




Family firm entrepreneurship and sustainability initiatives: Women as corporate change agents

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Abstract

Family businesses are often seen as key players in efforts to increase sustainability due to their transgenerational focus. Researchers have reported that companies strengthen their commitment to sustainability as they consolidate their entrepreneurial commitment, but the existing knowledge about drivers of family firms' sustainability choices is limited. This study sought to fill related research gaps by exploring the relationships between five entrepreneurial orientation (EO) components—risk taking, innovativeness, proactiveness, competitive aggressiveness and autonomy—and family businesses' sustainability initiatives. These companies comprise a unique research context in terms of the EO-sustainability link due to their focus on continuity and propensity to create value for future generations. In addition, women increasingly hold leadership positions within family businesses, and studies have categorised both entrepreneurship and sustainability as gendered processes. Thus, this research also explored female chief executive officers' (CEOs) moderating role as corporate change agents who influence the EO-sustainability initiatives relationship. Analyses were conducted using primary data collected from 195 privately held family firms in Poland. The results indicate that only one EO component (innovativeness) is significantly associated with family businesses' sustainability initiatives and that CEO gender moderates the links between two EO components (proactiveness and autonomy) and sustainability. Thus, this article contributes to the management literature by exploring the role of women leaders as change agents for sustainability in family firms. Other significant theoretical and practical implications are also discussed.

KEYWORDS

CEO gender, entrepreneurial orientation, family firm, female chief executive officer (CEO), sustainability initiative

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1 | INTRODUCTION

Growing concerns about environmental, social and economic issues (Domańska et al., 2019) have prompted organisations to search for sustainable development solutions (Auer, 2021; Pelster & Schaltegger, 2022). These initiatives satisfy 'present needs without compromising the ability of future generation to meet their own needs' (World Commission on Environment and Development, 1987, p. 16). The search for sustainable solutions has contributed to academics' growing interest in sustainability antecedents, such as entrepreneurial orientation (EO) (e.g. Arya et al., 2021; Silva et al., 2021). EO, defined as the 'set of distinct but related behaviors that have the qualities of innovativeness, proactiveness, competitive aggressiveness, risk taking, and autonomy' (Pearce II et al., 2010, p. 219), enables organisations to make entrepreneurial decisions and take relevant actions (Rauch et al., 2009). Companies strengthen their commitment to sustainability as they consolidate their entrepreneurial commitment (Dias et al., 2021; Dyllick & Hockerts, 2002; Jansson et al., 2017) because they need to be innovative, adaptive and able to recombine their available resources to create business solutions and adjust strategies to match environmental and social changes (Gundry et al., 2014). However, researchers have only recently begun to explore how EO influences family firms' sustainability initiatives (De Falco & Vollero, 2015), which is surprising as family businesses are a uniquely fertile setting in which to analyse both EO (Hernández-Linares & López-Fernández, 2018) and sustainability (Domańska et al., 2022). In addition, sustainability initiatives encourage long-term social and ecological development, which is closely linked to family businesses' philosophy of creating an enduring organisation (Eze et al., 2021; Mullens, 2018; Samara et al., 2018; Zellweger et al., 2012) and creating value for future generations (Chua et al., 1999; Miller et al., 2008).

The limited literature on the EO-sustainability link in family firms presents ambiguous findings. Some scholars have found that EO promotes sustainability (Mullens, 2018), while others report a null or negative effect (Khan et al., 2022). Two reasons could explain these contradictory results. *First*, many researchers (e.g. Khan et al., 2022; Mullens, 2018) have examined EO features after merging them into a gestalt model of EO that 'neglects the individual influence of each dimension' (Hughes & Morgan, 2007, p. 652). This approach contrasts with Lumpkin and Dess's (1996) assertion that EO components can vary independently. The literature on family business corroborates the cited authors' observation (e.g. Casillas & Moreno, 2010), so this finding constitutes an important caveat that needs further exploration (e.g. Hernández-Perlines & Rung-Hoch, 2017; Silva et al., 2021). *Second*, no studies have focused on moderating factors that affect the EO-sustainability initiatives link despite evidence that these variables affect the relationship between family firms' EO and their outcomes (Hernández-Linares & López-Fernández, 2018). For example, gender role theory (Eagly, 1987) suggests that women and men are prescribed distinct sets of gender roles or norm-congruent behaviours. Upper echelons theory (Hambrick & Mason, 1984)

in turn posits that these differences affect corporate policy and organisational outcomes. Given the growing number of women on family firms' board of directors (Bauweraerts et al., 2022; Kubiček & Machek, 2019), further research is needed to clarify how female leaders affect the EO-sustainability initiatives relationship in family businesses.

To address the research gaps identified, the study sought to answer two questions: (1) How do risk taking, innovativeness, proactiveness, competitive aggressiveness and autonomy influence family firms' sustainability initiatives? (2) How does chief executive officer (CEO) gender moderate the above relationships? To this end, a theoretical framework was developed based on four prominent theories: stakeholder theory (Freeman, 1984), resource-based view (RBV) (Barney, 1991), upper echelons theory (Hambrick & Mason, 1984) and gender role theory (Eagly, 1987). The study's conceptual model was tested using data gathered from 195 family firms in Poland, where 34.6% of all private firms have female CEOs (Transparent Data, 2020). In contrast, women only occupy 7% of CEO positions in the European Union (European Women on Boards, 2021). The current study's results reveal that some EO components are associated with family firms' sustainability initiatives and shed light on female CEOs' role in the EO-sustainability initiatives relationship.

This article makes three contributions to the literature. *First*, it responds to calls for further investigations of sustainability antecedents (Biggemann et al., 2014; Hall et al., 2010) and of the complex ways that EO affects sustainability initiatives (Chavez et al., 2020). More specifically, the present study deconstructed EO into its principal components to extend the existing knowledge about EO and sustainability (e.g. Arya et al., 2021; Chavez et al., 2020). *Second*, this article contributes to the literature on family firms by answering to the calls (e.g. Broccardo et al., 2019) for exploring EO consequences that have remained underexplored (Hernández-Linares & López-Fernández, 2018). *Last*, the present research responds to appeals for scholarship that opens the 'black box' of women's leadership—including social contextual factors (Hoobler et al., 2018)—through the current study's focus on family firms' unique environments (Arzubiaga et al., 2019; Mullens, 2018). The present findings comprise an important contribution because family businesses more often advance women into leadership positions (Bjuggren et al., 2018; Kubiček & Machek, 2019) but scholars have rarely explored female leadership in these companies beyond comparing male- and female-led firms' performance (e.g. Rachmawati et al., 2022). Even more importantly, the current study's results provide ground-breaking evidence of how family businesses leaders direct their EO towards more sustainability initiatives and how these firms' women CEOs can become true change agents of sustainability. The findings also have practical implications. Family firm managers can follow the guidelines provided for how to allocate organisational resources so that they focus on specific EO components that promote sustainability initiatives. Policymakers can use the present results to argue for and support their efforts to promote both entrepreneurship and

female leadership in organisations. Finally, the findings provide women with a fuller understanding of female family firm CEOs' potential role in their organisations' shift towards greater sustainability, ultimately contributing to women business leaders' greater visibility.

2 | THEORETICAL BACKGROUND AND HYPOTHESES

2.1 | EO and family businesses' sustainability initiatives

The worldwide focus on sustainable development has boosted interest in the antecedents of organisational sustainability initiatives (e.g. Le Breton-Miller & Miller, 2016), including EO (DiVito & Bohnsack, 2017). The relationship between EO and sustainability initiatives can be quite special in the family business context for three main reasons. *First*, the founding family's dominance generates powerful family-oriented financial and, more particularly, non-financial goals (Chrisman et al., 2012; Gómez-Mejía et al., 2007; Kotlar & De Massis, 2013). Maintaining a good reputation is a nonfinancial objective pursued by most family firms (Deephouse & Jaskiewicz, 2013) due to the inextricable link between the family and company's reputation (Ward, 1988). In stakeholder theory (Freeman, 1984), firms' value-creation activities should consider the varied interests of all groups and individuals with a legitimate stake in the company's success (e.g. customers, suppliers, employees, shareholders and local communities). Businesses build legitimacy by identifying and conforming to stakeholders' expectations (Bansal & Bogner, 2002). Family firms tend to establish especially long-lasting relationships with their stakeholders (Bingham et al., 2011; Offenbergh & Offenbergh, 2009; Van Gils et al., 2014), and these companies focus more closely on issues related to corporate reputation (Campopiano et al., 2019; López-González et al., 2019). Family firms 'search for legitimacy in their stakeholders' eyes' (Borralho et al., 2022, p. 8) by committing to action plans that benefit society at large and the environment (Cruz et al., 2014; Lumpkin & Dess, 2013) via sustainable development (Zahra et al., 2008). The drive to create and maintain a positive reputation among stakeholders motivates family businesses to behave well and to want to be seen as good corporate citizens (Binz et al., 2017), which can foster sustainability initiatives. *Second*, future-oriented organisations generally show a stronger propensity to adopt sustainability initiatives (Jahanshahi et al., 2017). Family firms' primary goals usually include continuity and generational transfer (Hanson et al., 2019; Jaskiewicz et al., 2015; Martín & Gomez-Mejia, 2016; Rau et al., 2019; Ward, 2011; Zellweger, 2007; Zellweger & Sieger, 2012). *Last*, EO and its components can vary in different organisational contexts (Lumpkin & Dess, 1996). According to the RBV (Barney, 1991), family businesses offer a singular environment in which to research EO and its outcomes. EO requires the commitment of resources, and these firms have uniquely relevant assets and capabilities

(Habbershon & Williams, 1999). Family businesses are governed by a specific set of norms, cultural features and processes that reflect how their leaders manage and deploy their resources (Eddleston et al., 2008; Kellermanns et al., 2012). These particularities help explain the recent interest in exploring the EO-sustainability initiative relationship in the family firm context (Arzuabiaga et al., 2019; Khan et al., 2022; Mullens, 2018).

