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Evaluation of Challenges to Modernization of Family Businesses: Grey Relational Analysis

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Abstract: Family businesses have contributed to the economic growth of economies globally. Family businesses face unique challenges that affect their efforts to modernize their operations and compete effectively on the global market. This study, therefore, aims at evaluating challenges affecting family business efforts to modernize. Using survey, the study collected primary data and evaluated twelve challenging factors using the Dynamic Grey Relational Analysis model. The findings indicate that there are several challenges affecting the modernization of family business, including resistance to change, rapid advancement of technology, rigid organizational structures, and succession planning. The study provides insight into how family businesses can reconcile traditional features with modern characteristics for sustainability in the long run.

Keywords: Sustainability; modernization; barriers; family business; grey relational analysis.

1. Introduction

Family businesses are among the most important sectors of the global economy (Eddleston *et al.*, 2019; 2010), serving as critical employers and economic drivers (Araya-Castillo *et al.*, 2021; Amato *et al.*, 2022). A family business represents a specific type of business model, and family businesses have a significant role in the global economy, accounting for 70–90% of annual GDP and a large proportion of the workforce (Biel & Ślusarczyk, 2022; De Massis & Foss, 2018; Herrero et al, 2024). Both economic and socio-emotional objectives influence their strategic decisions, with an emphasis on family authority and legacy preservation (Pongelli *et al.*, 2021). By projecting socio-emotional wealth (SEW) through firm ownership, owners pursue five dimensions: family control and influence, identification, bonding social ties, and renewal through dynastic succession (Pongelli *et al.*, 2021; Biel & Ślusarczyk, 2022).

Family business people are key to the economy, creating significant job opportunities and contributing to GDP across various countries. For example, family-controlled businesses comprise 80-90% of all businesses in the USA and employ more than half of the workforce (Hannadige & Harris, 2022). In contrast to other firms, family businesses exemplify continuity, serving as a foundation for local economic stability and intergenerational wealth transfer (Zellweger *et al.*, 2013). They increasingly incorporate social capital and nonfinancial objectives, strengthening the regional economy through community engagement (Arregle *et al.*, 2021). Guided by principles of longevity and community involvement, family firms foster long-term growth, provide stable employment, and enhance regional economies. Indeed, their focus on values and resilience often enables them to weather economic downturns more effectively than their non-family counterparts, facilitating prolonged local development and intergenerational wealth transfer. Literature indicates that family firms are among the highest-performing types of enterprises. Family firms outperform their partners, whether in terms of profitability, shareholder value creation, or job creation capabilities (Poza, 2010). In navigating the challenging aspects of succession without compromising family peace or solidarity (Baltazar *et al.*, 2023), clear communication, transparency, and professional counsel prove essential. The preservation of cultural identity and continuity connecting generations represents a traditional challenge (Erdogan *et al.*, 2020). However, conservative tendencies may impede innovation and global expansion (De Massis & Foss, 2018; Biel & Ślusarczyk, 2022). Family companies should strive to balance this paradox of continuity and adaptability. Nevertheless, effective governance frameworks and strategic leadership enable these firms to remain innovative while upholding their values for the future (Erdogan *et al.*, 2020).

Sustainable growth requires balancing tradition with modernity, and family businesses must navigate a series of challenges. Additionally, cultural and geographical factors significantly influence whether a family business will endure for generations (Stamm & Lubinski, 2011). Approximately 10% to 15% of family businesses progress to the third generation, and about 30% last for more than one generation (Pyromalis & Vozikis, 2009; Stamm & Lubinski, 2011). Only 3% survive to the fourth generation and beyond (Mokhber *et al.*, 2017; Vallejo, 2008). These figures highlight succession as one of the most significant difficulties faced by family-owned businesses (Bocatto *et al.*, 2010). Family owners may also encounter serious conflicts within the family due to various sources of tension. Discrimination or perceived favoritism, along with differences in skills and merit among family members, can lead to disputes, especially when defining roles within the business (Ferrari, 2025).

