Unlocking the "SHERO" Within: An Exploration of how Female Entrepreneurs in the Caribbean use Digital Technologies for Business Transformation

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Introduction

In the past few decades, the unprecedented proliferated and accelerated use of digital technologies has ushered in disruptive transformation to business models, practices, and outcomes globally (Nambisan, 2017;Roblek *et al.*, 2021;Nzembayie and Buckley, 2022). Among scholars, practitioners, and policy makers, digitalisation evokes aspirations for solutions to challenges and problems that affect the advancement of entrepreneurship (Nambisan, 2017) thereby laying the foundation for economic and social breakthroughs. The high topicality of the revolutionary and transformative advancements of digital technologies is replete with notions of being the great leveller and great equalizer (Martin and Wright, 2005) with potential to create various opportunities for entrepreneurs (Kraus *et al.*, 2019;García-Morales *et al.*, 2021). With such positively charged notions, it is therefore not surprising that the dominant discourse on digital entrepreneurship includes viewpoints of its role as a pathway towards achieving enhanced socio-economic inclusion and equality among entrepreneurs (Ladeira *et al.*, 2019;Rosin *et al.*, 2020). Notwithstanding, recent observations of the phenomena fostering business transformation through digital technologies and its role in closing the importunate existence of the gender gap in entrepreneurship, point to a fuzzy picture of their interactions (Gaweł and Mińska-Struzik, 2023). The development of a gender-aware framework provides a useful launchpad to illuminate some of the normative assumptions that can mitigate the gender gap in entrepreneurship (Brush *et al.*, 2009).

Normalised by contemporary viewpoints of a stereotypical entrepreneur who is male, white and middle-aged operating in high-growth firms (Marlow and McAdam, 2013), and of a stereotypical digital entrepreneur who is similar but with added features of being young and operating out of Silicon Valley (Ozkazanc-Pan, 2012), suggest female digital entrepreneurs do not fit the traditional entrepreneurial prototype (Treanor *et al.,* 2020). As a result, some scholars have argued that such normative assumptions are highly gendered, as they are not only ascribed to masculinity and men (Ahl and Marlow, 2012;Marlow and McAdam, 2013;Reyes and Neergaard, 2023), but are also laden with overtures of a hero male entrepreneur with ambition and capacity to create wealth and be innovative (Treanor *et al.*, 2020). Consequently, we concur with the notion that by ignoring the contextual socio-cultural contexts within which business endeavours are pursued, there are significant risks in de-contextualising the gendered nature of entrepreneurship, and the dynamics of the experiences of entrepreneurs in their ecosystems (McAdam and Cunningham, 2021). Further, we note the importance to avoid essentialising

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gender within the entrepreneurship research agenda (Galloway *et al.*, 2015), and to look for deeper understanding of feminine views of entrepreneurship beyond being adaptable, compassionate, empathetic, and affectionate (Javadian *et al.*, 2021).

Although female entrepreneurs are among the fastest growing entrepreneurial groups globally (Yadav and Unni, 2016;Dean *et al.*, 2019), and the importance of their contributions in all economies have been documented (Brush, 2010;Brush and Cooper, 2012), there is a paucity of research on the effects of digital technologies on the phenomenon of female entrepreneurship (Kelly and McAdam, 2022). Inarguably, the rapid advancement and integration of digital technologies into businesses and the entrepreneurial ecosystem across the globe (Nambisan, 2017;Roblek *et al.*, 2021) are not only causing both excitement and alarm, but are also raising important questions about their impacts on the entrepreneurial gender gap (Ferrando, 2014). For instance, notwithstanding the recent accelerated use of these technologies during the recent COVID-19 pandemic, reports have shown that the gender-regressive impacts of the pandemic have affected female entrepreneurs in greater proportions than male entrepreneurs (OECD, 2021). To obtain a more comprehensive understanding of the influence of digital technologies and digital entrepreneurship on equal access to opportunities and markets (Martinez Dy *et al.*, 2018), we argue that gender must be taken into account (Adam *et al.*, 2004; Dy et al., 2017). Cognisant that the intractable challenges of female entrepreneurs dominate the discourse and scholarship on female entrepreneurship (Jamali, 2009), this research serves to build a more robust foundation for a better understanding of the implications of digital technologies in transforming female-owned and managed businesses.

Against the backdrop of calls to expand the research boundaries of female entrepreneurship (Dean *et al.*, 2019), this paper undertakes a critical appraisal of the benefits of digital technologies in unlocking opportunities for female entrepreneurs in the Caribbean. The Caribbean is portrayed as a regional paradise comprising mostly Small Island Developing States (SIDS) and as having some of the highest rates of total entrepreneurial activity (TEA) and female entrepreneurial activity (Terjesen and Amorós, 2010;Hart *et al.*, 2021). Further, the countries of the Caribbean epitomise a unique spatially fragmented entrepreneurial context described as *islandness* (Hall, 2012), which is an interesting and novel context for capturing and analysing the relationship between business enterprises and context (Merouani *et al.*, 2023). The paradox of patriarchal ideology in the Caribbean where a large number of households are headed by women, calls for heightened attention to challenge dominant gender

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assumptions (Slocum and Shields, 2008). In so doing, our research seeks to highlight the importance of embeddedness and contextualisation (Xheneti *et al.*, 2023) as a premise to integrating gender as a socially constructed situational practice (Henry, *et al.*, 2016). Moreover, notwithstanding the multifaceted dimensions of the entrepreneurial context - who, where, when and how - (Welter and Baker, 2020), we argue that the wave of digital transformation that permeates the entrepreneurial environment (Nzembayie and Buckley, 2022) provides an additional opportunity to broaden the understanding of context for female entrepreneurs operating in the digital space.

To achieve the objectives of the study, a qualitative interpretative methodology was employed, and 30 semi-structured interviews were undertaken of educated female digital entrepreneurs who owns SMEs in a range of sectors from three Caribbean Island nations: namely Trinidad & Tobago, Jamaica and Barbados. By drawing on feminist theory (Marlow and McAdam, 2013) related to the Caribbean post-colonial context (Mohammed, 1998), while also considering the cyber-feminism discourse of a replicated and seamless online/offline space (Ughetto *et al.*, 2019), this study provides an understanding of how digital technologies are transforming female entrepreneurship (Martin Dy *et al.*, 2018) , and how they affect the agency of the female digital entrepreneurs.

This study makes three contributions to the literature. First, we contribute to research on female digital entrepreneurship with nuanced empirical data from island states which are outside the typical Western centric contexts. In so doing, we emphasize the importance of context and embeddedness in entrepreneurship studies. Second, we contribute to the growing body of knowledge and theoretical advancements on gender in the on/offline space as a situational practice that is done by "others" who are beyond the stereotypical masculine hero entrepreneur in developing countries. Third, we contribute to research on female entrepreneurship by exploring how Caribbean female entrepreneurs use digital technologies to navigate inequalities and develop their entrepreneurial SHERO of enhanced "Sustainability, Hope, Empowerment, Resilience and Optimism".

The remainder of this paper is as follows: an overview of key elements of the Caribbean entrepreneurial context, the methodology which guided the data collection process, the findings which analysed the main results, a discussion of the findings, and the conclusion with considerations of limitations and implications for future research.

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Sinews of the Caribbean Context: Entrepreneurship, gender, digitalisation

A focus on the Caribbean context highlights unique aspects of entrepreneurship (Welter and Baker, 2021) in island nations, including gendered multi-layered dimensions of culture, institutions and markets within a digital era.

Entrepreneurial context

The Caribbean SIDS are characterised by development models shaped by the confluence of colonial conquest, the emergence of the plantation economy, and independence starting in the 1960s towards the era of globalisation (Slocum and Shields, 2008). In particular, economic activity in the region is largely influenced by the British, French, Spanish, Dutch, and Danish colonisers who operated plantations with forced and under-compensated labour of African slaves, as well as voluntary and under-compensated Asian indentured workers (Slocum and Shields, 2008). Considering the historical role of the region as an economic and geographic periphery for these colonial powers, the region's business history can be described as the "internal history of capitalism and the taproot of imperialism" (Minto-Coy *et al*., 2018, p.93). It is therefore not surprising that the private sector in the Caribbean largely comprises small and medium sized enterprises (SMEs) that are locally owned with weak links to the international economy (*ibid*).

Given its historical context, the region is considered a melting pot of cultures that is metamorphized as the Caribbean versions of African, Asian, and Latin cultures which are prominent assets of the service industries (mainly tourism and financial) that dominate the economies. An interesting ancestry legacy of the region is the honing of survival skills by Caribbean people which undergirds the origins of the creativity and the creation of new ventures (Esnard-Flavius, 2010;Pounder, 2015). These countries are scattered and strategically located between the main trading routes of South/Central America and North America/Europe and their economies are integrated in trade blocs: the Caribbean Single market and Economy (CARICOM) and the Economic Union of the Organisation of the Eastern Caribbean States (OECS) (Minto-Coy *et al*., 2018).