The literature, however, shows that the limited empirical research on this relationship in family businesses has yielded controversial results. Mullens (2018) reports that EO promotes these companies' sustainability initiatives, while Khan et al. (2022) report an insignificant or negative effect.

One explanation for these contradictory results is that researchers (e.g. Abbade et al., 2014; Khan et al., 2022; Mullens, 2018) have treated EO components (e.g. risk taking, innovativeness and proactiveness) as behavioural manifestations of a single strategic orientation (Covin & Slevin, 1989; Miller, 1983). Prior studies have thus merged EO elements into a gestalt model, so all the components must covariate for firms to be entrepreneurial. In contrast, Lumpkin and Dess (1996) argue that not all EO elements need to converge within entrepreneurial businesses.

Miller's (1983) gestalt approach neglects each component's individual influence, ignoring the possibility that sustainability initiatives can be the product of only one or several EO elements and that any remaining components are either of no value or discourage sustainability initiatives. The management literature reports that EO elements overall have different effects on sustainability initiatives (Abbade et al., 2014; Jansson et al., 2017). Researchers have thus called for further exploration of each EO component's specific impact on these initiatives (Hernández-Perlines & Rung-Hoch, 2017; Silva et al., 2021).

The present study answered these appeals and other calls for investigations of sustainability antecedents in the unique family firm context (Broccardo et al., 2019). More specifically, the current research applied Lumpkin and Dess's (1996) approach, proposing that risk taking, innovativeness, proactiveness, competitive aggressiveness and autonomy affect family businesses' sustainability initiatives, as explained in greater detail below.

2.1.1 | Risk taking and sustainability initiatives

Risk taking can be defined as a 'willingness to commit resources to projects, ideas, or processes whose outcomes are uncertain and for which the cost of failure would be high' (Covin & Wales, 2012, p. 694). This EO component appears to have contradictory effects on sustainability initiatives. On the one hand, researchers have reported that risk taking is not significantly related to companies' commitment to environmental and social activities (Jansson et al., 2017). More risk-averse firms may even be more responsive to stakeholders' needs and more committed to the relevant communities and the environment than businesses that take greater risks (Godfrey et al., 2009; Nybakk & Panwar, 2015).

On the other hand, scholars have pointed that risk taking supports sustainability initiatives (Bacq & Eddleston, 2018; Spence et al., 2011). Multiple risks arise during the implementation of socially and environmentally responsible practices (Hofmann et al., 2013). Firms also incur significant short-term costs when adopting these practices (Margolis & Walsh, 2001), which can make managers hesitant to engage in sustainability initiatives. Nonetheless, family firms are characterised by a long-term orientation and extended investment horizons (Lumpkin et al., 2010), as well as access to patient capital (Gómez-Mejía et al., 2007), which allows these firms to undertake risky enterprises that non-family organisations have to ignore (Zahra et al., 2004). Businesses cannot determine how consumers will respond to sustainability initiatives, so their return on investment is somewhat unpredictable (Mullens, 2018). However, family firms show a willingness to put family wealth on the line by taking on the risk of incurring costs linked to sustainability initiatives because of these companies' concentrated use of family financial resources (Zellweger & Sieger, 2012). The above findings were incorporated in the following hypothesis:

Hypothesis 1a. Risk taking is positively associated with family firms' sustainability initiatives.

2.1.2 | Innovativeness and sustainability initiatives

Innovativeness is understood in this research context as attitudes that enable companies to apply new ideas and experiment and engage in creative processes (Covin & Slevin, 1989), so this EO component is often associated with sustainability initiatives. Innovation is required to pursue sustainability actively (Klewitz & Hansen, 2014). More innovative businesses are more likely to engage in sustainable behaviours (Uhlener et al., 2010), adopting, among other things, green-oriented practices (O'Neill & Gibbs, 2016) such as alternative technologies, waste reduction policies or recycled materials—all of which benefit the environment (Hall et al., 2010; Tilley & Young, 2009). According to Mullens (2018), 'innovativeness is necessary for firms to identify policies, processes, structures and products that allow a firm to deliver products or services that are aligned with consumer specifications and remain socially beneficial and environmentally conservative' (p. 167). Innovativeness thus helps companies meet many stakeholders' needs.

This EO component is considered a driver of sustainability initiative implementation in family firms (Craig & Dibrell, 2006). Scholars have even posited that a conceptual overlap exists between these businesses' innovativeness and their corporate social responsibility (CSR) (Randolph et al., 2022) since both emphasise leveraging corporate capabilities to create social value for stakeholders interested in long-term results (Detomasi, 2008). Randolph et al. (2022) detected a borderline significant relationship (i.e. a *p*-value lower than 0.1) between family firms' innovativeness and their social responsibility initiatives. The cited authors further found empirical evidence that

innovativeness is strongly related to environmentally responsible practices. Therefore, both empirical research on businesses in general and Randolph et al.'s (2022) findings on innovativeness's positive impact on environmental sustainability initiatives in family firms lead us to propose:

Hypothesis 1b. Innovativeness is positively associated with family firms' sustainability initiatives.

2.1.3 | Proactiveness and sustainability initiatives

Proactiveness is defined as the constant search for opportunities and future market trends to get ahead of competitors and anticipate customers' future requirements, problems and changes (Hughes & Morgan, 2007). Proactiveness enables companies to identify and generate resources that will support their long-term business trajectory (Roxas et al., 2017) and stimulates action plans and processes that detect and grab opportunities to meet social and environmental needs (Zahra et al., 2009). This EO component is required for firms to become involved in sustainable development initiatives (Jansson et al., 2017). In other words, proactiveness is necessary to create value for the environment and society at large (Biggemann et al., 2014). The existing literature provides empirical evidence that proactiveness is positively associated with sustainability initiatives, such as environmental and community projects (Ayuso & Navarrete-Báez, 2018) and green supply chain practises (Namagembe et al., 2016).

Proactiveness can act as an enabler of sustainability initiatives—a role that appears to transfer to family business context. Researchers have reported that proactive family firms seek to improve community welfare by implementing sustainability initiatives in public health, education or human rights protection (Bergamaschi & Randerson, 2016). In addition, proactiveness favours the adoption of business models that minimise family firms' ecological footprint (Sharma & Sharma, 2011). The above findings were incorporated in the present study's third hypothesis:

Hypothesis 1c. Proactiveness is positively associated with family firms' sustainability initiatives.

2.1.4 | Competitive aggressiveness and sustainability initiatives

Competitive aggressiveness is understood here as companies' ability to take decisive action to overcome their competitors (Soininen et al., 2012). Namagembe et al. (2016) report that this EO component is not significantly associated with ecological practices. However, de Oliveira Santini et al.'s (2021) more recent meta-analysis found that multiple researchers have detected a significant positive relationship between competitive aggressiveness and CSR-related initiatives.

Competitive aggressiveness has often been neglected in family business research (Hernández-Linares & López-Fernández, 2018) as it has been considered less important in family firms due to their inward focus (Lumpkin et al., 2010; Nordqvist & Melin, 2010). The existing knowledge is thus quite limited about competitive aggressiveness's link to these companies' sustainability, and the work done has already produced some conflicting results. On the one hand, competitive aggressiveness characterises family firms that favour short-term rather than long-term values (Lumpkin et al., 2010; Nordqvist & Melin, 2010), which may negatively affect these businesses' future-oriented sustainability initiatives (Wu et al., 2018). On the other hand, family firms tend to focus on developing a positive reputation and image (Deephouse & Jaskiewicz, 2013; Zellweger & Sieger, 2012), and competitive aggressiveness signals their dedication to being exceptional. Family firms that significantly integrate competitive aggressiveness become more powerful, vigorous and willing to compete with other businesses via competitive action plans, including sustainability initiatives (Kallmuenzer & Peters, 2017). These companies' competitive aggressiveness can also strengthen their long-term sustainability practices by encouraging owners and employees to be more creative, innovative and motivated to endure the rigours of environmental protection strategies. Family businesses may seek to compete with their rivals by working hard to support the surrounding society (Salloum et al., 2021). In line with these last findings, the current research included the following hypothesis:

Hypothesis 1d. Competitive aggressiveness is positively associated with family firms' sustainability initiatives.