Additionally, the potential consequences of business failure pose unique risks, impacting not only the financial standing of the business but also the family's reputation. Tensions may arise between upholding family customs and the business's need to improve and adapt continuously, as tradition can sometimes conflict with modernization efforts (Balzano & Marzi, 2024). The desire for family unity and cooperation can clash with the necessity of fostering diversity and competition, essential for growth. Finally, family loyalty may conflict with the need to provide equal opportunities to non-family employees, a challenge that can affect workplace morale and operational effectiveness (Siaba & Rivera, 2024). Many family businesses are disappearing due to problems and family conflicts in the inter-generational management era. The factors accelerating the collapse of family businesses include favoring family members in the business environment, competition among family members, role conflict, centralization, and transfer problems (Akca & Küçükoglu, 2019; Qiu & Freel, 2020). In examining compensation practices, some conclude that family members believe they are overworked and underpaid, while others suggest they receive higher salaries and perquisites (Sharma *et al.*, 1997). This contradiction required deeper exploration because if unrecognized and not addressed, the seeming discrepancy between perceptions and reality can lead to problems in strategy implementation (Sharma *et al.*, 1997). Various circumstances, such as the family business environment, management style, leadership, and type of supervision, may significantly influence the success or failure of a family business. Therefore, sustainability-related studies in family businesses are becoming increasingly popular in business environments.

The rest of the study is organized as follows. In the next sections some literature is reviewed and then potential challenges to the modernization efforts of the family businesses have been identified. In the suceeding section, research methodology is presented. In this section, the Dynamic Grey Relational Analysis and associated techniques are reported. In the next sections, the data is analysed and findings are discussed followed by the conclusion of the study.

2. Literature review

Change is necessary to adapt and continuously adjust to the environment, and it is essential for any firm's long-term survival (Miller *et al.*, 2008). Regarding the rigid organizational structure that slows the decision-making process, negative factors that restrict innovation in family businesses include traditional organizational frameworks, risk-averse behavior, a desire for control, and the intention to protect family wealth (Zahra & Sharma, 2004). The disadvantages of a traditional rigid organizational structure have been extensively discussed in management literature, which often attributes issues such as conflict, inefficiency, and the maintenance of the status quo especially in family firms to these structures. Chen *et al.* (2008) argued that family firms are more conservative in financial reporting than non-family firms led by non-family professional CEOs. Additionally, conservatism increases with family ownership in professional CEO family firms but decreases with family ownership in firms run by founder CEOs. van Essen *et al.* (2015) noted that most family businesses adopted conservative financial strategies to protect the interests of their shareholders or members. Such families faced challenges related to the scarcity of working capital and other financial resources, which negatively impacted business expansion and development.

Shahzad and colleagues found that proactive succession planning, formal governance mechanisms, and successor training are critical for achieving smooth leadership transitions in Pakistani family-owned businesses (Shahzad *et al.*, 2024). Companies that implement structured governance and transparent succession processes experience fewer internal conflicts and greater business continuity. However, socio-cultural factors such as seniority-based preferences and gender biases present significant obstacles, often complicating transitions. Regarding limited external collaborations, studies found that as family management increases, family managers might pursue more family-centered strategies due to their mixed gamble, prioritizing family control and influence along with altruistic behavior, such as nepotistic hiring (Block *et al.*, 2023; Maharajh *et al.* 2024), over preferences that could lead to prospective financial gains, such as creating successful, long-term ties with distinct stakeholders.

Family-owned businesses are more than just economic entities; they are living embodiments of family traditions, values, and principles passed down through generations (Weenink, 2024; Pauceanu *et al.*, 2025). These businesses carry a deep sense of history and purpose, with their reputation and identity shaped not only by the products or services they offer, but also by the family behind them. Preserving this legacy is a key aspect of what makes family businesses unique, and ensuring its continuity requires careful, thoughtful succession planning (Weenink, 2024). The global challenges and drivers for growth in family businesses span cross-border business horizons. Globalization has become mainstream phenomenon and it is hard to avoid it as a strategic choice for family-owned businesses looking for growth. However, small and medium-sized family businesses are lacking in formulating globalization strategies (Patel *et al.*, 2012).