The underlying global image of the islands in the Caribbean is as "playgrounds" and the epitome of paradise and tax havens, featuring tourism products and creative and cultural industries, instead of a place where serious business is done by entrepreneurs *(ibid)*. Yet, the region has some of the highest rates of total entrepreneurial activity (TEA) and female

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entrepreneurial activity (Terjesen and Amorós, 2010;Hart *et al.*, 2021). Therefore, the unique historical context of the Caribbean provides a framework for a more nuanced understanding of the link with entrepreneurship (Alecchi, 2020) situated in the islandness of the economies. As island nations, the Caribbean have a sense of community and a strong sense of social relation of space (Merouani *et al.,* 2023). The region's financial landscape also has a historical relic of colonialism whereby finance for business development is largely derived from a commercial banking system that is influenced by conservative lending practices and products, together with an institutional framework that has limited appreciation for innovation being informed by the local context (Minto-Coy *et al*., 2018). Even with the recent increase of indigenous banks and modern financial services which provide greater financial flexibility (Pounder, 2015), there remains some underlying structural assumptions related to the assessment of risk and creditworthiness of small businesses in the Caribbean (Minto-Coy *et al*., 2018). Such constraints have caused female entrepreneurs in the Caribbean to mostly rely on informal financial support services such as credit unions and savings clubs (Lashley and Smith, 2015). This prevalence suggests the dynamics of inherent financial constraints towards new venture creation and employment among Caribbean people (GEM, 2017).

Caribbean society and gender
Class, race and gender related-issues are interlocked differently in the different island nations (Mohammed, 1998), emphasising the vast diversity in the configuration of ethnicities in Trinidad and Tobago (largely African and Indian), and Jamaica and Barbados (largely African) and the concomitant need for different gender arrangements. This resonates with calls from Caribbean scholars to challenge generalisations of Caribbean women (Barriteau, 1998) to better understand the region's societal arrangements and problems. Considering gender as a social construct (Ahl and Marlow, 2012), while simultaneously highlighting the interconnectedness of class and race (Mohammed, 1998) underlines the relevance of feminist theory for analysing women entrepreneurship (Al-Dajani *et al.*, 2015). Drawing on feminist theory in post-colonial contexts (Calás *et al.*, 2009) offers a coherent framework for conceptualising gender by paying attention to how the diverse historical, cultural, social and economic issues within the Caribbean context affect women (Welter, 2020). Post-colonial feminist theory calls for further consideration and theorisation of the experiences of women in post-colonial contexts influenced by colonial power and hierarchies, including in terms of gender (Kerner, 2017). Such theorisation draws attention to the specific intersectional experiences of women in post-colonial contexts, their situatedness and positionality (Lewis and

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Mills, 2003). Furthermore, an alignment with the perspective of post-colonial feminist theory (*ibid.*) provides benefits for situating the significance of contextualising entrepreneurship thinking and practices that are based in diverse non-western contexts (Zahra *et al.*, 2014;Welter and Baker, 2020) and acknowledge their complexities (Ozkazanc-Pan, 2012). Hence, paying attention to the cultural variability of countries and regions in the Global South, such as the Caribbean, resonates with the value of drawing on non-western feminists philosophies to interrogate and advance our knowledge and nuanced understanding of gender and entrepreneurship (Esnard-Flavius, 2010;McAdam and Cunningham, 2021b). Moreover, by emphasising the interconnectedness between gender, race and class within the Caribbean offers an opportunity to further reveal a novel analytical framing and understanding of women's experiences in entrepreneurship, which in itself implies that perspectives on women entrepreneurs are subject to scrutiny and change (Ahl and Marlow, 2012).

Undoubtedly, the homogenising tendencies of various development thinking (Freeman, 2014) have influenced the geographic pegging of the Caribbean region. A decontextualization of gendered family patterns however does not capture the impact of the plantation system in breaking up Afro-Caribbean families and in shaping nuanced extended family structures and kin arrangements (Slocum and Shields, 2008). It is interesting that the cliched notion of "single parenthood" has been frequently used to describe the structure of many Caribbean households, when in reality children are seldom raised by a single individual irrespective of the mother's marital status. Even the pioneering research undertaken on Caribbean family by Edith Clarke (1957) and later published in the book entitled *"My Mother Who Fathered Me"* conjures widespread notions of iconic proportions of a matriarchal overdrive and male irresponsibility and such other gender assumptions (albeit from the title and not the content) as being characteristic of a relatively higher regional rate of single parent Caribbean families in our social development (Pounder, 2015). Further, the experience of Afro-Caribbean more than Indo-Caribbean women has been one in which they always worked inside and outside the home mostly due to colonial and economic imperatives (Slocum and Shields, 2008). Hence, prevailing social perspectives of Caribbean women being domestically bound in non-marital relations, and categorisations of male (public) - female (private) spheres, point to contradictions in the context of the interplay of structure and agency in Caribbean social gendered realities (Mohammed, 1998). It is therefore unsurprising that the existence of a large number of female-headed households in the islands and their active participation in the public, portends that the Caribbean cultural forms of agency are not only predicated on a direct propensity to engage in

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adoption or resistance of colonial forms, but may be also driven by internal local realities of the region (Freeman, 2014). For instance, among Afro-Caribbean women, the novel concept of "matrifolk" is used to describe the diverse spaces of womanhood, motherhood and relationships within which they must traverse and navigate (Slocum and Shields, 2008). In this vein, Caribbean women have been also characterised as "complex cultural agents" (*ibid*, p.695).

Female entrepreneurship and digitalisation: a movement or moment?

Female entrepreneurs in the Caribbean make an important contribution to the social and economic development of the region (Pounder, 2015;Ramkisson-Babwah, 2015). It is therefore unsurprising that parallel to the recent "contextual turn" occurring in the field of entrepreneurship (Henry, 2023), is the heightened revelation of the embeddedness of female entrepreneurship in multiple contexts such as family, institutions, and society (Hughes and Jennings, 2020;Xheneti *et al.*, 2023). In addition, recent attention to micro and small-scale entrepreneurship within the Global South has extended the contextualisation argument through an exploration of the empowerment of women at both the individual and community levels (Al-Dajani *et al.*, 2015). Further, for the Caribbean countries in particular, female entrepreneurship is also situated in the unique contextual factors of "islandness" such as dependence on seasonal economic activities and deficient infrastructure (Xheneti *et al.*, 2023). Female entrepreneurs in Latin America and the Caribbean (LAC) are prone to operate without employees (Lashley and Smith, 2015) and they are generally sole or majority owners of their business ventures. Notwithstanding their prominent role and the many debates centred on why they continue to lag behind male entrepreneurs (Jamali, 2009;Brush, 2010;Ahl and Marlow, 2012), there remains a need to understand prospects for transforming female entrepreneurship within the context of island economies in the new digital space and era.

While available statistics in the Global Entrepreneurship Monitor suggests that the prevalence of necessity-based entrepreneurs seems to co-exist with high levels of female enterprises, there is a need to refrain from stereotyping female entrepreneurs across the world as "necessity-driven" (Andersson *et al.*, 2007). Researchers such as Seguino (2003) and Kaushal *et al.*, (2024) claim that because there is a relatively higher rate of female headed households in the Caribbean, the large majority of women who engage in entrepreneurial activities are driven more by necessity than opportunity (Pounder, 2015;Ramkisson-Babwah, 2015). Such simple dichotomous categorisation neglects the importance of entrepreneurs' agency in recognising opportunities as their context changes over time. As digital

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transformation is providing new avenues for entrepreneurship across the globe, digital technologies portend to offer great opportunities for female entrepreneurs (Angelovska, 2022). Notwithstanding, gender-based challenges persist.

Similar to other contexts, the constraints faced by female entrepreneurs in the Caribbean include the lack of access to finance, networks, relevant and timely business-related information, appropriate business support services, and access to technology and equipment (Lashley and Smith, 2015). However, the distinct social, cultural, and economic contexts of Caribbean female entrepreneurs suggest that the intensity of these constraints differ (Pounder, 2015). The overall boom in e-commerce over the past decade and the recent increased use of digital technologies since the COVID-19 pandemic have raised new hope for business transformation that is more inclusive, sustainable and resilient (Angelovska, 2022). Yet, disparities remain in digital entrepreneurship in developing countries. Hence, the gender gap in the use of digital technologies can impinge on the capability of female entrepreneurs to unlock their full potential in the digital economy (Reyes and Neergaard, 2023).