2.1.5 | Autonomy and sustainability initiatives

Autonomy can be defined as the 'independent action of an individual or a team in bringing forth an idea or a vision and carrying it through to completion' (Lumpkin & Dess, 1996, p. 140). Autonomy may have a negative impact on sustainability initiatives (Gauthier et al., 2021) because they require effective collaboration with multiple stakeholders (Nidumolu et al., 2014). The freedom to take autonomous independent actions, therefore, tends to diminish—rather than support—social value creation efforts (Gauthier et al., 2021).

Family business studies have paid autonomy the least amount of attention among the five EO components proposed by Lumpkin and Dess (1996), so autonomy is severely underresearched (Hernández-Linares & López-Fernández, 2018; Rauch et al., 2009). The scarce research conducted indicates that a positive association exists between autonomy and sustainability initiatives because autonomy drives family firms to channel their resources towards activities with long-term prospects. These companies tend to support and protect their employees, and their managers act according to a value system that contributes to sustainable development

(Antheaume et al., 2013; Fernando & Almeida, 2012). Family firms have varied reasons for investing their resources in sustainability initiatives, for example, protecting their business for future generations (Delmas & Gergaud, 2014), contributing to the common good (Niehm et al., 2008) and maintaining their reputation in the eyes of different stakeholders (Borralho et al., 2020). Autonomy appears to be necessary when companies engage in activities with long-term prospects (Antheaume et al., 2013), such as sustainability initiatives. The above findings were aggregated into the following hypothesis:

Hypothesis 1e. Autonomy is positively associated with family firms' sustainability initiatives.

2.2 | Women's moderating role as family business CEOs

Companies can best contribute to meeting the United Nation's (2015) Sustainable Development Goals after undergoing a fundamental organisational transformation (e.g. Johnson & Schaltegger, 2020). For this process to succeed (Schaltegger et al., 2016), firms often need personnel who are able to start initiatives, make decisions and implement measures, that is, people who are change agents for sustainability (Girschik et al., 2020; Ploum et al., 2018). The gender role (Eagly, 1987; Eagly et al., 2000) and upper echelons theories (Hambrick, 2007; Hambrick & Mason, 1984) suggest that women CEOs can take on the role of change agents by influencing the relationship between EO and sustainability initiatives.

Gender role theory (Eagly, 1987) suggests that societies prescribe distinct gender roles and norm-congruent behaviours to men and women and that female leadership tends to be more communal than agentic (Eddleston & Powell, 2008). For instance, women have strong moral norms (Loo, 2003; Yasser et al., 2017), are more sensitive and empathetic and pay more attention to other individuals' needs and welfare, which causes women to engage in more altruistic behaviours (Gilligan, 1982; Mallin & Michelon, 2011). Women are also more focused on social and ethical issues (Loo, 2003; Yasser et al., 2017) and social responsibility (Eagly & Johannesen-Schmidt, 2001; Zhang et al., 2022) than men are. Upper echelons theory (Hambrick, 2007; Hambrick & Mason, 1984) further posits that CEOs integrate their values, personalities and experiences into their corporate policy decisions, such as which CSR strategies to implement (Zhang et al., 2022).

The present study drew on these two theories, considering that gender affects company leaders' perspective on complex issues related to business activities (Johnson et al., 1996; Pearce & Zahra, 1992). In addition, the research model proposed that female leadership in family firms may lead to divergent approaches to applying risk taking, innovativeness, proactiveness, competitive aggressiveness and autonomy to sustainability initiatives. These differences are discussed in greater detail below.

2.2.1 | Women, risk taking and sustainability initiatives

Sustainability initiatives can be risky and even more so for family businesses due to how family wealth is concentrated on funding their operations (Zellweger & Sieger, 2012). Some studies have found no significant gender differences in female and male managers' risk tolerance (Atkinson et al., 2003; Croson & Gneezy, 2009; Sonfield et al., 2001), but most researchers have reported that female CEOs generally avoid taking risks as compared to their male counterparts (e.g. Bjuggren et al., 2018; Expósito et al., 2023; Mínguez-Vera & Martín, 2011; Nadeem et al., 2020; Weber & Geneste, 2014). Women leaders thus tend to make less risky funding and investment decisions (Francis et al., 2015).

Family firms are especially interested in maintaining their reputational capital given the close association between company and family names (Stockmans et al., 2013) and the owners' desire to transfer the business to the next generation (Deephouse & Jaskiewicz, 2013). Reputational capital is considered an important intangible asset for family businesses (Borralho et al., 2020). This motivation can be even stronger in firms led by women as they are often quite concerned about harming their personal reputation (Gul et al., 2009). Female CEOs harbour fears of damaging their reputational capital, which may drive them to opt for the status quo. Thus, women who lead family businesses can develop a weaker positive relationship between risk taking and sustainability initiatives than male leaders do. These findings were incorporated into the following hypothesis:

Hypothesis 2a. CEO gender moderates the positive association between risk taking and family firms' sustainability initiatives. Specifically, the positive association between risk-taking and sustainability initiatives will be weaker in firms led by women.

2.2.2 | Women, innovativeness and sustainability initiatives

A recent literature review found that the role of CEO gender in innovation has seldom been explored (Arun & Joseph, 2021). However, researchers have long debated whether women are generally more or less innovative than men. For example, some studies have found that women's creative capacity—a key ingredient of innovativeness—surpasses that of men (Reuter et al., 2005; Wolfradt & Pretz, 2001), while other investigations have supported the opposite conclusion (Dollinger et al., 2005). This debate also appears in the literature on business and management. Various scholars have reported that CEO gender is not a determinant of innovativeness (Expósito et al., 2023; Qian et al., 2013). Others argue that female entrepreneurs have a lower preference for innovation and a stronger propensity for a more conservative approach (Buratti et al., 2017), thereby undermining the stereotype of women as more innovative (Fuentes-Fuentes et al., 2017).

In contrast, Nadeem et al. (2020) detected a significant positive relationship between board gender diversity and environmental innovation. The cited authors suggest that female directors' sensitivity to other actors' interests and to environmental matters is a significant driver of environmental innovation in contemporary corporations. This finding is in line with Dickel and Eckard's (2021) results, which indicate that women are often more concerned about social and environmental issues and more inclined to promote social innovation than profit maximisation. In addition, Eddleston and Powell (2008) found that women's participative and communal leadership style can enhance their ability to tap into internal and external stakeholders' innovative potential. For example, employees may come up with new ways to address social and environmental challenges, and, as active listening is considered characteristic of women, female CEOs will be more open to discussing these ideas than a male counterpart would. Family businesses can thus offer a more comfortable setting for female leaders who seek to deploy their personal skills and resources (Hernández-Linares, et al., 2023). Therefore, the current research establishes when women CEOs run family firms, the positive relationship between innovativeness and sustainability initiatives will be stronger than in similar businesses led by men. This is formally hypothesised as:

Hypothesis 2b. CEO gender moderates the positive association between innovativeness and family firms' sustainability initiatives of family firms. Specifically, the positive association between innovativeness and the sustainability initiatives will be stronger in firms led by women.

2.2.3 | Women, proactiveness and sustainability initiatives

Some scholars have found that women are less proactive than men are (Lim & Envik, 2013). Other researchers, however, have reported that no differences exist between women and men on this level (Runyan et al., 2006) and that CEO gender has no significant impact on companies' proactiveness (Brzozowski & Cucculelli, 2016). Nonetheless, women can still be proactive in developing deep connections with their stakeholders given that interpersonal skills can be at the root of proactive behaviours (Bandura, 2002). Women may also be better at relationship building, active listening, communicating (Eagly et al., 2003; Tung, 2004) and considering and integrating multiple parties' perspectives in their decisions (Nielsen & Huse, 2010).

Glass et al. (2016) report that firms with a greater proportion of female board members are more likely to pursue proactive social and environmental policies and practices. Cordeiro et al. (2020) similarly report that many female CEOs' proactive attitude often leads them to develop sound environmental strategies, including environmentally friendly investments, policies and programmes. The above results were the basis for the present study's next hypothesis,

namely, that when women CEOs head family businesses, a stronger positive association arises between proactiveness and sustainability initiatives than in companies led by men. The following hypothesis reflects this prediction:

Hypothesis 2c. CEO gender moderates the positive association between proactiveness and family firms' sustainability initiatives. Specifically, the positive association between proactiveness and sustainability initiatives will be stronger in firms led by women.

2.2.4 | Women, competitive aggressiveness and sustainability initiatives

Gender role theory (Eagly, 1987) posits that masculine gender stereotypes include aggressiveness and dominance, while feminine stereotypes expect interdependence and communal values (Eagly et al., 2000; Eagly & Carli, 2007; Eddleston & Powell, 2008). Women's interpersonal orientation may foster less aggressive behaviours (Zhang et al., 2022). This tendency is supported by Lim and Envick's (2013) research, which found that individual female students score much lower than female groups do in competitive aggressiveness. Bartoš et al.'s study (2017) also confirmed that women report more frequently than men do that their companies do not have a reputation for being aggressive.