Literature indicates that digital technology challenges both family and non-family businesses, which is evident across several dimensions of business activities, notably in strategic options concerning technological innovation (Begnin, 2024). The digital transformation poses more challenges for family-owned businesses. These businesses encounter specific difficulties due to limited financial resources to support the digital transformation and the challenges related to understanding how to utilize technologies to gain a competitive advantage, which are unique issues to address. Given that the competitive landscapes and organizational environments have become increasingly complex, as demonstrated by the growing number of crises over shorter periods, such as geopolitical clashes, pandemics, economic downturns, climate change, and natural disasters, resilience has also garnered increasing interest in management research and related disciplines (Amann & Jaussaud, 2012; Yilmaz *et al.*, 2024).

As family businesses grapple with a problem of short-term focus that creates complex challenges in addition to the adversities they already face, empirical evidence shows that they are often more resilient than non-family businesses (Mahmud *et al.*, 2021). These findings present a scholarly puzzle and suggest there might be an idiosyncratic way in which family businesses develop and enact resilience. Another study discovered that various factors influence reactions to disruptive industry changes in two distinct phases: opportunity recognition and opportunity implementation (de Groote *et al.*, 2020). While some of these influencing factors, such as family influence, may function more effectively or ineffectively for incumbent firms, literature highlights that in firms with a family disruptor, a family member in a powerful position who drives the adoption of new technology, obstacles can be overcome (König *et al.*, 2013). Firms tend to exhibit more successful strategies when responding to disruptive industry changes.

3. Research design and methodology

3.1 Data

Data was collected using a well-designed questionnaire, which was distributed to the respondents from Malawi with experience of working in family businesses in different countries. Twelve main tensions in the family business tradition vs. modern tendency were considered in this survey, challenge factors were built based on previous studies that worked in this field. *Table 1* lists a summary of the challenges covered by the questionnaire. 106 participants completed the survey. However, respondents with near-zero standard deviations in their responses and the questionnaires that were incomplete or were improperly filled were excluded from the analysis. One question was repeated twice with a gap of other questions and those who answered them differently were also excluded. The final sample comprised 38 participants, whose data were included in the further analysis.

The demographic information of these respondents is shown in *Table 2*. From *Table 2*, one can see that both genders were fairly represented despite the males having a slightly bigger percentage of 55 percent than 45 percent for females. With respect to the ages of the study participants, most of the study participants were of the youthful group, as 70% of the study participants were aged

Table 1. Key challenges to modernization of family businesses

Code	Challenge	Description	Literature
C1	Resistance to change	Failure to adapt to and adjust to changes due to the tension between continuity and the need for change	Miller *et al.* (2008)
C2	Rigid organizational structure	Increase the possibility of conflicts within the business and inefficiency of operations, and slows decision-making process	Zahra and Sharma (2004); Calabrò *et al.* (2017)
C3	Conservative financial practices	Failure to adhere to internationally recognized financial practices in order to protect the interest of shareholders	Chen *et al.* (2008)
C4	Succession issues	Leads to more internal conflicts and puts the business continuity in doubt	Shahzad *et al.* (2024)
C5	Limited external collaborations	Reduction in financial gains due to low market presence or limited partnerships	Gjergji *et al.* (2019)
C6	Focus on legacy preservation-Limits expansion	More interest in living embodiments of family traditions, values and principles passed down through generations	Weenink (2024)
C7	Rapid Technological Advancements	Technological advancements provide competitive advantage but demands investment that is sometimes not available	Begnini *et al.* (2024)
C8	Increased competition and slow adaptation	When competition grows, one needs faster adaptation	Amann and Jaussaud (2011)
C9	Globalization pressure	Inability to see outside silos and make right strategic choices	Patel *et al.* (2015)
C10	Short-term focus	Short-term gains and return on investments are prioritized over long-term sustainability of the business	Mahmud *et al.* (2021)
C11	Disruptive innovation	A need for members to develop strategies to cope with levels of innovation while recognizing opportunities and timely grasp them	de Groote *et al.* (2020)
C12	Data-driven decision-making	New skills are needed to survive in the era of data-driven business management	Chang *et al.* (2022)

Table 2. Demographic characteristics of the study participants

	Description	Frequency	Percentage
Gender	Male	21	55
	Female	17	45
	Total	38	100
Age	18 – 35	27	70
	36 – 45	6	15
	46 – 55	4	12
	56 – 65	1	3
	Total	38	100
Academic qualification	Tertiary qualification	34	90
	Secondary qualification	4	10
	Total	38	100

18 – 35 years. This is followed by those aged 36 – 45 years at 15%, those aged 46 – 55 years at 12%, and finally those aged 56 – 65 years at 3%. The study also found that 60% of the respondents were never married.