The literature is inconclusive on whether the digital technologies are threats or opportunities for female entrepreneurs and there is incomplete understanding of the effects of digital technologies on female entrepreneurship (Kelly and McAdam, 2022). Therefore, it is not surprising that the growing research interest among scholars is not about increasing the number of female digital entrepreneurs but about enhancing the understanding on the use of these technologies in improving gender equity in entrepreneurship and in improving the contribution of female entrepreneurship towards achieving the Sustainable Development Goals (SDGs) (Ughetto *et al.*, 2019;Angelovska, 2022;Gaweł and Mińska-Struzik, 2023). Indeed, whether there are considerations of the glass half-full or half-empty outlook, digital technologies have not only transformed the nature of the unpredictability of the business environment (Nambisan, 2017), but also the increasing disruptiveness of digitization in business ventures have also added a new dimension to the already vicious circle between gender inequality and female entrepreneurship in developing countries (Pantic-Popovic *et al*, 2019), where the majority of women own and operate businesses (Bartesaghi *et al.*, 2020). Therefore, the ubiquitous use of digital technologies not only points to their relative affordability and accessibility (Sussan and Acs, 2017), but also begs the question whether their influence on female entrepreneurship is the dawn of a new movement or a defining moment in the field of entrepreneurship? To go further, it is worth exploring what is the role of the digital

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technologies on the contextualised experiences of female entrepreneurs and their entrepreneurship activities.

In keeping with the contextualised approach of this paper, it is useful to describe the main characteristics of the concepts of digital technologies and digital transformation since a review of the literature has revealed there are no uniform global definitions (Pantic-Popovic *et al*, 1019). Considering the context of this study, we adopt Nambisan's (2017) definition of digital technologies as digital artifacts (smart phones, laptops, iPad), digital platforms (iOS and Google's Android) and digital infrastructures (cloud computing, 3D printing, online communities, social media) which are used to create opportunities. In this context, these technologies infuse generativity, as well as agility, unpredictability and fluidity in business outcomes (Nambisan, 2017). For digital transformation, which is sometimes referred to as digitisation or digitalisation, we consider it to be a complex and dynamic phenomenon which integrates digital technologies into business processes to create new conditions for enhancing innovation, better market positioning, and new business models (Giones and Brem, 2017;García-Morales *et al*., 2021). Further, in assessing the outcomes of the digital transformation, it is important to reflect on the nature of the digital entrepreneurship which has been described by Hull *et al*. (2007) as mild, moderate and extreme. Therefore, as we explore the use of digital technologies in influencing the digital transformation of female owned businesses, there is a need to also consider the power and strength of the agency of the female entrepreneurs from a gender perspective, as well as the generativity of the technologies in the overall transformative processes and outcomes of their entrepreneurial environment (Kraus *et al.*, 2019).

Methodology

Approach

Our research strategy is qualitative and contextually embedded. It aims at capturing the heterogeneity and uniqueness of contextual experiences of female entrepreneur in the digital spaces. Multiple country contexts tend to provide insights that are more robust, trustworthy, convincing and more comparable (Ates and Bititci, 2008). This research is interpretive in nature to reveal and give meaning to "collective frames of references or construed realities" (Jamali, 2009, p.239) within the context of gendered and digital environments. Cognisant that historically masculine voices generally dominate and influence entrepreneurial discourses (Dean and Ford, 2017), by using an interpretivist approach, the study explores the unique

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contextual issues of the experiences surrounding female digital entrepreneurship in the region and the interplay of the impact of digital entrepreneurship at the intersection of gender on female entrepreneurship.

To adequately capture the key contextual dynamics of the underlying relational, structural and cognitive dimensions of female digital entrepreneurship in the Caribbean, the study draws on post-colonial feminist theory which recognises the significance of context and the situations in which they are performed (Foss *et al.*, 2018). Female entrepreneurs' behaviours are not only circumscribed by logic of rationality but also influenced by logics of practice, situation, and potential within the digital entrepreneurial environment (Chia and Holt, 2023). From a gendered contextual perspective, the study explores the interplay between the female entrepreneurs and the digital technologies in the Caribbean context.

Data collection and analyses

We interviewed 30 female digital entrepreneurs who own and operate their businesses in the Caribbean in a range of sectors (agro-processing, education, light manufacturing, information and communication technologies, events management, food and nutrition, health and fitness, and retail and wholesale trade). Participants were selected from Trinidad and Tobago, Barbados, and Jamaica – the three national contexts that have the most advanced and structured entrepreneurial ecosystems, the highest rates of entrepreneurial activity, and experience political stability (Terjesen and Amorós, 2010). For the fieldwork, we chose online interviews as the main data collection method. This was considered to be less intrusive and most viable for SMEs owned and manged by women facing the challenges of domestic and family commitments in a semi-post pandemic era of digitalisation. We collected the data over a 11-month period where the length of the interviews varied from 60 to 120 minutes. All participants allowed the interviews to be audio recorded. These interviews provided an opportunity for the female entrepreneurs to share on their entrepreneurial selves and experiences (Dean and Ford, 2017) in relation to the opportunities and challenges of responding to digital technological demands for enhanced business transformation. The female entrepreneurs expressed their appreciation for the timeliness of the study and its focus on them which seemingly contributed to an open sharing of their experiences and views. The interviews allowed authentic sharing on gender perspectives among the female entrepreneurs and an understanding of any intricacies of gender constructs in the socio-economic development of the Caribbean (Freeman, 2014).

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Based on the size of the firm (1-19 employees for LAC SMEs as established by the World Bank), we looked at businesses at different stages of operations and in different sectors. Participants are digital entrepreneurs by virtue of the fact that they use digital technologies (artefacts, platforms and infrastructures) as inputs to carry out their operations or pursue new business opportunities, as well as create services and products that are digitalised and technological in nature (Giones and Brem, 2017;Nambisan, 2017). All participants were fluent in English language. The significant heterogeneity among these female digital entrepreneurs (McAdam *et al.*, 2020) was further reflected in diverse demographic backgrounds (education and qualifications, age, marital status, years of operation, location, and employment status in the business). The samples were selected in a non-probabilistic, purposive, and snowballing manner (Yin, 2014),

Table I provides an overview of the profile of the female digital entrepreneurs interviewed in the study. We used pseudonyms for the participants to ensure anonymity. Secondary data from the business websites and LinkedIn page, academic papers from international organisations (such as the World Bank, UN Women), and information from interviewer notes were used to triangulate the primary interview data collected and ultimately to enhance validity and reliability. The data analysis process included Nadin and Cassells's matrix analysis technique (Rouse, 1997) for the development of provisional categories from the data, identification of axial codes to address our research question, and development of theoretical dimensions (Gioia, 2021). Of particular importance is the fact that during the coding process, we stayed close to the data to capture the narratives of the participants, subsequently developing themes and categories emerging from interviews (Campbell, 2014). This resulted in the development of first order concepts and provided a layer of validation for the qualitative research method. We did this until the analysis stopped yielding sufficiently distinct first-order concepts. This is not to infer that the analysis followed a linear process. Instead, the study embraced reflexivity to gain insights on novel themes that have not been adequately covered in the literature, or insights on exiting themes that stand out due to their relevance to the phenomena (Braun and Clarke, 2021).

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We acknowledged the power relations emanating from insider and outsider perspectives and the concomitant reflexive way to account from our unique position as researchers who possess Caribbean heritage and European experience. Together with the non-intrusive approach adopted to collect the data, emphasis was placed on unearthing the lived experiences of the participants. In moving between the data and the literature on female entrepreneurship and digital entrepreneurship, we developed second-order themes such as enthusiasm, dual spaces, diversification, capacity building, information sharing, resource mobilisation, and contexts. Finally, we performed selective coding by aggregating the second-order concepts into broad dimensions which enabled us to identify theoretical elements of entrepreneurial SHERO among the participants. **Figure 1** depicts the data analysis process and structure leading to the emerging aggregate themes.

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Findings

Through the analysis, the findings point to gendered contextual issues surrounding the impact of digital technologies on female entrepreneurship in a non-Western digital context. From post-colonial feminist theoretical lens, we observe how these technologies influence the potential opportunities for enhanced "Sustainability, Hope, Empowerment, Resilience and Optimism" (SHERO) for female entrepreneurs in the Caribbean context. To better understand the dynamics of the multiplexity of changes affecting female entrepreneurs in this era of digital transformation, we discuss each of these areas in the following subsections. While these are presented and may be interpreted as discrete, our analysis shows that they are intertwined and sometimes occur concurrently.

Expanding sustainability towards social responsibility

The findings show that female entrepreneurs working with digital technologies consider not only the economic aspects, but also socio-cultural dimensions. In this situation, the participants emphasized how they were able to thrive in the context of their "islandness" which is characterised by limited markets, clients bases and resources, and reinforced by the boundaries of water. In particular, with the use of the digital technologies, they were able to overcome challenges of remoteness and peripherality and instead capitalise on promoting the natural

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assets of the islands to people in international markets. This is underscored by a participant (FE#14) who shared her experience as the owner of a destination wedding enterprise, in which digital technologies afforded her the opportunity to shift to an international target audience having realised that after two years, the local market was not sustainable.

"With my website I do a lot of search engine optimisation. I do a lot of blogging…and a lot on social media – Instagram and Facebook in particular. These have helped me to connect with potential clients overseas (who visit the island to get married). I think if you have an amazing service or product, and no one knows about it, then you would not be able to sustain your business." (FE#14)

Participants gave account of their role in making deliberate business decisions that positively impact the lives of people in their societies and communities. The underlying thrust of the business is not rooted in the pursuit of wealth generation, but rather in building sustainable ventures that pay attention to service so that they can be sustainable. Some of the participants underscored how the context of their business endeavours shaped the focus of their product and service offerings. The aspirations of their entrepreneurial activities are generally so large (in terms of temporal context) that they need to innovate to achieve their goals. The scope of the constraints is shown in the relative limited knowledge spillover from the communities and the use of the technologies by the participants to promote and share information about the products and ultimately increase community knowledge, broaden market competition and improve survival of the business. For instance, participant FE#27 highlighted how her experience of the tragic loss of lives of family members motivated her to study science subjects so that she can help find a solution for persons who suffer from airborne diseases.