Family firm researchers have largely ignored competitive aggressiveness (Hernández-Linares & López-Fernández, 2018). The limited literature available suggests that these companies' interest in maintaining a positive family reputation appears to motivate them to avoid any aggressive actions that could, for example, cause financial losses (Deephouse & Jaskiewicz, 2013; Kallmuenzer et al., 2018). The same pattern may apply when female CEOs are involved because women are more often concerned about their reputation (Gul et al., 2009). These findings seem to indicate that, when family firms have women CEOs, the positive association between competitive aggressiveness and sustainability initiatives will be weaker than for family businesses led by men. Therefore, the following hypothesis was proposed:

Hypothesis 2d. CEO gender moderates the positive association between competitive aggressiveness and family firms' sustainability initiatives. Specifically, the positive association between competitive aggressiveness and sustainability initiatives will be weaker in firms led by women.

Women, autonomy and sustainability initiatives

The literature often stresses that female entrepreneurs do not typically start a business for economic reasons but rather for personal

satisfaction. These women may also want to fulfil their need for autonomy and independence (Robichaud et al., 2013), and strong similarities have been found between all genders' desire for autonomy (Bird, 1993). Autonomy is understood in this context as the ability to make key decisions without paying attention to external influence (Kallmuenzer et al., 2018). Although male and female entrepreneurs appear to value autonomy equally, actual autonomy is less prevalent among female entrepreneurs because, in general, they rely more heavily on spouses, family members and friends for help and support (Lim & Envick, 2013).

Women thus seem to be more receptive than men are to other people's needs and opinions (Cordeiro et al., 2020; Eagly et al., 2000; Eagly & Johannesen-Schmidt, 2001), which suggests that female CEOs who seek for organisational autonomy do so with other individuals' support. In the absence of any empirical evidence to the contrary, the current research model assumed that women are able to perceive and consider various stakeholders' interest (Nielsen & Huse, 2010) in their family firm without submitting to the associated pressure. This emboldens us to propose that, when women CEOs run family firms, the positive link between autonomy and sustainability initiatives will be stronger than in family businesses led by men. This is formally hypothesised as:

Hypothesis 2e. CEO gender moderates the positive association between autonomy and family firms' sustainability initiatives. Specifically, the positive association between autonomy and sustainability initiatives will be stronger in firms led by women.

Figure 1 depicts the hypothesised relationships between the five EO components and family businesses' sustainability initiatives and CEO gender's moderating effect on these links. Empirical research was carried out to test the conceptual model. The main methodologies applied are described in the next section.

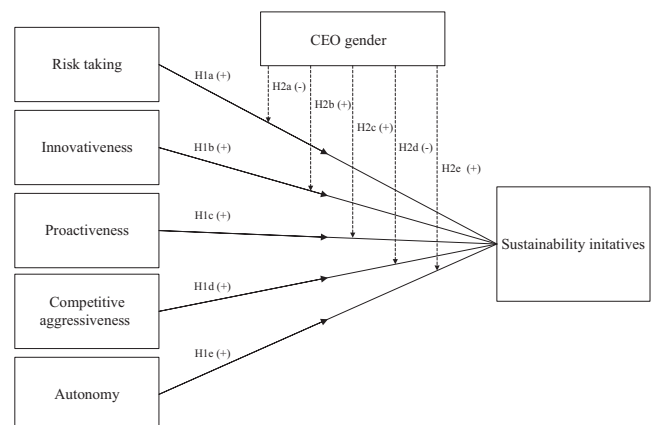


FIGURE 1 Conceptual model.

3 | METHODOLOGY

3.1 | Data collection and sample

The data were collected via an online survey between April and June 2021. The questionnaire was distributed to 7142 owners and managers of family businesses in Poland. No official dataset was available of Poland's family firms, so the initial mailing list was developed by searching the media, family company foundations and national registers. A similar approach had been used by Madison et al. (2018) and Żukowska et al. (2021).

As suggested by Klein (2000), the present study assumed a business is a family firm when it is substantially influenced by one or more families. Either one family is the sole owner or their influence is exercised through their involvement in the supervisory board or management. The substantial family influence index (SFI) was applied to indicate 'a family's influence on the business through ownership, management, and/or governance' (Klein, 2000, p. 159), which had to be equal to or greater than a score of one for businesses to be included in the current research.

Of the 7142 companies listed in the database, 326 questionnaires were completed and returned, yielding an initial response rate of 4.56%. However, 126 had to be excluded because of missing information, unanswered questions or a failure to meet the SFI requirement. The final response rate was thus 2.8%, which is comparable to the rate reported by recent studies of management teams in Poland (e.g. Randolph et al., 2019; Żukowska

et al., 2021). In addition, other research based on survey data gathered in Europe have had even lower response rates (e.g. Heider et al., 2021).

To minimise the risk of sampling bias, the present sample's characteristics were compared with Żukowska et al.'s (2021) set of 396 family firms, which confirmed that the current sample was similar to that of other researchers analysing Polish family businesses. This methodological approach was developed by Madison et al. (2018). The final sample could not be compared with the overall population of Polish family businesses because no such database or registry existed. Instead, the data collected included the available basic statistics on all businesses in Poland (see Table 1).

The low response rate meant that late-response bias had to be checked (Hudson et al., 2004). The data were split into two groups: early and late respondents. Independent samples t-tests were conducted to compare the questionnaire items' means. The results reveal only one significant difference between the measures used (i.e. EO_CA2: In general, our business takes a bold or aggressive approach when competing with other firms), so late-response bias is absent from the data.

Half of the sample's businesses were managed only by the founding generation. The second generation was more present among the listed owners given that, in 51% of the firms, the latter generation at least partially owns the business. The historical context determined these characteristics and the firms' average age (22.73 years). Poland differs from other Western countries as it has only recently transitioned from communism to a free-market

	Current study	Statistics Poland (activity of non-financial enterprises in 2020—data for all enterprises)	Żukowska, Martyniuk and Zajkowski
Employment	48.93	4.42 ^a	43.74
Age	22.73		23.64
<i>Sector^b</i>			
Production (without building industry)	0.36	0.11	0.44
Retail	0.43	0.22	0.28
Other	0.68	0.68	0.58
<i>Generation of owners</i>			
Founder-owned	0.46	n/a	0.48
Second	0.51	n/a	0.47
Third or next	0.04	n/a	0.05
<i>Generation of management</i>			
Founder	0.5	n/a	0.4
Second	0.45	n/a	0.54
Third or next	0.05	n/a	0.06

TABLE 1 Representativeness across samples.

^aThe low number of average employment in Polish enterprises is connected with including into statistics all self-employed (one-men economic activities).

^bThe response percentages in the current study do not add up to 1.00, as the respondents were able to indicate more than one sector.

economy (Nikodemska-Wolowik et al., 2020). Most businesses were established after 1989, which explains their relatively brief time in their markets.

3.2 | Measures

All EO and sustainability initiative constructs were measured using a 7-point Likert scale, with responses ranging from 'Strongly disagree' (1) to 'Strongly agree' (7). All items and Cronbach's alpha (α) values are listed in Appendix 1, Table A1.

3.2.1 | Dependent variable

The level of sustainability initiatives ($\alpha=0.85$) was measured with Turker's (2009) multidimensional tool. This scale was developed based on Maignan and Ferrel's (2000) operationalisation of corporate citizenship. Turker's (2009) scale has been widely used in related studies (e.g. Grabner-Kräuter et al., 2021; Mullens, 2018; Stock et al., 2020; Wang et al., 2020) as it covers all aspects of CSR regarding society in general, the natural environment, future generations, non-governmental organisations (NGOs), employees, customers and governments.

The present research focused, however, solely on those CSR practices that target society at large, the environment, future generations and NGOs for two reasons. *First*, these initiatives are less obvious options for businesses from a financial perspective as they are only indirectly connected to profit generation. For instance, practices geared towards meeting consumers or employees' needs can simultaneously improve customer and employee satisfaction and operational effectiveness. *Second*, family firms tend to have a long-term orientation (Bingham et al., 2011; Lumpkin et al., 2010), so their sustainability initiatives will most likely produce benefits for future generations.

The questionnaire thus only included seven items from Turker's (2009) scale because they address the specific social and environmental issues selected. Confirmatory factor analysis (CFA) confirmed that five of the seven items' standardised factor loadings exceed the 0.50 cut-off for practical significance (Hair et al., 2010). In empirical research, estimated models' items can have loadings below this threshold, especially when newly developed scales are used or when questions are poorly worded (Hulland, 1999). In the current case, the items were translated into Polish for this study, which may have affected their validity.

Two standardised factor loadings failed to reach the 0.50 cut-off point, but only the item with a value of less than 0.3 was excluded. The six remaining standardised factor loadings are significant at the .001 level (t -test score [t] > 2.0), so they have convergent validity (Kohli et al., 1998) (see Appendix 1, Table A1). In addition, the present conceptual model's fit indices are satisfactory (chi-square [χ^2] [₂₃₄] = 404.75; probability [p] < .001; root mean square error of approximation [RMSEA] = 0.06; comparative fit index [CFI] and

incremental fit index [IFI] = 0.93; goodness of fit index [GFI] = 0.86; Tucker-Lewis index [TLI] = 0.91).