The study observed that 90% of the study participants have tertiary qualifications, such as a professional certificate, diploma, or degree. In addition, the remaining 10% have a secondary-level qualification, enhancing their ability to participate in this study duly. Thus, the primary group of respondents was youthful with tertiary qualifications.

3.3 Dynamic grey relational analysis

The Dynamic Grey Relational Analysis (Dynamic GRA, or DGRA) is one of the recent developments in the fields of the Grey System Theory and multiple criteria decision analysis. It is the generalized form of the classical GRA model, which was proposed by Professor Deng Julong in the 1980s. Other variants of the GRA are also available in market such as the ones proposed by Professor Liu Sifeng.

Even though the GRA models have seen a lot of applications in engineering and energy sectors they have rarely been used to study family businesses. Much of the work in this direction has been done by a Polish team. For instance, Więcek-Janka *et al.* (2016a) used Liu's GRA model to study differences in the impact of family aspects on the family businesses in Mexico and Poland. Więcek-Janka *et al.* (2016b) used Liu's GRA model to evaluate the barriers faced by Polish successors in family businesses during the first process of succession. Majchrzak and Więcek-Janka (2019) analysed the relationship between family businesses' communication and their market activities using Deng's GRA model. Więcek-Janka *et al.* (2021) used Liu's GRA model to study the influence of conflicts on family businesses. Majchrzak and Więcek-Janka (2021) studied family business succession process management using Deng's GRA model.

One can see that most of the literature have either used Liu's GRA or Deng's GRA models. Both of these models have their own limitations. For instance, Liu's GRA is not properly normalized and thus its output values never fall under 0.5 (Javed & Liu, 2019) and Deng's GRA has a parameter (Distinguishing Coefficient) whose value should vary between 0 and 1 but scholars have assumed its value to be 0.5 without any logical rationale (Mahmoudi *et al.*, 2020). Therefore, the current study uses the Dynamic GRA model (Javed *et al.*, 2022) as it represents an advanced form of Deng's GRA where the Distinguishing Coefficients are objectively estimated from data. The effectiveness of this model is validated from literature (Ervural, 2023; Darbinian *et al.*, 2023). The key components of the Dynamic GRA model are discussed below.

In the current study, the Grey Relational Grade (GRG) is:

$$\Gamma_{0k} = \sum_{j=1}^{n} \gamma_{0k}(j) \tag{1}$$

where, the Grey Relational Coefficient (GRC) is:

$$\gamma_{0k}(j) = \frac{\Delta_{min} + \xi(j)\Delta_{max}}{|\Delta_{0k}(j)| + \xi(j)\Delta_{max}}, k = 1,2, \ldots . m \tag{2}$$

where,

$$|\Delta_{0k}(j)| = |x_0(j) - x_k(j)| \tag{3}$$

$$\Delta_{min} = min_k min_j |x_0(j) - x_k(j)| \tag{4}$$

$$\Delta_{max} = max_k max_j |x_0(j) - x_k(j)| \tag{5}$$

$$\xi(j) = \{\xi(1), \xi(2), \ldots, \xi(n)\}, \xi(j) \in (0, 1] \tag{6}$$

The method proposed by Javed *et al.* (2022) was used to estimate the values of the Dynamic Distinguishing Coefficients $\xi(j)$. Meanwhile, the Grey Relational Standard Deviation (GRSD) can also be estimated as,

$$\text{GRSD} = \sqrt{\frac{\sum_{j=1}^{n}(\Gamma_{0k} - \gamma_{0k}(j))^2}{n-1}} \tag{7}$$

and, the Rank Product Score (RPS) as,

$$\text{RPS} = Rank(\text{GRG}) \times Rank(\text{GRSD}) \tag{8}$$

For details about the GRSD and the RPS, Javed *et al.* (2022) can be consulted. All calculations were done on Microsoft Excel.