"So, my study of science …led me into further research….where I built a patented indoor air quality monitor that's able to detect specific pathogens and gases within the room space…And all of this is accessible on the users' smartphone where we use IoT application," (FE#27).

Claims of having an entrepreneurial spirit and a drive to do something different for others were expressed repeatedly by the participants, accounting for their entrepreneurial attitudes and activities. Based on the description of their experiences, the participants' conceptualisation of the digital technologies revealed how normative cultural expectations of them determined how they engaged with these in their business endeavours. Despite the relatively high educational attainment of the participants, their engagement with the technologies was to promote human

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connections which, when put into perspective, by extension indirectly preserves traditional gender roles among entrepreneurs in the Caribbean. Participant FE#27 encapsulated this when she explained how the use of social media tools and digital platforms are instrumental in realising the goal of pursuing new business ideas.

"For the business to succeed, you have to have a good [product]. Most customers also want to know your story. To be honest, at first, I was not so much into the different technologies. With a website, online platforms such as Zoom, and Applications such as TikTok, Instagram, Facebook, I can do a demo of my product and also share my story and those of other customers using the product to incentivise other people who face similar health issues. Many of my customers are overseas…even if you are an introvert like me, through these technologies you can easily grow your business organically." (FE#27)

The thrust towards making a difference extended to enriching and adding value to the lives of persons in their communities, inclusive of their families and their staff for those who had employees. In these cases, the focus of the engagement among the participants was not so much on closing the digital gender divide as it was to open a direct window for themselves and others to make a difference. The premium and sense of responsibility female entrepreneurs place on helping others and contributing to society is expressed in a statement by participant F#13:

"You know when I started off as a business owner…my first thought was not to run down the money. Although literally, this is what I need to do…as that's the only way the business could sustain itself. But I seek to develop the right model so that I can offer sustainable STEM packages." (FE#13)

The participants highlighted the learning opportunities afforded by the use of technology for the provision of e-mentoring programmes for women and girls, online skills training for disenfranchised women and for sharing their stories (successes and failures) to inspire others. In keeping with the notion of having a strong "social relation of place", the participants shared that access to digital infrastructure, as well as the pervasive use of digital platforms and artefacts offered opportunities for more inclusive learning in being able to engage and even train others in remote areas, where transport costs are generally high. Hence, the use of the technologies, has improved capacity of the participants to be part of the digital environment which, through their agency, further enables them to circumvent contextual challenges of "islandness", and also to reduce the risk of business failure. Some participants even explained that their entrepreneurial ventures are not just focussed on utilising digital Apps and Platforms but to impact the social fabric through the training of women and girls in coding and in cyber

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security in order to expand the digital footprint of female entrepreneurs in the Caribbean region. In this regard, participant FE#16 indicated:

> *"I offer digital skills training courses online to enhance critical thinking...I see this as a paradigm shift in the educational system." (FE#16)*

The use of social media to review trends from consumer databases and other records allow the female entrepreneurs to give the customers centre stage by being more attuned to their demands and anticipating their needs for new services and products (including delivery at home or work to those persons with special needs). Running in parallel with easy access to market information, is the degree of assertiveness shown by the participants in their employment of cultural recognition of the distinction of their global and local contexts. While the dynamics of this business environment is in keeping with learning organisations, the participants also noted that the growth and influence of social media require higher alertness to the counter-intuitive aspects of social media where their "control of power" can be easily relinquished and be fully transferred to consumer's feedback which at times can be transient and ultimately risky. In reflecting on the longevity of her online business, participant FE#8 highlighted this issue:

> *"People are not loyal to a thing if they do not feel connected to it, or if they do not feel they can grow with the business...So, it is not just the offering, it is the service. I continuously strive to improve my online service to sell my products." (FE#8)*

Through the use of digital technologies, the conceptual skills of the participants were affected as they acquired the capacity to view their enterprises as a whole and were able to coordinate diverse interests and activities that include the wellbeing of the staff. The findings indicate that the participants provide staff with online training opportunities, options for remote working, and more regular online connection to provide support and share information on a timely basis. Hence, in the quest towards entrepreneurial sustainability, a more transformational approach is adopted as aptly explained by participant FE#4:

> *"The technologies have been enablers… I am able to train staff to use the platform, I am able to cut down on my hours of work. I am able to help them to grow professionally .... They can utilize the training even when they leave my business." (FE#4)*

Hope and Optimism interwoven

Female entrepreneurs face a plethora of constraints in their operations; and yet in the realm of digital transformation of their business processes and outputs, the technologies offer

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opportunities that amplify their sense of optimism and hope in an increasingly demanding and uncertain business environment. By hope, we mean a process of having agency and pathways to achieve goals, and by optimism we refer to having a positive outlook on the future. Cognisant of the nuanced differences in these two processes, we observed a more powerful impact when they work in tandem. According to the participants, it seems unfathomable that anyone would become an entrepreneur if their attitudes were not anchored in hope and optimism towards exploring business opportunities. Therefore, in using the voices of the participants to be the mirror or echo of what exists, we are better able to understand how the technologies are revolutionising hope and optimism outside the norm in entrepreneurship. As the female entrepreneurs shared their experiences, the narratives showed how the technologies have been a source of significant enthusiasm and self-confidence which is translated into their capacity to navigate the digital spaces in which their businesses operate. This sentiment is aptly surmised by female entrepreneur FE#22 who owns and operates a fitness centre when she stated:

"The technology contributed significantly. Digitalisation saw the evolution of my business as without technology, there would be no business. I truly don't know how I would have managed as Traditional Ads TV and newspapers are now very expensive for small businesses…and even obsolete. There is obviously me and what I bring to the business. But I am also talking about getting the people to me in the first instance and even knowing of my existence. That is because of the technology" (FE#22)

We noted that since optimism is central to their business experiences and endeavours, the female entrepreneurs then espoused greater hope in the new opportunities provided by digital technologies in balancing their focus on making a profit and addressing societal problems and challenges. Invariably the hope of the female entrepreneurs mushroomed with an increased access to digital technologies which equipped them to broaden and bolster their entrepreneurial drive and motivation beyond the economic growth discourse. In the context of Caribbean islands with relatively small populations, the average number of employees of the entities owned by the participants ranged from 1-4 persons. Hence, the participants explained that the digital technologies contributed to allaying their fears related to low entrepreneurial activity and low market dynamism which are generally associated with small markets.

Further, depending on the level of combination of digital and non-digital resources in their operations and the concomitant degree of the digital entrepreneurship (light, moderate, or extreme) practised by the female entrepreneurs, there are diverse cognitive sentiments linked to the business outcomes. The experiences of the participants showed that with the different

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typologies of digital entrepreneurship, the technologies offered opportunities for flexibility, agility and generativity towards innovation in the business outcomes or processes. Without delving into why the participants decided to pursue a particular typology of digital business model, the information shared by the following participants about their experiences highlight how the digital opportunities impacted their business endeavours:

> *"I always strive to use the technologies without losing my humanity. I remain connected to self....As a woman I am not keen on competition as I am on learning to improve my business operations and purpose." (FE#19) – an extreme digital entrepreneur: business fully driven by technologies*

> *"Digital technologies provide an amazing service. I am now able to participate in online coaching sessions and benefit from an international Business Mentor who has helped me overcome significant challenges faced during the early stages of my operations. (FE#14) – a moderate digital entrepreneur: uses a combination of digital with 2 or more non-digital resources*

> *"Definitely there are more pros. Because with Zoom and other online platforms, I am able to expand and have a larger geographic reach of clients across the country". (FE#30) – a light digital entrepreneur: uses a combination of 1-2 technologies with core non-digital operation*

From these accounts, we see evidence of the social interactions within the digital space and the material context of female entrepreneurs whereby the business transformation differs in relation to the context of the online social capital of the different digital entrepreneurs. Both in the context of gender and their islandness characterised by fragmentation in geographic space, information and limited resources, the participants conceptualised their engagement with the digital technologies as an avenue to generate novel ideas, identify and mobilise resources, capitalise on new market opportunities, gather information and create legitimacy for business innovation.