3.2.2 | Independent variables

To analyse the EO components' individual effects, the model treated EO as a disaggregated set of constructs—an approach adopted in literature (e.g. Hernández-Linares et al., 2020). Hughes and Morgan's (2007) scale was used to measure risk taking (3 items; $\alpha=0.76$), innovativeness (3 items; $\alpha=0.81$), proactiveness (3 items; $\alpha=0.78$), competitive aggressiveness (3 items; $\alpha=0.77$) and autonomy (6 items; $\alpha=0.83$). The measurement model has acceptable convergent validity as all the measures are significantly related to their underlying constructs and the t -values are statistically significant at the .001 level ($t > 2.0$).

The standardised factor loading of the seventh item assessing autonomy did not, however, exceed the 0.50 cut-off for practical significance (Hair et al., 2010). This item was not removed because of the autonomy scale's overall internal consistency ($\alpha=0.83$) and the model's satisfactory fit indices (χ^2 [₂₃₄] = 404.75; $p < .001$; RMSEA = 0.06; CFI and IFI = 0.93; GFI = 0.86; TLI = 0.91). In theory, eliminating formative indicators from a model should be seriously considered, but, in practice, following this step tends to be the exception rather than the rule (Sarstedt et al., 2014).

Discriminant validity

The average variance extracted (AVE) was next calculated for risk taking, innovativeness, proactivity, competitive aggressiveness, autonomy and sustainability initiatives. All these constructs have AVE values higher than 50% (53.84%, 60.11%, 55.45%, 54.24%, 57.78% and 52.07%, respectively), but some AVE scores are not higher than the square of the constructs' correlations (see Appendix 2, Table A2). Farrell (2010) suggests that the constructs' correlations can reflect the calculation technique used and that the relationship between AVE and squared construct correlations is debatable.

CFA was again conducted to test whether the items measuring risk taking (3 items), innovativeness (3 items), proactiveness (3 items), competitive aggressiveness (3 items), autonomy (6 items) and sustainability initiatives (6 items) represent different constructs. The results show that the six-factor model fits the data satisfactorily (χ^2 [₂₃₄] = 404.75; $p < .001$; RMSEA = 0.06; CFI and IFI = 0.93; GFI = 0.86; TLI = 0.91). This model's goodness of fit is slightly better than, first, the model merging risk taking, innovativeness, proactiveness, competitive aggressiveness, autonomy and sustainability initiatives (χ^2 [₂₄₉] = 1109.42; $p < .001$; RMSEA = 0.133; CFI and IFI = 0.63; GFI = 0.64; TLI = 0.59) and, second, the model that treats risk taking, innovativeness, proactiveness, competitive aggressiveness and autonomy as dimensions of a second-order construct: EO (χ^2 [₂₄₃] = 421.927; $p < .001$; RMSEA = 0.06; CFI and IFI = 0.92; GFI = 0.5; TLI = 0.91).

3.2.3 | Moderating variable: CEO Gender

To measure CEO gender's moderating effect on the dependent variables, the reference category male CEO was coded as 0 and female CEO as 1 (Hussain et al., 2022; Ng & Sears, 2017). In the sample, 49 women occupied the family firms' CEO position versus 146 men.

3.2.4 | Control variables

Eight control variables were included in the conceptual model. Different industries can exhibit different organisational and environmental characteristics (Wiklund & Shepherd, 2005), and CSR initiatives differ depending on the business sector involved (Tolmie et al., 2020). The current study controlled for the sectors' effects with two dummy variables—services and manufacturing—with the trade sector serving as the default.

In addition, larger firms can have a greater impact on the environment and society at large and thus be under more external pressure than smaller companies are to implement sustainability initiatives (Grant et al., 2002; Grewatsch & Kleindienst, 2018). The present research included firm size as a third control variable and defined it as the total number of employees (Moreno-Menéndez et al., 2021), ranging from 0 to 1700 employees. On average, the current sample's businesses employed almost 50 people.

Firm age was also controlled for and measured in the number of years since the company was established (Hernández-Linares & López-Fernández, 2020) because this factor has been associated with sustainability initiatives (e.g. Oh et al., 2018) and younger firms face greater challenges in their entrepreneurial ventures due to their more limited resources (Casillas et al., 2011; Hernández-Linares, Kellermanns, & López-Fernández, 2018). The youngest company in the present sample was three years old and the oldest was 151.

Better performance generates greater access to resources and potentially more investment in sustainability initiatives (Lamb & Butler, 2018), so firm performance was also controlled for. More specifically, Barontini and Caprio's (2006) example was followed in terms of including return on equity (ROE) and sales growth as the fifth and sixth control variables since profitability and sales growth are traditional contrasting methods of assessing performance (Lumpkin & Dess, 2001). Objective measures of the present set of family firms' performance were not available, so subjective measures of this variable were used because, according to Love et al. (2002), they correlate strongly with objective performance data. Both ROE and sales growth were quantified based on the family firm leaders' self-reported data and compared to Poland's industry average. Scores were based on an adapted 5-point Likert scale on which 1 is 'significantly below average' and 5 is 'significantly above average'. This approach is similar to that applied by Wiklund and Shepherd (2005).

The seventh control variable was customer satisfaction as this can be a driver of sustainability initiatives (Kang & Hur, 2012). This variable was also measured using self-reported data, compared to industry average and scored using the scale described above.

Finally, evidence has been found that family CEOs reinforce the family's identification with their business, which promotes socially responsible behaviours (Gavana et al., 2017; Marques et al., 2014). The current study thus controlled for CEOs who are part of the owners' family (i.e. family CEO). This variable was coded as 1 if the CEO is a family member or 0 otherwise.

3.3 | Multicollinearity, common method bias and endogeneity

The correlation coefficients between variables are below the recommended threshold of 0.65 (Tabachnick & Fidell, 2012), the variance inflation factors are below 2.81 and the condition indexes are lower than 4.41. These results show that multicollinearity evidently does not seriously affect the model's fit and hypothesis testing outcomes (Hair et al., 2010). The variables were converted to Z-scores to address any remaining multicollinearity concerns (Aiken & West, 1991) (see Table 2).

The data were collected on the dependent and independent variables from the same source, so common method variance (CMV) could be a problem (Fuller et al., 2016; Richardson et al., 2009). Various procedural measures were taken to reduce the chances of CMV occurring. The respondents' confidentiality was protected, and they were informed that the data would be aggregated, which helps minimise the risk of social desirability bias (Podsakoff et al., 2003). Pre-tests were also conducted to remove any ambiguity in the survey questions and items (Ruiz-Arroyo et al., 2012).

In addition, Harman's (1967) single-factor test was run to check for 'spurious internal consistency that occurs when the apparent correlation among indicators or even constructs is due to their common source' (Cabrera-Suárez et al., 2014, p. 294). Thus, all scales' items of all variables were entered into a factor analysis. Six factors with eigenvalues exceeding 1.0 emerged that together explain 67.78% of the variance. The first unrotated factor's total variance for the sample is 35.61%. The varimax rotated solution produced similar results (i.e. six factors explaining 67.58% of the variance). A single dominant factor failed to emerge, and no factor accounted for most of the variance, which suggests that CMV most likely does not distort the final results.

Next, a common method factor model was estimated in which all the items were loaded on to one method. The single-factor model did not produce strong overall statistics ($\chi^2_{[249]}=1109.42$, $p<.001$, RMSEA=0.133, CFI and IFI=0.63, GFI=0.64 and TLI=0.59), especially as compared to the initial model's CFA results ($\chi^2_{[234]}=404.75$, $p<.001$, RMSEA=0.06, CFI and IFI=0.93, GFI=0.86 and TLI=0.91). However, the fit significantly improved ($\chi^2_{(210)}=310.91$; $p=.00$; RMSEA=0.05; CFI and IFI=0.96; GFI=0.89; TLI=0.94) when a method factor was imposed onto the aforementioned CFA outcomes (Widaman, 1985; Williams et al., 1989).

These procedures' findings suggest the need for reasonable caution when interpreting the significant effects detected. The moderation hypotheses are less of a concern because any potential CMV is

TABLE 2 Means, standard deviations and correlations.