4. Results and discussion

Table 3 below presents the original data, where R represents the respondents and C represents the challenges that affect the modernization of family businesses. *Table 4* presents background calculations of the Dynamic GRA – Delta, Delta Average, Delta Max, and Dynamic Distinguishing Coefficients. To optimize the space, Delta values are reported to zero decimal places, while other values are reported to two decimal places. For clarity, the challenges are labeled C1 to C12: C1 (resistance to change), C2 (rigid organization structure), C3 (conservative financial practices), C4 (succession issues), C5 (legacy preservation), C6 (limited external collaboration), C7 (globalization pressure), C8 (rapid technological advancement), C9 (increased competition), C10 (short term focus), C11 (disruptive innovation), and C12 (data-driven decision making). In contrast, respondents are labeled from the first respondent as R1 to the last respondent as R38.

The grey relational grades, the grey relational standard deviations and the rank product scores are reported in *Table 5*. The grey relational grades-based ranking of the twelve challenging factors (or barriers) is illustrated in *Figure 1*. The results indicate that C9 (increased competition), C1 (resistance to change), C4 (succession issues) is the most significant challenge, followed by C8 (rapid technological advancement, C2 (rigid organization structure), C10 (short-term focus), C6 (limited external collaboration), C3 (conservative financial practices), C7 (globalization pressure), C11 (disruptive innovation), C5 (legacy preservation), and C12 (data-driven decision making). The analysis, done through the Rank Product Scores as shown in *Figure 2*, shows that the first group (C9, C4, C10 and C10) represents the most significant challenges and managing them on priority is of critical importance in order to modernize family businesses.

It can be observed from the results that increased competition, resistance to change, and succession issues are considered to have a high impact as challenges on family businesses regarding the traditional and modern approaches to handling business. These findings imply that with

Table 3. The original data

	C1	*C2*	*C3*	*C4*	*C5*	*C6*	*C7*	*C8*	*C9*	*C10*	*C11*	*C12*
R1	7	5	5	7	4	7	1	5	7	7	4	2
R2	6	6	6	6	6	6	2	6	6	6	6	6
R3	7	7	7	5	4	6	6	6	7	2	6	6
R4	7	1	5	7	5	6	6	6	7	7	7	7
R5	6	6	6	6	1	5	4	6	4	6	4	6
R6	6	6	4	5	2	4	1	6	6	7	4	5
R7	6	7	4	4	4	5	4	4	5	6	5	4
R8	7	6	5	4	5	6	6	5	7	5	6	4
R9	2	2	2	2	2	2	6	6	6	6	2	6
R10	6	4	2	2	4	2	5	6	4	1	4	5
R11	7	7	4	7	7	7	7	5	7	2	7	5
R12	7	7	7	6	6	5	4	5	6	6	5	5
R13	7	7	6	7	6	7	5	6	7	7	5	6
R14	2	6	2	7	6	6	5	2	4	1	6	6
R15	7	7	4	5	5	7	4	5	5	6	6	6
R16	6	6	6	6	6	4	4	6	7	6	6	7
R17	7	7	7	6	2	6	6	6	6	7	6	4
R18	5	6	7	5	2	5	5	5	5	7	7	7
R19	7	7	7	7	7	2	7	7	7	7	7	2
R20	6	6	6	5	4	6	7	6	7	6	5	5
R21	4	6	6	7	6	6	7	7	6	7	4	1
R22	6	6	6	7	5	5	6	5	5	1	4	2
R23	7	7	5	7	7	6	6	7	5	6	5	6
R24	2	2	5	6	6	1	6	6	6	6	6	2
R25	5	4	6	7	6	6	6	5	7	5	6	5
R26	7	6	7	7	6	6	5	7	7	5	7	1
R27	6	4	4	5	5	6	6	5	5	4	4	6
R28	6	6	5	6	6	6	7	7	7	6	5	5
R29	4	4	6	7	5	7	7	7	4	6	2	2
R30	4	5	6	6	6	5	5	7	7	4	6	6
R31	4	5	6	6	6	5	6	5	4	4	5	5
R32	6	4	4	1	1	4	1	1	1	4	4	1
R33	6	6	1	6	5	6	1	6	6	6	5	6
R34	6	1	5	7	5	5	5	5	4	4	1	2
R35	4	5	6	6	6	6	2	7	6	5	5	2
R36	6	5	6	7	5	5	6	6	5	4	6	7
R37	6	6	6	6	6	6	4	5	2	2	5	5
R38	6	5	6	1	2	6	6	6	7	7	4	6

modernity, family businesses find it more challenging to compete with multinational corporations that have larger resources, scalability, and technological abilities. Now, they must adapt to new strategies and forms of technology while improving efficiency and not abandoning their traditional values. For resistance to change, there is generally a contradiction between the previous generations, who want things to remain the same, and younger generations, who tend to favour