The accounts of the female entrepreneurs also highlighted the persistence of some contradictions, ambiguities and tensions in their experiences as digital entrepreneurs. For instance, during one of the interviews, a thriving female entrepreneur (FE#13) continuously referred to female digital entrepreneurs as *"not real entrepreneurs"* because of the small size of their ventures. Participants highlighted that their identities are interwoven in and are shaped by the context of the entrepreneurial environment. For instance, in accessing resources from

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traditional financial system, participant FE#4 who owns an online tutoring business and is an extreme female digital entrepreneur recounted her experience:

> *"It is really difficult to get funding here…I am still having a lot of challenge in this area even though I've proven myself financially….To get a loan, I had to utilise my husband's credit worthiness as he is fully employed in the public sector." (FE#4)*

Evidently, this statement reflects concerns with traditional mindsets in the entrepreneurial ecosystem of these island nations. Such thinking by the participants emphasizes their alertness to call out existing gender-related inequalities, notwithstanding their proven embrace of digital technologies to explore novel opportunities in online education. The logic of the participants is that the increased entrepreneurial hope and optimism facilitated by the technologies can be thwarted; leading to a vicious circle between long standing inequalities of lack of finance for business operations in the new digital environment.

Further, the narratives illustrate that the digital contexts within which the female entrepreneurs operate are characterised by capitalist social relations and structures that are circumscribed by gender issues. As they experienced business transformation, the female digital entrepreneurs demonstrated that they operate in a dual space as both leaders with active agentic capabilities, and individuals who are in transition in the digital space. Participants FE#6, FE#8, and FE#27 shared stories which captured their experiences in the digital space:

> *"I am actually a non-technical Tech Founder. And yes, there is such a thing! I am creative and I am a visionary. Men dominate the field of tech…And sometimes in this space it is difficult. So, I am able to survive with the use of Advisors and outsourcing to developers to do the job." (FE#6)*

> *"I met a lot of sceptics in the field because of my age [under 35], gender and just being a woman…When I have some very big meetings with CEOs from large corporations, they at first presume I am male because of my name. On arrival at the meeting, they [men over 70 and white] would ask if I am bringing someone else to have the meeting. When I respond no and tell them I am the CEO, I can see the discomfort and awkwardness. (FE#27)*

Based on these statements, the participants explained further that interwoven in their experiences are the product of a combination of underlying historical gender-specific mindsets and effects and superficial arguments whereby women are generally described technophobic and not likely to be tech savvy. The participants further surmised that in the digital space, technologies are portrayed as a male domain which resonates with the view that technology is gendered and considered as "toys for the boys" (Hilbert, 2011)

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Empowerment in dimensions

The findings further indicate that digital technologies play a role in empowering women to become entrepreneurs and operate in the entrepreneurial environment. We observed that digital resources such as social media platforms and digital artefacts such as smart phones, which were initially used for personal transactions were transferred for business activities. Further, with the growth of digital technologies (such as internet, WhatsApp, social media platforms, and emails), there resulted a lowering of barriers for the female entrepreneurs to sell products and services directly to consumers. They also provided an avenue to even develop and participate in more than one business, and generally enhanced opportunities to participate in eBusiness. This is underscored by a participant FE#26, who shared on her experience as the founder and manager of a data consulting company in which digital technologies afforded her the opportunity to promote and expand the business venture.

> *"We use social networks for driving and promoting the business… and also for education. We push digital because we work with clients all over the world – from London, to South Korea and Qatar. Our students are from all over the world too – Taiwan, China, Australia, Africa. So, we drive everything to be digital." (FE#26)*

Additionally, for the women who owned businesses over a period of 6 years and more, the digital technologies provided expanded opportunities in respect of their personal growth and development through e-learning. These have experienced better information sourcing and use, as well as enhancement in their investment decision making capacities which in turn impacts their sense of agency. Yet, the agency and resources dimensions of empowerment are showing tensions and contradictions in the findings. For example, participant FE#8 shared her experience about the perspectives of others (including family members) towards female digital entrepreneurs, when she stated:

> *"I literally heard my mother on the phone telling my aunt that I am unemployed…all because I am working for myself and there is no physical place to meet customers face to face." (FE#8)*

The findings indicate improvements connecting with business professionals. In addition to advertisements, the female digital entrepreneurs use social media sites (Twitter, YouTube, LinkedIn, Facebook, Instagram) as business platforms to engage and interact with people (women and men) who would have been otherwise difficult to reach. Hence, with the issue of remoteness which typifies small island-nations, the participants were able to employ the

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technologies to overcome barriers in the traditional market. This is summed up in one of the statements given by a participant FE#17:

"The digital world levelled the playing field for me as I am able to connect and engage with persons like Richard Branson and Seth Golding of this world….there is no need to waste time and hang out together once mutual value-added business interest is established. The use of these technologies gave me the access and breakthrough that I needed." (FE#17)

The participants' perspectives on digital entrepreneurship revealed agency and the emancipation from the constraints of socio-economic systems. For instance, some participants pointed to improved work-life balance and offerings of flexibility to work remotely; inclusive of working from home. Those female entrepreneurs without children, spoke of their use of digital technologies as allowing them greater freedom and flexibility to work from anywhere at any time. Even for the female entrepreneurs with children, the absence of temporal-spatial constraints, as afforded by digital technologies, gave them more time to engage in other activities such as family and childcare responsibilities, self-care (health and wellness), community projects for women and girls, mentoring online, and "me time". Given that the digital technologies reduce the need for "brick and mortar" establishments, most of the businesses operate entirely or partly from home. A married participant FE#17 who provides care for two family members (under 5 years old) shared her experience of a typical workday:

"Through the use of these technologies, I am able to connect with a group of women from across the globe early in the morning,…because I have flexible work hours, I am also able to fit in going to the gym, able to drop off and pick up my nieces from kindergarten school, put in hours of work…and sometimes I even have time to go to the beach in the evening…This also allows me to have a no-work/day off during the week where I disconnect from everything digital!"(FE#17)

Interestingly, some of the women with childcare responsibilities faced some challenges of reconciling the tension of having the work space for their businesses at home, where some opted to scale back or temporarily halt their business operations to ensure they spend quality time with their family members, especially their children. In this regard, participant FE#3 stated that:

"I therefore conclude that whether it is a single parent home or not, as long as the mother owns or runs a business, she is sacrificing time that the children need…Even though I operate my business at home, I am not at home as I am busy working. So, while my business blossomed with the use of digital technologies during COVID it is now on pause. Believe it or not, I think my children are happier that I am more present." (FE#3)

Several female digital entrepreneurs work full-time in their businesses, while others work part-time. The very nature of digital entrepreneurship facilitates and impacts this new and emerging feature of female entrepreneurship. Yet, the female entrepreneurs expressed feelings of "being overwhelmed, being exhausted and burnt-out, wearing different hats to perform different functions, and being intimidated" (FE#2,6,15,16,17,18,22,23); all for the sake of being available to respond and to meet the needs of customers and other online partners. One participant claimed that as a female digital entrepreneur (FE#16) there is always the "Fear of Missing Out" (FOMO) factor which leads to the struggle of having to construct new work-life boundaries. Also, female entrepreneurs, such as participant FE#23 is clear on how they navigate the digital space as she stated:

"I've set hours to reflect what is important to me, which isn't just about money…I am not accessible all the time." (FE#23)

Also, the women shared experiences of being under scrutiny in the online space as instances of normativity appeared to supersede nature in some of the implicit signposts. Although, facing some sort of backlash with opinions on social media, some of the female entrepreneurs strove for authenticity in their embodiment and maintain eclectic dress-codes, carry natural hair styles, wear no make-up, and are not pressured if they bulged in the middle. The accounts of participants FE#2 and FE#19 are captured in statements such as:

"Women are criticised and are required to have perfect figures in my field of health and fitness. Whereas there are several male fitness instructors and football coaches who do not have a six-pack. They are not judged the same way. Subjective norms from society are used as the yardstick for us female entrepreneurs." (FE#2)

"Online I am fully who I need to be… I'm not trying to pretend to be younger. It's just about presenting myself in a way that I feel more comfortable, and that, I think, is going to be supportive of the message rather than distracting from it." (FE#19)

Resilience dynamics

We saw that that the role of digital technologies towards enabling entrepreneurial resilience is illustrated in the participants' functioning both as a necessity in this digital era and as a trigger for creating new opportunities in areas related to (a) information for self- efficacy, critical thinking, decision making, and productivity, (b) resourcefulness and affordances, (c) capacity building paradigms, and (d) diversifying and sustaining representation**.**

Information for self-efficacy, critical thinking, decision making and productivity. We noticed that the female entrepreneurs utilised the digital technologies during challenging periods of their business start-up and operation for idea inspiration and a source of validation of new business ideas. As the participants relied on social media to connect beyond their usual business environment, they realised the important role of garnering self-confidence in marketing their products and services and in feeling a greater sense of achievement with their entrepreneurial abilities. In such instances, the participants explained how digital technologies such as social media, and online advertising provide a space to amplify their voices as female entrepreneurs at an affordable cost. They also referred to meaningful positive reinforcements of their business endeavours that were derived as they gained self-confidence through bonds of trust developed in their respective online communities. For instance, participant FE#6 stated:

> *"The journey with digital technologies is a positive one in the end because I am in a better place than when I started…the craving need to adapt very fast has helped me as an entrepreneur." (FE#6).*