Variables	Mean	SD	Correlations														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1 Sustainability initiatives	4.63	1.39															
2 Risk-taking	4.47	1.52	.31**														
3 Innovativeness	5.42	1.36	.46**	.46*													
4 Proactiveness	5.31	1.31	.42**	.55**	.65**												
5 Competitive aggressiveness	4.11	1.44	.39**	.52**	.48**	.65**											
6 Autonomy	5.33	1.14	.32**	.42**	.53**	.52**	.42**										
7 CEO gender	0.24	0.43	.05	-.01	-0.05	.01	-.11	-.14*									
8 Manufacturing	0.36	0.48	.10	.09	.02	-.01	.03	-.11**	.03								
9 Services	0.67	0.47	.05	.04	.20**	.22**	.07	.17*	-.08	.45**							
10 Firm size	49.80	135.24	.04	.04	-.02	.05	.03	-.06	.06	.09***	-.18*						
11 Firm age	22.81	14.19	-.01	-.06	-.13	-.09	.03	-.01	-.05	.24**	-.22*	.12					
12 ROE	3.57	1.00	.12	.14	.19**	.15*	.23**	.14*	-.01	.04	.02	.07	-.10				
13 Sales growth	3.58	1.12	.14*	.09	.15*	.14*	.14*	.16*	-.09	.02	.03	.09	-.02	.50**			
14 Customer satisfaction	4.32	0.76	.23**	.16*	.22**	.15*	.14	.21**	.04	-.11	.09	-.07	-.01	.19**	.22**		
15 Family CEO	0.98	0.14	.01	-.02	-.06	-.02	-.05	.00	-.09	-.12	.05	.01	-.26**	.11	-.05	-.03	

Note: $n = 195$.

Abbreviation: SD, standard deviation.

* $p < .05$; ** $p < .01$; *** $p < .001$.

counteracted by the complex data relationships and the participants' inability to give socially desirable responses that could contribute to significant interaction effects (Ribeiro et al., 2021). More importantly, Monte Carlo simulations have shown that CMV effects cannot generate significant interactions (Evans, 1985).

Endogeneity tests were conducted for each model. The literature refers to two tests—Durbin (1954) and Wu–Hausman (Hausman, 1978; Wu, 1974). The present research ran these tests, which confirmed that the explanatory variables are exogenous for all the models (see Table 3) (Model 1: Durbin $p=.6367$ and Wu–Hausman $p=.6458$; Model 2: Durbin $p=.7941$ and Wu–Hausman $p=.8023$; Model 3: Durbin $p=.9003$ and Wu–Hausman $p=.9046$; Model 4: Durbin $p=.8723$ and Wu–Hausman $p=.8795$).

Endogeneity was also checked for the two models used in post-hoc analyses (see Table 4). The Durbin and Wu–Hausman test results are, for Model 1, Durbin $p=.6367$ and Wu–Hausman $p=.6458$ and, for Model 2, Durbin $p=.6275$ and Wu–Hausman $p=.6378$. These models' independent variables were thus confirmed to be exogenous. These findings verify the models' robustness.

4 | RESULTS

4.1 | Main analysis

The hypotheses were tested using multiple regression analysis, which is a widely used method of checking for moderating effects (Escadas et al., 2019). The results are presented in Table 3. In Model 1, the control variables customer satisfaction (beta [β]=0.3; $p<.01$) and manufacturing sector ($\beta=0.24$; $p<.05$) are significantly related to family firms' sustainability initiatives.

The five independent variables (i.e. risk taking, innovativeness, proactiveness, competitive aggressiveness and autonomy) were included in Model 2 to test Hypotheses 1a through 1e. The results show a significant change in the coefficient of determination (R^2) (delta [Δ] $R^2=.20$; $p<.001$). Innovativeness has a significant positive association ($\beta=0.38$; $p<.05$) with sustainability initiatives, which supports Hypothesis 1b. Competitive aggressiveness also has a positive association with sustainability initiatives, as posited by Hypothesis 1d, but this link was only partially validated ($\beta=0.22$; $p<.1$). Risk taking ($\beta=0.00$; not significant [n.s.]), proactiveness ($\beta=0.13$; n.s.) and autonomy ($\beta=0.07$; n.s.) do not have a significant relationship with sustainability initiatives, so Hypotheses 1a, 1c and 1e were not supported by the results.

The moderating variable (i.e. CEO gender) was first introduced in Model 3, and then the five interaction terms were added to Model 4 to test the moderation hypotheses (i.e. Hypotheses 2a through 2e). Model 3 failed to produce any significant change in R^2 . In contrast, Model 4 generated a significant change ($\Delta R^2=.07$; $p<.01$). Hypothesis 2a proposed that the positive association between risk taking and family firms' sustainability initiatives would be weaker in firms led by women, but the results do not support

TABLE 3 Regression analysis.

Variables	Dependent variable: sustainability initiatives			
	Model 1	Model 2	Model 3	Model 4
Manufacturing	0.24* (0.11)	0.15 (0.10)	0.15 (0.10)	0.15 (0.10)
Services	0.14 (0.11)	−0.01 (0.10)	−0.01 (0.10)	−0.02 (0.10)
Firm size	0.07 (0.10)	0.04 (0.09)	0.03 (0.09)	0.08 (0.09)
Firm age	−0.03 (0.10)	0.12 (0.10)	0.02 (0.10)	0.03 (0.09)
ROE	0.05 (0.11)	−0.06 (0.10)	−0.07 (0.10)	−0.07 (0.10)
Sales growth	0.09 (0.11)	0.07 (0.10)	0.08 (0.10)	0.06 (0.10)
Customer satisfaction	0.30** (0.10)	0.18* (0.09)	0.17† (0.09)	0.25** (0.09)
Family CEO	0.04 (0.10)	0.08 (0.09)	0.09 (0.09)	0.13 (0.09)
Risk-taking		0.00 (0.11)	−0.00 (0.11)	0.04 (0.11)
Innovativeness		0.38** (0.12)	0.39** (0.12)	0.34** (0.12)
Proactiveness		0.13 (0.14)	0.10 (0.14)	0.12 (0.14)
Competitive aggressiveness		0.22† (0.12)	0.25* (0.12)	0.19 (0.12)
Autonomy		0.07 (0.11)	0.09 (0.11)	0.08 (0.11)
CEO gender			0.13 (0.09)	0.21* (0.09)
Risk-taking * CEO gender				−0.13 (0.10)
Innovativeness * CEO gender				−0.07 (0.11)
Proactiveness * CEO gender				−0.30* (0.14)
Competitive aggressiveness * CEO gender				0.13 (0.11)
Autonomy * CEO gender				0.42*** (0.11)
ΔR^2	.88*	.20***	.01	.07**
R^2	.88	.29	.30	.36
Adjusted R^2	.05	.24	.24	.30
F	2.24*	5.68***	5.45***	5.29***
	IC < 1.92 VIF < 1.38	IC < 3.51 VIF < 2.61	IC < 3.59 VIF < 2.66	IC < 4.24 VIF < 2.81

Note: $n=195$.

Abbreviation: SE, standard error.

† $p<.1$

* $p<.05$; ** $p<.01$; *** $p<.001$.

TABLE 4 Post-hoc analysis: regression analysis.

Variables	Model 1	Model 2
	B (SE)	B (SE)
Manufacturing	0.24* (0.11)	0.16 (0.10)
Services	0.14 (0.11)	0.02 (0.10)
Firm size	0.07 (0.10)	0.04 (0.09)
Firm age	-0.03 (0.10)	-0.00 (0.09)
ROE	0.05 (0.11)	-0.05 (0.10)
Sales growth	0.09 (0.11)	0.07 (0.10)
Customer satisfaction	0.30** (0.10)	0.19* (0.09)
Family CEO	0.04 (0.10)	0.06 (0.09)
EO		0.63*** (0.09)
ΔR^2	.88*	.18***
R^2	.88	.27
Adjusted R^2	.05	.23
F	2.24*	7.54***
	IC < 1.92 VIF < 1.38	IC < 1.98 VIF < 1.14

Note: $n = 195$.

Abbreviation: SE, standard error.

* $p < .05$; ** $p < .01$; *** $p < .001$.

this hypothesis ($\beta = -0.13$; n.s.). Hypothesis 2b posited that the positive association between innovativeness and family businesses' sustainability initiatives would be stronger in companies headed by women. The results also fail to validate this hypothesis ($\beta = -0.07$; n.s.). Hypothesis 2c suggested that CEO gender would strengthen the relationship between family firms' proactiveness and their sustainability initiatives, but a significant negative link was found instead ($\beta = -0.030$; $p < .05$). Hypothesis 2d in turn proposed that the positive association between competitive aggressiveness and family businesses' sustainability initiatives would be weaker if women led those firms. However, this moderating effect is non-significant ($\beta = 0.13$; n.s.), so Hypothesis 2d was rejected. Finally, Hypothesis 2e posited that the positive association between autonomy and the family firms' sustainability initiatives would be stronger in firms led by female CEOs. The results confirm this last hypothesis ($\beta = 0.42$; $p < .001$).

The statistically significant interactions are plotted in Figures 2 and 3, which facilitate interpretations of these moderating effects. The first interaction between proactiveness and CEO gender (see Figure 2) indicates that a positive relationship exists between proactiveness and sustainability initiatives when the family firms are headed by male CEOs, but this relationship is negative for family

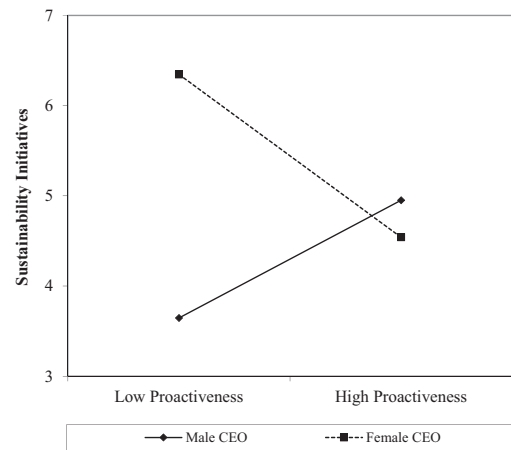


FIGURE 2 Interaction between proactiveness and CEO gender.