Table 4. Delta, delta average, delta max, and dynamic distinguishing coefficients

	C1	*C2*	*C3*	*C4*	*C5*	*C6*	*C7*	*C8*	*C9*	*C10*	*C11*	*C12*	$\Delta_{avg}(j)$	$\psi(j)$	$\xi(j)$
R1	0	2	2	0	3	0	6	2	0	0	3	5	1.91	0.32	0.44
R2	1	1	1	1	1	1	5	1	1	1	1	1	1.33	0.22	0.31
R3	0	0	0	2	3	1	1	1	0	5	1	1	1.27	0.21	0.29
R4	0	6	2	0	2	1	1	1	0	0	0	0	1.08	0.18	0.25
R5	1	1	1	1	6	2	3	1	3	1	3	1	2.00	0.33	0.46
R6	1	1	3	2	5	3	6	1	1	0	3	2	2.33	0.39	0.54
R7	1	0	3	3	3	2	3	3	2	1	2	3	2.17	0.36	0.50
R8	0	1	2	3	2	1	1	2	0	2	1	3	1.50	0.25	0.35
R9	5	5	5	5	5	5	1	1	1	1	5	1	3.33	0.56	0.77
R10	1	3	5	5	3	5	2	1	3	6	3	2	3.25	0.54	0.75
R11	0	0	3	0	0	0	0	2	0	5	0	2	1.00	0.17	0.23
R12	0	0	0	1	1	2	3	2	1	1	2	2	1.25	0.21	0.29
R13	0	0	1	0	1	0	2	1	0	0	2	1	0.67	0.11	0.15
R14	5	1	5	0	1	1	2	5	3	6	1	1	2.55	0.42	0.59
R15	0	0	3	2	2	0	3	2	2	1	1	1	1.42	0.24	0.33
R16	1	1	1	1	1	3	3	1	0	1	1	0	1.17	0.19	0.27
R17	0	0	0	1	5	1	1	1	1	0	1	3	1.17	0.19	0.27
R18	2	1	0	2	5	2	2	2	2	0	0	0	1.50	0.25	0.35
R19	0	0	0	0	0	5	0	0	0	0	0	5	0.83	0.14	0.19
R20	1	1	1	2	3	1	0	1	0	1	2	2	1.25	0.21	0.29
R21	3	1	1	0	1	1	0	0	1	0	3	6	1.42	0.24	0.33
R22	1	1	1	0	2	2	1	2	2	6	3	5	2.17	0.36	0.50
R23	0	0	2	0	0	1	1	0	2	1	2	1	0.83	0.14	0.19
R24	5	5	2	1	1	6	1	1	1	1	1	5	2.50	0.42	0.58
R25	2	3	1	0	1	1	1	2	0	2	1	2	1.33	0.22	0.31
R26	0	1	0	0	1	1	2	0	0	2	0	6	1.08	0.18	0.25
R27	1	3	3	2	2	1	1	2	2	3	3	1	2.00	0.33	0.46
R28	1	1	2	1	1	1	0	0	0	1	2	2	1.00	0.17	0.23
R29	3	3	1	0	2	0	0	0	3	1	5	5	1.92	0.32	0.44
R30	3	2	1	1	1	2	2	0	0	3	1	1	1.42	0.24	0.33
R31	3	2	1	1	1	2	1	2	3	3	2	2	1.92	0.32	0.44
R32	1	3	3	6	6	3	6	6	6	3	3	6	4.33	0.72	1.00
R33	1	1	6	1	2	1	6	1	1	1	2	1	2.00	0.33	0.46
R34	1	6	2	0	2	2	2	2	3	3	6	5	2.83	0.47	0.65
R35	3	2	1	1	1	1	5	0	1	2	2	5	2.00	0.33	0.46
R36	1	2	1	0	2	2	1	1	2	3	1	0	1.33	0.22	0.31
R37	1	1	1	1	1	1	3	2	5	5	2	2	2.08	0.35	0.48
R38	1	2	1	6	5	1	1	1	0	0	3	1	1.83	0.31	0.42

innovation. However, this reaction can restrict growth, miss opportunities, or make it difficult to adopt new technologies or business strategies that lessen the organization's competitiveness in the market. For succession issues, leadership handovers become complicated when successors are selected purely on familial connections rather than through professional expertise. A more complex