The female entrepreneurs explained how the technologies are instrumental in addressing the challenges of obtaining information for resourcefulness (labour and finance), supply chain management, multiple distribution channels (and export). Moreover, the findings portray the use of the technologies as inspiring and emboldening the female entrepreneurs to participate in dynamic and complex networking activities to foster business resilience and innovation. Participants FE#15 and FE#25 explained:

> *"I see the effect on productivity and critical thinking. Now I have records and information on each process on my computer and mobile phone. With the different issues recorded, I can keep an eye and be able to track the status of orders… In digitalizing the process, I enhance my accuracy in decision making." (FE#15)*

> *"My information system for the business is everything…it underpins confidentiality in data management, including personal data." (FE#25)*

With respect to business continuity, we noted that the use of digital technologies was a key mechanism to either pivot or expand their business model and maintain virtual presence during the COVID-19 pandemic to maintain engagement with their customers. Participants indicated during this pandemic the technologies provided additional opportunities to innovate in marketing practices (using social media) and to access new networking experiences. technologies have become an integral part of their business operations to adapt to the

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challenges, participant FE#25 described *"I was also able to remain engaged and operational during the pandemic." (FE#25)*

Capacity building. Building on the access to information, we noted results pointing to enhanced active collaboration through e-groups, virtual discussions, attendance at online events (shows and exhibitions), formal and informal associations with other entrepreneurs (male and female), firms, professionals, and organisations. We also witnessed opportunities for capacity building which were useful for helping participants to simultaneously keep up with the changes both in the business environment and the disruptive innovation in digitization. These perspectives were captured by participant FE#22 who stated:

"My new business is a learning and communication platform…it does not keep me up at nights but fills my waking hours…living on an island, digital technologies, enable me to be more agile in seeing opportunities and to leverage the digital world." (FE#22)

There was a turning point among female entrepreneurs in their capacity building endeavours through the use of digital technologies. For instance, they are more deliberate to share about lessons learned and help to provide solutions to problems or challenges faced in both the digital space and the entrepreneurial environments. These entrepreneurs understand that with the sharing of their knowledge and expertise, either for free or at a largely reduced costs (if it is done through an organised training modules or sessions), is instrumental to build resilience. The experience in capacity building even evoked a novel perspective on entrepreneurial context as explained by female entrepreneurs FE#22 and FE#13:

"One on one training is facilitated online which is deemed a safe space as some services such as fitness or yoga can be easily sexualized." (FE#22)

Moreover, female entrepreneurs used effective strategies and good practices to navigate the entrepreneurial ecosystem. This is interesting, as it seems that the participants are keen on illuminating nuanced issues (that could be easily missed by their female counterparts. For example, participant FE#22 commented that:

"Through the digital technologies, there are community spaces that are created and enable the female entrepreneurs to find other business owners and experts who can act as substitutes in their absence." (FE#22)

Diversifying and sustaining representation. As the female entrepreneurs described the challenges they face in accessing funding and the limited opportunities to support their business ventures, they saw the broader importance of the digital technologies of having a great impact

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in bolstering their aspirations for other women in the entrepreneurial ecosystem. The results show that digital technologies can bolster the aspirations for women in the entrepreneurial ecosystem. This experience shows a link to the heightened optimism and hope discussed earlier about the current and future outlook for female entrepreneurship among the participants. For example, female entrepreneur FE#26 commented:

> *"There is virtual circle of women entrepreneurs who want to help each…there is no pressure." (FE#26)*

The use of digital technologies enabled the participants to directly mentor other women and girls with the expressed motivation to effect change (inclusive of those from vulnerable groups and remote areas) and ultimately positively influence the diversity of female entrepreneurs. The participants explained that their experience of mobilizing other female entrepreneurs was to create change given their understanding of power structures and the influence of their cultural form of agency, which is circumscribed and structured by their sense of a "matrifolk" identity and practice of women in the Caribbean. Participants FE#17 and FE#16 respectively explained that:

> *"With digital technologies I have an online mentorship programme where I offer skills training to disenfranchised women and give them a second chance…the participants are global." (FE#17).*

> *"Women entrepreneurs equipping other women with digital capacity is a gamechanger." (FE#16).*

Importantly, the participants are focused on improving the effective participation and representation of women with the entrepreneurial ecosystem in the region and globally. In this regard, the findings suggest there is a recognition and a deliberate mindset among the participants maintain this trajectory as expressed by FE#26:

> *"The landscape has changed to drive mentorship programmes. There is a need for it…with digital technologies, students and other young people can be mentored more broadly…a catalyst for female digital entrepreneurs…With global clients online, digital technologies bridge spatial and social contexts." (FE#26).*

Discussion

As digital technologies herald a new era in entrepreneurship (Nambisan, 2017), there have been heightened interests in gaining a deeper understanding of the key issues in the context of female entrepreneurship and digital entrepreneurship. The rapid and pervasive changes to the business

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environment caused by the integration of digital technologies, suggest that academic research is not on par with the reality in the field (Kraus *et al.*, 2019). Moreover, we observe with others (Gaweł and Mińska-Struzik, 2023) that business transformation through digital technologies necessitates considerations of various dimensions.

First, by bringing novel evidence from a non-Western context, we emphasize the defining role of the Caribbean of island nations and of their contextual historical and socio-economic dimensions on the business transformation for female entrepreneurship in their interactions with digital technologies. While there is an aura of universalism and essentialism encapsulated in female digital entrepreneurship, the intensity of how digital technologies are perceived by the participants depends on the socio-cultural context of their countries (Dy *et al.*, 2017). The cultural context of the Caribbean countries contradict the notion of submissive and passive stereotypical women and how female entrepreneurs from developing countries of the Global South perceive themselves; instead, revealing sustainability, hope and optimism, empowering and resilience actions. The empirical data from the Caribbean context challenges the homogenised assumptions of female entrepreneurs in the Global South as being generally poor, uneducated, ignorant, and traditional, and instead compares with prescribed Western representations of being educated, modern and free (Kerner, 2017). As previous studies have shown that Caribbean women are known to challenge limits placed upon them (Slocum and Shields, 2008), we argue that the digital technologies provide an opportunity for female entrepreneurs to reinvent their business activity, overcome contextual constraints, and become creators of transformation strategies for their businesses through enhanced capacity building, information sharing, mentoring, networking and among others. Here we noted that issues of independence and emancipation are not featured as being impactful for female digital entrepreneurship in the region.

Results highlight the significant presence of family networks that provide care for children and other domestic responsibilities, as well as the family support to the female business endeavours. This needs to be contextualised in view of the relatively limited structured and affordable care-giving services in the Caribbean. More than marital status, family network is crucial and affect entrepreneurship. The notion of self-sacrifice for family members - particularly children - was evident in participants' business decisions. Giving due consideration to the contextual factors of the region requires an acknowledgement of the interwoven complexity of the fabric of cultural, socio-economic norms (Freeman, 2014;García-Morales *et*

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al., 2021) a view that resonates with gendered contextual approaches (Welter, 2020). Specifically, the colonial and post-colonial history of these small island nations has affected the construction of specific socio-cultural norms and gender expectations, including in the economic sphere. Such understanding is crucial for theorising from a post-colonial feminist perspective (Ozkazanc-Pan, 2012). By recognizing and analysing the post-colonial contextual conditions in which female digital entrepreneurs operate, we argue that the Caribbean context and its socio-cultural arrangements and gendered normative expectations influence the lived experiences of the female digital entrepreneurs. In this regard, post-colonial feminist theories provide insights on "the politics of location" as described by Adrienne Rich (Piedalue, 2017) where the participants have interpreted and assessed their lived experiences and knowledge as situated and embodied, and their identities as relationally produced in the Caribbean context in their understanding of the influence of imperial power and a recognition of resistance practices in their operations. Therefore, this in-depth exploration of how female entrepreneurs in the Caribbean interact with digital technologies within their environments portends significant scope for contributing to feminist theories in entrepreneurship and policy development; particularly within the distinctive dynamics of entrepreneurship in developing countries.

Second, the study contributes to the growing body of knowledge that explores gender in the on/offline space (Dy *et al.*, 2017) as a situational practice that is done by "other" entrepreneurs, who are beyond the stereotypical masculine hero entrepreneur in developing countries (Marlow and McAdam, 2013). While several streams of literature present digital entrepreneurship as a "great leveller" (McAdam *et al.*, 2020) in empowering and enabling greater economic participation for women, this claim remains debatable (Dy *et al.*, 2017). Notwithstanding the benefits derived through enhanced resourcefulness and affordances that in some instances, the research participants deemphasized the gendered utilitarian perspective of networking and instead emphasized the value of sorority, interpersonal relationships and social richness (Dean and Ford, 2017;Dean *et al.*, 2019). These female entrepreneurs are highly resource-constrained (Foss, 2010) because of the geographic (remoteness and fragmentation) and socio-cultural normative contexts, yet more malleable to adapt in the face of crises (Alhothali and Al-Dajani, 2022). Moreover, the ingrained socially constructed particularities that tend to link digital technologies and women at a lower level of engagement within digital entrepreneurship (Reyes and Neergaard, 2023) does not feature strongly in our findings. In fact, we noted that through digital platforms, the female entrepreneurs took the initiative to

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create more business opportunities and to expand their entrepreneurial landscape and overcome contextual constraints, which is critical in empowerment towards building self-efficacy (Ahl and Marlow, 2012). Therefore, we conclude that stereotypical biases of agentic entrepreneurial deficits associated with female entrepreneurs, which are infused with assumptions of a neutral Web (Dy *et al.*, 2017) can be compared to a "digital double bind" on female digital entrepreneurs (McAdam *et al.*, 2020). As noted by various feminist scholars, we argue that while digital technologies and technological prowess are often associated with masculinity, digital entrepreneurship cannot be perceived as a gender-neutral field (Reyes and Neergaard, 2023). Indeed, empirical evidence highlight underexplored contradictions of female entrepreneurs navigating embedded gender norms in the digital space, and in male dominated settings, through deliberate mentorship, networking, capacity building and even outsourcing of the technological aspects of the business operations. Further, gendered considerations of the experiences of the female entrepreneurs in the digital space can also provide insights on future research directions that are linked to the persona of citizen developers who are willing to learn and collaborate .