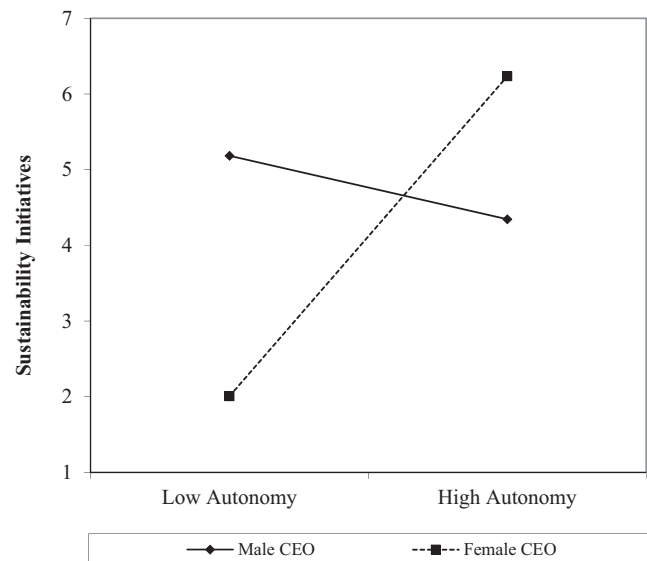


FIGURE 3 Interaction between autonomy and CEO gender.

businesses led by women. A gradient test revealed that a significant negative slope exists between proactiveness and sustainability initiatives implemented by family firms with female CEOs ($t = -2.05$; $p < .05$). The positive slope between proactiveness and sustainability initiatives is only partially significant for family businesses with male CEOs ($t = 1.81$; $p < .1$).

The interaction between autonomy and CEO gender (Figure 3) confirms the presence of a negative relationship between autonomy and male-led family firms' sustainability initiatives, while this link is positive for family firms headed by women. A gradient test resulted in a significant positive slope between autonomy and sustainability initiatives when family businesses are led by women ($t = 4.04$; $p < .001$). In contrast, a statistically non-significant negative relationship exists between autonomy and sustainability initiatives if family firms are headed by men ($t = -1.38$; n.s.).

4.2 | Additional analysis

Research that has treated EO as a second-order construct (e.g. Stanley et al., 2019). The present study conducted regression analysis with the same control variables previously used to replicate this result. The findings are presented in Table 4. The independent variable (EO) was added to the second model, which generated a significant change in R^2 ($\Delta R^2 = .18$; $p < .001$), so EO is positively related to sustainability initiatives ($\beta = 0.63$; $p < .001$). However, Models 3 and 4's results are statistically insignificant, which underlines that EO components should be incorporated as independent variables in studies involving gender.

5 | DISCUSSION AND CONCLUSIONS

Creating value for future generations is one of the most important features that distinguish family firms from other companies (Chua et al., 1999; Miller et al., 2008). In addition, family firms often pursue nonfinancial goals, such as meeting the need to feel a sense of belonging and preserving the family dynasty and reputation, in addition to standard business objectives (Gómez-Mejía et al., 2007). These priorities explain family firms' emphasis on building trustworthy relationships with their stakeholders (Arregle et al., 2007) and specifically with the local community, which may influence their capacity to become transgenerational enterprises (Eze et al., 2021). Family businesses' long-term orientation also motivates them to care about continuity, perseverance and future outcomes (Brigham et al., 2014) and thus to invest in the firm's future and forgo short-term profits in favour of long-term development (Gómez-Mejía et al., 2007; Le Breton-Miller et al., 2011). These idiosyncrasies often foster a marked commitment to sustainability initiatives, making these businesses a unique research context in which to study the EO-sustainable initiative relationship (Khan et al., 2022; Mullens, 2018).

The link between EO and sustainability initiatives in family firms remains controversial. To shed light on this topic, the current research went beyond the majority of research that has omitted the multi-dimensional nature of EO concept (e.g., Khan et al., 2022; Mullens, 2018) by first decomposing EO into its five components (risk taking, innovativeness, proactiveness, competitive aggressiveness and autonomy) and analysing each element's impact on family firms' sustainability initiatives based on a sample of 195 Polish family businesses.

The results reveal that only one EO component enables sustainability initiatives in family firms, thereby corroborating EO components' divergent effects on these initiatives also found by prior studies (Abbate et al., 2014; Jansson et al., 2017). More specifically, the present findings show that innovativeness has a positive association with sustainability initiatives, which Uhlaner et al. (2010) confirmed, namely, that innovation-oriented firms are more likely to develop sustainability initiatives. The current results further align with Randolph et al.'s (2022) finding that innovativeness has

a positive impact on environmental sustainability initiatives, and, corroborate the Mullens' words (2018, p. 166): 'firms use innovativeness to develop and deploy processes, policies, services and products that conserve the Earth for future generations.' That is, the more family firms focus on innovation, the more open they are to engaging in activities that meet social and environmental challenges.

Conversely, the present results reveal that risk taking, proactiveness, competitive aggressiveness and autonomy have no significant relationship with family businesses' sustainability initiatives, which contradicts previous researchers' findings (Jansson et al., 2017; Namagembe et al., 2016). However, the positive link is nearly statistically significant ($p < .1$) between competitive aggressiveness and sustainability initiatives, which seems to point that although competitive aggressiveness characterises family firms that favour short-term values (Lumpkin et al., 2010; Nordqvist & Melin, 2010), it boots these businesses' future-oriented sustainability initiatives (Wu et al., 2018).

The above findings can be explained by the global challenges presented by sustainability, which means that autonomy is not a necessary condition for family firms to implement sustainability initiatives. In addition, the business world is so concerned about sustainable development (Broccardo et al., 2019; Chavez et al., 2020) that companies neither need to be especially proactive to deal with the associated social and environmental challenges nor have to develop an especially high-risk tolerance. Family firms' real risk lies in a lack of investment in sustainability initiatives given that these businesses are increasingly expected to engage in these activities by their markets and stakeholders (Bergamaschi & Randerson, 2016; Bingham et al., 2011; Cennamo et al., 2012).

The literature confirms that firms' engagement with organisational sustainability transformation requires the presence of change agents who propose, implement and pursue sustainability projects and activities (Ploum et al., 2018; Schaltegger et al., 2021; Thakhathi et al., 2019). The present study thus explored CEOs' role as change agents in family businesses' EO-sustainability initiatives relationship.

Hypotheses 2a and 2b proposed that CEO gender would moderate the positive association between family businesses' sustainability initiatives and risk taking and innovativeness, respectively. The results fail to support these hypotheses; hence, they do not corroborate that women are less inclined to accept the risks inherent to sustainable initiatives (Bacq & Eddleston, 2018). The results also do not seem to align with the findings of Gundry et al. (2014) who reported that the innovativeness of female entrepreneurs heading family firms strongly affects the sustainability of the company's development.

Hypothesis 2c postulated that women as family firm CEOs would strengthen the positive association between proactiveness and sustainability initiatives, but this link actually proved to be negative (see Figure 2), which negates this hypothesis. The results thus contradict the evidence reported for female CEOs' skills, such as their ability to integrate multiple perspectives into decision-making processes (Nielsen & Huse, 2010) and to show proactiveness in implementing sustainability initiatives. The current findings include a significant

negative slope for family firms led by women and a partially significant positive slope for family businesses headed by men. Thus, the relationship between proactiveness and sustainability initiatives appears to be negative for family firms with female CEOs and somewhat positive for those with male leaders.

Hypothesis 2d theorised that the positive association between competitive aggressiveness and sustainability initiatives would be weaker in family businesses headed by women, but the results do not support this hypothesis. This seems to indicate that, contrary what we thought, the higher concern of female CEOs about their reputation (Gul et al., 2009) does not lead to differences in the relationship between competitive aggressiveness and sustainability initiatives in family firms.

Finally, Hypothesis 2e suggested that family firms with female CEOs would have a stronger positive association between autonomy and sustainability initiatives, which the findings confirm. This is in line with studies that have confirmed that women's positive role in improving the global environment is closely related to their autonomy (Du et al., 2022; Mujeed et al., 2021). The positive slope for family firms led by women is statistically significant, yet the slope detected for family businesses headed by men is negative. These findings indicate that only the relationship between autonomy and sustainability initiatives is positive for family firms when they have a woman as CEO.

Overall, the above results corroborate that a significant portion of organisational outcomes is attributable to the CEOs (Finkelstein et al., 2009) and reveal that female leaders in family firms guide them towards making unique decisions and engaging in sustainable behaviours, thereby demonstrating that female CEOs are change agents in the singular environments provided by family businesses. Thus, the results also corroborate the economic and noneconomic benefits that women can bring to the family businesses (Samara et al., 2019).