Table 5. The grey relational evaluation of challenges to modernization of family businesses

	GRG	Rank (GRG)	GRSD	Rank (GRSD)	RPS
C1	0.738	2	0.218	6	12
C2	0.683	5	0.214	7	35
C3	0.639	8	0.201	8	64
C4	0.737	3	0.226	2	6
C5	0.581	11	0.184	12	132
C6	0.639	7	0.185	11	77
C7	0.612	9	0.225	4	36
C8	0.687	4	0.193	9	36
C9	0.738	1	0.225	3	3
C10	0.652	6	0.241	1	6
C11	0.608	10	0.191	10	100
C12	0.566	12	0.220	5	60

Figure 1. Grey Relational Grades and their ranks

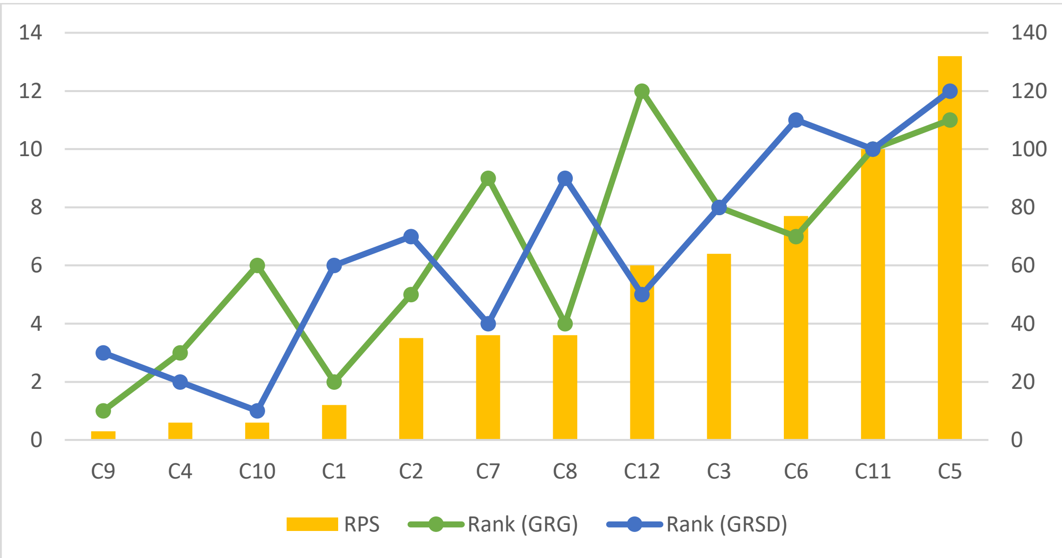

Figure 2. Rank Product Scores and the two ranks

picture of internal conflicts versus preparation and the calls for globalization versus the calls for traditional management practices.

Even though other factors are relatively low, it is observed that their impact is also high due to high GRG values. For instance, artificial intelligence and digitization also pose a challenge for Family Businesses that do not have the financial resources and/or the in-house expertise to deploy new technology. It makes it even more difficult when they are very conservative and reluctant to hire other specialists, which might have resulted in high values of automation. The study has also noted that most family businesses use centralized decision-making, which stifles innovation and adaptability. A demarcation creates a communication gap that frustrates younger members who want a more collegial approach, while elders oppose initiatives that would undercut traditional hierarchies. Such might have influenced the restrictive organizational structure and had an impact on the challenges of traditional to modernity.