Third, the study contributes to research on female entrepreneurship by exploring how Caribbean female entrepreneurs use digital technologies to navigate inequalities and develop their entrepreneurial SHERO. Intrinsically, these topics are similar to those on female entrepreneurship in general (Foss *et al.,* 2018), and the profound integration with digital entrepreneurship expands on the notion that gender is not obsolete (Ferrando, 2014). To some extent, the findings support the viewpoint that there are aspects of digital transformation that tend to maintain the gender divide in entrepreneurship (Gaweł and Mińska-Struzik, 2023) even if the scope and nature differ due to the range of contextual dimensions. As digital technologies are advancing constantly, suggests that the challenges and opportunities of digital entrepreneurship for women are diverse.

Therefore, to acknowledge the situatedness of female digital entrepreneurs, we theorise the SHERO from a post-colonial feminist perspective (Ozkazanc-Pan, 2012), recognizing the specific positionality of female digital entrepreneurs in the Caribbean context of post-colonial small island nations. By so doing, we see the SHERO as the lived experiences of these women in complex socio-cultural and socio-economic settings of power and gender hierarchies influenced by history and geography.

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Finally, our research reveals that digital entrepreneurship occurs as a process (a movement) and in the moment, as the female entrepreneurs learn by doing (Dodd *et al.*, 2022) in their geographic and social locations situated in the Caribbean region of the Global South . Cognisant of the novelty of the phenomenon of digital entrepreneurship, we consider it useful particularly at this early stage to also chart the significance of post-colonial feminism as a lens to capture alternative knowledge paradigms more broadly, with empirical variations of gendered social realities of female entrepreneurs in non-Western regions (Piedalue, 2017) such as the Caribbean. Therefore, the implications of the post-colonial feminism perspective for practical considerations in the field of digital entrepreneurship and female entrepreneurship contributes to attempts at historicising and also highlighting the agency of non-Western female entrepreneurs (Kerner, 2017) in the global digital environment.

Conclusion: Limitations and Future Research

In this paper, we analysed how female digital entrepreneurs participate in and shape digital entrepreneurship in a broader context, in light of the multidimensional and gendered dimensions of the topic. Despite intrinsic limitations of interview-based qualitative research, the engagements with participants were open and conversational in nature which yielded rich novel data that highlight emic perspectives of female digital entrepreneurship in small island developing states, inclusive of the nuances, paradoxes, tensions and contradictions to some established dominant assumptions. The study advances on the interplay between female entrepreneurship and digital entrepreneurship while showing the evidence from the perspectives and narrative accounts of women from a "fresh" context.

First, we relied heavily on the perspectives of the participants who shared how they experienced business transformation in their use of digital technologies. We applied reflexivity, in using the empirical data to analyse the connection between the degree of digitalization and the performance of the female entrepreneurs in their socio-cultural contexts. In a post semi-pandemic era of digitalization, the data collection process was done online as this was the preferred option by the participants given the opportunities for more flexible (time-wise) and safe (health-wise) engagements.

Our results illuminate the socio-economic contextual dimensions in three Caribbean countries. Even though we believe that the Caribbean countries share similar economic characteristics, social values, and regional integration institutions, they are heterogenous. Studying the entrepreneurial landscape of this region and accounting for different contextual dimensions of history (post-colonial context), geography (remoteness) and socio-cultural norms is important for boosting the lacuna of empirical evidence on entrepreneurship in the region and to explore the effects of the interplay of digital technologies with female entrepreneurs in diverse contexts. Moreover, research on digital entrepreneurship is deemed to be in its infancy (Kraus *et al.*, 2019;Rosin *et al.*, 2020), which provide opportunities for reshaping the boundaries and broadening the trajectories for entrepreneurship research as an field of research (Al-Dajani et al., 2015) and contribute to debates on the inclusion of gender and context in shaping and influencing female digital entrepreneurship (McAdam et al., 2020). Cognisant of the ubiquity and the high developmental importance of female entrepreneurship and digital technologies, we argue that the effects of their interplay point to the need to shift from the traditional notion of female entrepreneurship as being vulnerable towards a recalibrated concept of entrepreneurship led by women who are more oriented towards patterns of business innovation, adaptability and sustained growth and development (Huaman *et al.*, 2022). This perspective resonates with calls to broaden the scope (research, policy and practice) of the entrepreneurship field in exploring novel and under-researched issues from non-traditional regions through gendered contextual lens.

Finally, our research reveals that digital entrepreneurship occurs as a process. In exploring the transformative potential of digital technologies towards female entrepreneurship, we presented the areas of sustainability, hope, empowerment, resilience and optimism, not so much as distinct categories, as they are guiding threads of overlapping and mutually reinforcing thematic areas of focus from contextual gendered lens. The challenge for future research is to be intentional in building on this knowledge to enhance understanding of entrepreneurship in the Global South in general; and in small island developing states in particular. Not only are we seeking to bring additional scholarship to the field with an approach that emphasizes the novel Caribbean context, but we are also seeking to provoke and amplify the call to avoid representational problems by recognising and learning the value of theorization from the Global South in general.

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Figure I: Structure of Data on Female Digital Entrepreneurs (Source: Authors

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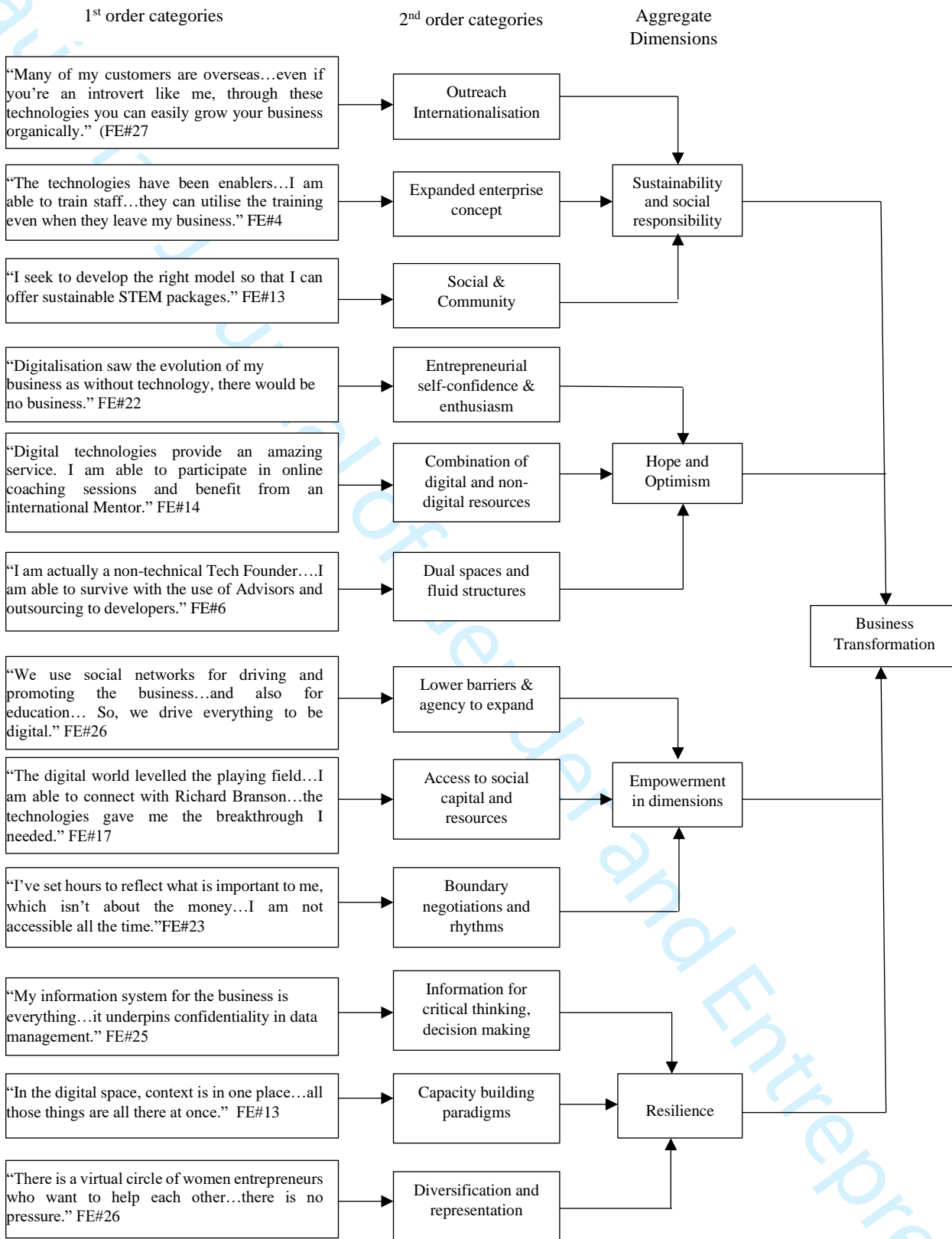48
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Table I: Overview of Research Participants (Source: Authors' own)