5.1 | Theoretical contributions and practical implications

This study's findings make three contributions to the literature. *First*, the research was designed to answer calls for further investigations of sustainability antecedents (Biggemann et al., 2014; Hall et al., 2010), which is important since sustainability initiatives adopted by firms are increasingly important to mitigate climate change, for example, developing use of renewable resources or preventing the pollution by low emission and low waste (Cosenz et al., 2020), and to support positive changes in society such as community development, equality and diversity, well-being, labour standards or secure livelihood (Gatto, 2020). More specifically, the present study examined the complex relationships between EO and sustainability initiatives (Chavez et al., 2020) by exploring individual EO components' influence. The results discussed above provide empirical evidence that innovativeness is the only important EO component with regard to family businesses' initiatives that address social and environmental

issues, thereby expanding the knowledge about EO-sustainability link in these firms (e.g. Hernández-Perlines & Rung-Hoch, 2017; Mullens, 2018).

Second, the current study responded to prior calls to clarify business contexts' effects on sustainability (Dias et al., 2021; Jansson et al., 2017), and to explore the sustainability practices of family businesses (Miroshnychenko & De Massis, 2022). Family firms offer a singular research context in terms of both EO (Hernández-Linares & López-Fernández, 2018) and sustainability (Antheume et al., 2013). Thus, the present investigation substantially enriches knowledge on the antecedents of sustainability in this unique business setting (Broccardo et al., 2019) by demonstrating that importance of innovativeness for family firms adopting sustainability initiatives.

Last, the findings discussed above contribute to the emergent stream of literature on change agents for sustainability (Hesselbarth & Schaltegger, 2014; Ploum et al., 2018). The current results also answer calls for research on women's leadership with regard to social context factors (Hoobler et al., 2018). These topics were explored through the lenses of gender role (Eagly, 1987) and upper echelons theory (Hambrick & Mason, 1984), concentrating on female CEOs' moderating effect on the complex relationships driving family businesses' engagement in sustainability initiatives. This approach stressed women's specific leadership traits and their unique management styles within organisations, which can be especially emphasised in family firm contexts (Hernández-Linares, et al., 2023). The present study thus also responded to Gundry et al.'s (2014) call for further empirical research on women in family businesses that goes beyond these actors' part in succession (Martinez Jimenez, 2009; Xian et al., 2021) and performance differences between family businesses led by women versus men (Rachmawati et al., 2022).

The current findings have practical implications for family firms, their managers, policymakers and women. Family business managers can make use of the clues provided regarding harnessing entrepreneurship's innovative potential to meet environmental and social challenges through sustainability initiatives, which are strongly associated with organisations' long-term economic, social and environmental success (Biggemann et al., 2014). The present results may also help family firms strengthen their engagement in sustainability initiatives by promoting their EO and women for leadership positions. In addition, the results provide family firms with a fuller understanding of women CEOs' key role in the associated transformation process.

In addition, the above findings could be useful to policymakers as this research highlights the need to intensify public entities' efforts to promote corporate innovativeness as part of sustainable development, particularly among family firms. Finally, these results may be useful to women leaders. A clearer vision of female CEOs' role could contribute to overcoming their categorisation as unsung heroes (Eddleston & Sabil, 2019) and to making women more visible (Hamilton, 2006) and their voices more often heard (Elstad & Ladegard, 2012).

5.2 | Limitations and future research directions

This study had various limitations. *First*, the sample was restricted to Polish family firms, which have a specific historical background and short market history. This research thus needs to be extended to other countries where family businesses operate in contrasting cultural settings.

Second, Klein's (2000) SFI was applied to differentiate family firms from non-family ones. However, the extant literature provides dozens of definitions of the term 'family business' (Hernández-Linares, Sarkar, & Cobo, 2018; Payne, 2018). Another possible future avenue of research would be to examine how the present conceptual model works when other family firm definitions are applied, such as self-identification (Barry, 1975) or the founding family's influence on power, experience and company culture (Rau et al., 2018).

Third, the current study examined CEO gender's moderating effect on the proposed model as a dichotomous variable, but women who serve on family businesses' board of directors also play significant roles in sustainability initiative engagement (Hyun et al., 2016; Williams, 2003). In the present research's sample, the number of women on boards was too small to allow this type of analysis. Further investigations could expand the model using data from different samples, for example, publicly listed family companies. Researchers may also get interesting results by investigating other pro-sustainability initiative stakeholders' influence (e.g. external consultants or chief sustainability officers) because their actions may reflect intentions reflecting an upper echelon perspective (Cordeiro et al., 2020).

Fourth, the current study had a relatively low-initial response rate (4.56%), which could also be considered a limitation. The survey occurred during the ongoing coronavirus disease-19 crisis, and numerous automatic responses were received because firms were temporarily closed or managers and/or owners were absent as they were dealing with private issues. To address this problem, the same research team plans to collect the data again after the crisis. As mentioned previously, low response rates are quite typical for surveys in Poland (Randolph et al., 2019; Żukowska et al., 2021).

Last, although all the AVE values are higher than 50%, they are not all higher than the square of the constructs' correlations. This result could reflect how the scores were calculated since programmes such as the Statistical Package for the Social Sciences (SPSS) can produce misleading results (Farrell, 2010). One solution might be to utilise other estimation methods or software.

In addition to additional studies to overcome the above limitations, the present results suggest other new lines of research. For example, scholars can use the proposed model to compare family and non-family firms, which would provide a clearer understanding of whether—and how—the motivations for undertaking sustainability initiatives change when family ties are present. The above findings confirm that one CEO characteristic (i.e. CEO gender) contributes to explaining the complex relationship between EO and sustainability initiatives. Researchers could explore other CEO traits such as age,

education or tenure. The results also show that female CEOs may act as change agents for sustainability in family firms, but this role could be analysed further to determine whether it becomes stronger when women CEOs are supported by boards of directors marked by gender diversity or when female leaders are a member of the founding family.

ACKNOWLEDGMENTS

The authors thank the editors, associate editors and reviewers for their constructive remarks and suggestions.

FUNDING INFORMATION

The research results are independent of the other party's claims and financial sources.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

PEER REVIEW

The peer review history for this article is available at <https://www.webofscience.com/api/gateway/wos/peer-review/10.1111/beer.12617>.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study were collected during the Authors' own research.

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How to cite this article: Domańska, A., Hernández-Linares, R., Zajkowski, R., & Żukowska, B. (2023). Family firm entrepreneurship and sustainability initiatives: Women as corporate change agents. *Business Ethics, the Environment & Responsibility*, 00, 1–24. <https://doi.org/10.1111/beer.12617>

APPENDIX 1

	Paths ^a	Standardised estimates	t-value
<i>Independent variables</i>			
Risk-taking	V1 ← RT	0.72	7.15
	V2 ← RT	0.83	7.41
	V3 ← RT	0.64 ^b	
Innovativeness	V1 ← I	0.81	9.65
	V2 ← I	0.82	9.52
	V3 ← I	0.68 ^b	
Proactiveness	V1 ← P	0.75	8.93
	V2 ← P	0.79	9.36
	V3 ← P	0.69 ^b	
Competitive aggressiveness	V1 ← CA	0.69	7.78
	V2 ← CA	0.84	9.55
	V3 ← CA	0.67 ^b	
Autonomy	V1 ← A	0.82	5.11
	V2 ← A	0.88	5.13
	V3 ← A	0.82	5.11
	V4 ← A	0.57	4.63
	V5 ← A	0.55	5.75
	V6 ← A	0.37 ^b	
<i>Dependent variable</i>			
Sustainable initiatives	V1 ← SI	0.82	5.28
	V2 ← SI	0.88	5.51
	V3 ← SI	0.82	5.52
	V4 ← SI	0.57	5.56
	V5 ← SI	0.55	5.26
	V6 ← SI	0.37 ^b	

Abbreviations: A, Autonomy; AC, competitive aggressiveness; I, innovativeness; P, proactiveness; RT, risk-taking; SI, sustainable initiatives; V, variable.

^aGoodness-of-fits statistics: $\chi^2=404.754(234)$, CFI=0.93, GFI=0.86, IFI=0.93, TLI=0.91, AGFI=0.82, RMSEA=0.06.

^bFixed parameter.

APPENDIX 2

TABLE A2 Discriminant validity of the constructs^a.

Construct	Risk-taking	Innovativeness	Proactiveness	Competitive aggressiveness	Autonomy	Sustainable initiatives
Risk-taking	0.54					
Innovativeness	0.26	0.60				
Proactiveness	0.40	0.64	0.55			
Competitive aggressiveness	0.42	0.36	0.68	0.54		
Autonomy	0.22	0.40	0.39	0.29	0.58	
Sustainable initiatives	0.12	0.27	0.23	0.20	0.15	0.52

^aDiagonal elements (bold) are the square root of the variance shared between the constructs and their measures (AVE). Off-diagonal elements are the squared correlations among constructs. For discriminant validity, diagonal elements should be larger than off-diagonal elements.