ? (vecu du temps, comment on vie le probleme du temps, par rapport a l'urgence climatique et aussi par rapport aux demandes de chef d'entreprise) →Comme gérer vous *l'équilibre travail/famille*

Soutien → Est-ce que vous pensez que vous avez le soutien de votre entourage comme entrepreneur ?

ABSTRACT

Research indicates that women entrepreneurs face structural barriers at both personal and institutional levels, with fewer businesses owned and managed by women than men. This gender gap in entrepreneurship is often attributed to pervasive gender norms and stereotypes, which are seen to influence women's entrepreneurial intentions and actions. However, studies often overlook women entrepreneurs' capacity to challenge or reinforce these gendered beliefs. This research adopts a more nuanced understanding of gender, acknowledging its fluidity. The research focuses on how growth-oriented and environmental-oriented women entrepreneurs navigate gender norms and stereotypes. The findings suggest that these beliefs negatively impact women entrepreneurs; however, the gender norms and stereotypes do not remain unchallenged. The study introduces the concept of 'Green femininities,' which blends femininity and masculinity according to contexts, goals, and values. It proposes a nuanced way to study gender stereotypes, challenging their supposed stability and arguing that women entrepreneurs simultaneously reinforce and subvert these beliefs through their gender performances. This research also proposes an innovative methodology using Artificial Intelligence (AI) for Natural Language Processing (NLP) to enhance the researcher's analytical capabilities, thus enlarging the methodological toolbox within management research.

Keywords: Women entrepreneurs, Ecopreneurs, Gender stereotypes, Qualitative methods

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SE CONFORMER OU REJETER LES STEREOTYPES DE GENRE CHEZ LES FEMMES ENTREPRENEURES - RESUME

Des recherches indiquent que les femmes entrepreneures font face à des obstacles structurels aux niveaux personnel et institutionnel car le nombre d'entreprises détenues et gérées par des femmes est inférieur à celui des hommes. Cet écart entre les genres dans l'entrepreneuriat est souvent attribué aux normes et aux stéréotypes de genres, qui constamment impactent les intentions et les actions des femmes entrepreneures. Cependant, les études négligent souvent la capacité des femmes entrepreneures à remettre en question ou à renforcer ces croyances genrées. Cette recherche adopte une compréhension plus nuancée du genre, en reconnaissant sa fluidité. Elle se concentre sur la façon dont les femmes entrepreneures axées sur la croissance et celles orientées vers l'environnement gèrent les normes et les stéréotypes de genre. Les résultats suggèrent que les normes et les stéréotypes de genre ont un impact négatif sur les femmes entrepreneures ; cependant, ces croyances ne restent pas incontestées. L'étude introduit le concept de "féminité verte", qui mélange féminité et masculinité en fonction des contextes, des objectifs et des valeurs. Elle propose une façon nuancée d'étudier les stéréotypes de genre, remettant en question leur prétendue stabilité et affirmant que les femmes entrepreneures renforcent et subvertissent simultanément ces croyances à travers leurs performances de genre. Cette recherche propose également une méthodologie innovante utilisant l'intelligence artificielle (IA) pour le traitement automatique du langage naturel (TALN) afin d'améliorer les capacités d'analyse du chercheur, élargissant ainsi la boîte à outils méthodologique de la recherche en management.

Mots clé : Femmes entrepreneures, écopreneurs, stéréotypes de genres, méthodes qualitatives