Pseudonym	Age	Marital Status Children	Country	Education and Qualifications	Ownership & Employment Status	Business Sector	Type of Digital Entrepreneur	No. of Employees	Established: Year & Duration
FE#1: Rhiza	35	Married 1 child (baby)	Trinidad & Tobago	MSc. Business Management	Sole-Owner Full-time	Beauty & Cosmetics: Wholesale, Retail, Online	Light	2	2014 (9 years)
FE#2: Loverly	33	Single No children	Trinidad & Tobago	BSc Engineering	Co-Owner (1 shareholder)	Nutrition & Fitness Exercise, Yoga, Hikes, Diet, Book club, Camps	Light	4 (1 male)	2016 (7 years)
FE#3: Diana	40	Divorced "Single" Parent 2 children	Trinidad & Tobago	MSc. Economics and Management, MBA, Certified Financial Planner, Post Graduate Diploma in Education	Co-Owner (6 shareholders)	Food & Beverage, Manufacturing	Light	1	2014 (9 years)
FE#4: Kimberlee	44	Married 2 children	Trinidad & Tobago	Associate Degree Project Management, MBA, BSc. Computer Info. Systems and Computer Engineering Technology	Sole-Owner	Education, Online Tutoring	Extreme	7 (1 male)	2020 (2 years)
FE#5: Rudelle	35	Single No children	Trinidad & Tobago	BSc Engineering	Sole-Owner Part-time	Beekeeping	Moderate	3 (2 males)	2018 (4 years)
FE#6: Arlene	32	Single No children	Trinidad & Tobago	MSc. Tourism	Sole-Owner Full-Time	IT and Tourism e-booking/e-commerce platform	Extreme	1	2016 (7 years)
FE#7: Linda	40	Single No children	Trinidad & Tobago	BA Business, MBA, Junior Scrum Master	Sole owner Part-time worker	Agri-processing Light manufacturing	Light	1	2020 (2 years)
FE#8: Raquel	39	Married No children	Trinidad & Tobago	BSc. International Relations	Co-Owner (husband)	Agriculture, Food, Online delivery of products	Moderate	16 (9 males)	2019 (15 years)
FE#9: Nisha	35	Single No children	Trinidad & Tobago	BA Process Engineering, MA Environmental Engineering	Sole owner	Agro-processing, Beekeeping, Honey	Light	1	2015 (8 years)
FE#10: Monica	40	Divorced 2 children Pregnant	Trinidad & Tobago	Certificates : Project Management, Hospitality, Marketing, Events Management BA - Law	Sole owner	Food & Nutrition	Light	5	2020 (3 years)
FE#11: Janet	44	Partner No children	Trinidad & Tobago	Diploma Culinary Arts, BA Human Resource Management, MBA Marketing	Sole owner Full-time	Food & Beverage, Agro-processing Granola, Sauces	Moderate	5	2019 (4 years)
FE#12: Lynn	40	Single No children	Trinidad & Tobago	BSc Business Management	Co-owner Part-time	Agro-processing, Wines, Blended Oils	Light	4 (2 males)	2016 (7 years)
FE#13: Susan	42	Married 2 children	Trinidad & Tobago	BSc. Process & Chemical Engineering	Sole owner Full-time	Education: Online classes and tutoring	Extreme	3 Full Time 12 Part Time	2015 (8 years)

Pseudonym	Age	Marital Status Children	Country	Education and Qualifications	Ownership & Employment Status	Business Sector	Type of Digital Entrepreneur	No. of Employees	Established: Year & Duration
FE#14: Astra	45	Married 2 children	Trinidad & Tobago	Certificate – Wedding Planning and Design	Sole owner Full-time	Tourism & Events	Moderate	6 (3 males)	2010 (13 years)
FE#15: Kasha	36	Single No Children	Barbados	BA Law and LLBC	Sole-Owner Part-time	Food & Beverage; Cookies and Cakes Online Teaching	Moderate	2	2014 (9 years)
FE#16: Nicola	60	Married 2 children	Barbados + Caribbean	BSc. Economic & Development	Co-owner Part-time	Education; IT Skills training	Extreme	1	2018 (5 years)
FE#17: Henrietta	44	Married Care-giver of 2 nieces	Jamaica	BSc – Management & Sociology	Sole-Owner Full-Time	Media & Communication; Podcast; Writer Public Speaker	Extreme	1	2014 (9 years)
FE#18: Kandia	39	Single No children	Jamaica	Foundation Degree in Law, BA Law	Sole Owner Full Time -Then Part time - Now	Digital Training; Digital Programmes Digital Marketing	Extreme	1	2018
*FE#19: Nancy	54	Divorced 4 children	Caribbean	Certificate- Business Coach, Project Management	Sole-Owner Full-time	Media & Communication; Storyteller Tutor/lecturer	Extreme	1 (+ children assist)	2016 (7 years)
*FE#20: Anna	40	Married No children	Caribbean	MSc. IT Master of Business Administration	Founder and Co-owner Full-time	Tech Hub; ICT services; Training; Consulting in storytelling, animation, and game development	Extreme	1	2016 (7 years)
*FE#21: Nathalia	54	Married 2 Children	Caribbean	PhD. Marketing Lecturer in Entrepreneurship	Stakeholder Full time	Education and Training, Mentoring	Light	NA	
FE#22: Donna	37	Single No Children	Barbados	BA Tourism Management Certified Yoga Tutor	Sole Owner Full-time	Fitness, Wellness	Light	1	2016 (7 years)
FE#23: Jenny	51	Divorced No children	Barbados	BA Communication MSc Media Management	Sole Owner Full-Time	Counselling, Wellness	Extreme	2 (1 Male)	2021 (2 years)
FE#24: Sabby	33	Single No children (pregnant)	Barbados	BSc. Business and Marketing, Certificate in Aesthetics	Sole Owner Full-Time	Beauty and Cosmetics	Light	10 (5 Males)	2019 (4 years)
FE#25: Brandy	58	Widow 2 children	Barbados + Caribbean	PhD Christian Leadership	Co-Founder Full-Time	Education and Training: Business Leadership	Moderate	3	2013 (10 years)
FE#26: Sumitra	45	Single No Children	Jamaica + Caribbean	BSc Information technology	Part-Owner Full-Time	Data Management, Technology Consultant	Extreme	2	2010 (13 years)
FE#27: Eunice	35	Single No Children	Jamaica	BSc Biology & Chemistry; Post Doc. Research in Airborne Diseases	Sole Owner & Founder Full-Time	Health Care	Extreme	6 (5 Males)	2019 (4 years)
FE#28: Kasha	58	Divorced 1 Child	Jamaica	BSc Economics & Accounts; MBA; (commenced PhD.)	Sole Owner & Founder Full-Time	Business Support Services	Moderate	2	2016 (7 years)
FE#29: Cherise	45-50	Divorced 4 Children	Jamaica	BSc Medical Laboratory Technology	Sole Owner & Founder Full-Time	Health and Wellness	Moderate	2	2016 (7 years)

Pseudonym	Age	Marital Status Children	Country	Education and Qualifications	Ownership & Employment Status	Business Sector	Type of Digital Entrepreneur	No. of Employees	Established: Year & Duration
FE#30: Patricia	55-60	Divorced 2 Children	Barbados	Secondary School Graduate; Certificates in Cosmetology, Secretarial and Office Management	Sole Owner & Founder Full-Time	Event Planning & Floral Decoration	Light	2-4 (Seasonal)	2007 (16 years)
Notes	• *FE = Female Entrepreneur* • *For the entities with 1 employee, this represents the owner* • *Employees where sex is not specified = females* • ***Extreme Digital Entrepreneur****: business is fully driven by digital technology* • ***Moderate Digital Entrepreneur****: business uses a combination of digital technologies with 2 or more non-digital resources* • ***Light Digital Entrepreneur****: business uses a combination of 1-2 digital technologies with core non-digital operation*								

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Unlocking the "SHERO" Within: An Exploration of how Female Entrepreneurs in the Caribbean use Digital Technologies for Business Transformation

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