Furthermore, family businesses are obsessed with short-term profits, which undermines family businesses' ability to grow investments and where they could create and research revolutionary products for the vast global market. It is a mentality that is going to make it difficult for them to compete with long-term future-oriented organizations. For limited collaboration with outsiders, A family business tends to want to do everything in house and not bring in much from the outside world. That sort of feeling of independence can cut them off from exposure to new ideas, new technologies, and the markets that they need to be competitive in a rapidly changing business environment.

On conservative financial practices, most family businesses focus on profits, not on reinvestment, in ledgers, and not on what the market will bear, with little or no interest in new technology. This cautious stance might ensure near-term stability, but it hampers long-run growth and international competitiveness. Due to the pressure of globalization, family businesses face the challenges of globalization, where individual values may clash with global competitive conditions. While being deeply rooted in local culture, local business, and relationships, they first must step up to modern-day practices like digitization, operational efficiencies, and international marketing in the context of multinationals. Innovative can also influence family business performance where contemporary practices might require the balancing act of balancing family traditions with evolving market needs. Younger members might push for technological innovation, while older ones lament that change will dilute the company’s decades-old identity.

Data driven decision making is the practice of relying on data and analytics to make business decisions rather than relying on traditional methods or gut feelings. While family-oriented businesses may rely more on personal experience and tradition, adding data is an objective way to approach things. This may be a tough shift for organizations with a strong personal-judgment tradition, as this change may seem to undervalue experience. However, with thoughtful implementation, data driven decisions can allow family businesses to stay competitive, discover new opportunities, and streamline workflow, all while preserving the core principles that got them where they are. The real challenge is to strike the right balance between data that informs, but does not replace, the gut feeling and intuition that have made the business successful to date.

5. Conclusion and recommendations

This study has evaluated the challenges faced by family businesses in modernizing and achieving long-term sustainability. By applying the Dynamic Grey Relational Analysis, the study evaluated key factors that influence this modernization and provided strategic recommendations for family businesses to integrate traditional and modern elements effectively, as follows:

Family businesses are frequently firmly rooted in tradition and may resist changing their product offerings and business methods. Businesses need to know how not to forget who they are and where they come from while fostering a culture of change. Providing change at a pace, introducing small projects, piloting, and then building helps to find the resistance gap while keeping the business in touch with its core vision. Due to the nature of technological advancements, which call for investment, family businesses having traditional financial practices may find it challenging. The methods to keep pace with are aggressive in deciding on the used technologies that help in boosting profit and try to achieve the goals of the organization. Technology that enhances operations rather than replaces them can allow family businesses to remain modernized without replacing the values upon which they were built.

Centralized decision-making slows responsiveness. Fostering younger generations and using flexible structures will allow agility, which will ensure guidance while also allowing needed experience from that experienced leadership. Family firms are facing new competitions from non-family businesses run by professionals. Market research, digital, and strategic partnerships can bring adaptability but should not lose sight of traditional skills. Traditional financial prudence is somewhat of a constraint. These modern financing options, alongside conservative management styles, allow many companies to function sustainably.

When expanding internationally, there are challenges related to regulations and the market. The most successful companies establish global networks and strategic partnerships or joint ventures to scale quickly and add value to their offerings while preserving their unique identity. Tensions between generations can arise over leadership transitions. Implementing organized succession plans and leadership development supports effective intergenerational transitions alongside incorporating contemporary business modalities. Prioritizing short-term profits over long-term strategy. A data driven approach can help to plan strategies, the benefits of which can accumulate over time.

A siloed working approach can slow down innovation and limit potential in the marketplace. Innovative practices and expansion opportunities arise through collaboration with external industry networks and partnerships. Identifying trends ahead of time and integrating innovations that align with family values can convert disruption into opportunity. Focusing too much on legacy restricts business expansion. Branding inclusion of family heritage alongside modernizing exploration of new markets allows businesses to evolve while not losing their identity. The demand for data-driven decision-making poses a challenge for family businesses that are not familiar with terabytes of big data and modern analytics. This indicates that family businesses need to prepare their leaders to use data effectively through investment in training and skills. Today, modern data collection and analytical tools allow them to make better decisions while ensuring that the business evolves with the changes in its environment, yet it holds on to family traditions.

From this study, we have learned that modernization comes with its own challenges, like resistance to change and many more; however, overcoming these challenges can lead to the promising growth of family-owned businesses.

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