

A review of digital family businesses: setting marketing strategies, business models and technology applications

Digital family
businesses

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Received 6 March 2022

Revised 28 April 2022

27 May 2022

Accepted 27 May 2022

Abstract

Purpose – Technological advances in the last decade have caused both business and economic sectors to seek for new ways to adapt their business models to a connected data-centric era. Family businesses have also been forced to leave behind traditional strategies rooted in family stimuli and ties and to adapt their actions in digital environments. In this context, this study aims to identify major online marketing strategies, business models and technology applications developed to date by family firms. **Methodology**: Upon a systematic literature review, we develop a multiple correspondence analysis (MCA) under the homogeneity analysis of variance by means of alternating least squares (HOMALS) framework programmed in the R language. Based on the results, the analyzed contributions are visually analyzed in clusters.

Design/methodology/approach – Upon a systematic literature review, we develop an MCA under the HOMALS framework programmed in the R language. Based on the results, the analyzed contributions are visually analyzed in clusters.

Findings – Relevant indicators are identified for the successful development of digital family businesses classified in the following three categories: (1) digital business models, (2) digital marketing techniques and (3) technology applications. The first category consists of four digital business models: mobile marketing, e-commerce, cost per click, cost per mile and cost per acquisition. The second category includes six digital marketing techniques: search marketing (search engine optimization and search engine marketing (SEM) strategies), social media marketing, social ads, social selling, websites and online reputation optimization. Finally, the third category consists of the following aspects: digital innovation, digital tools, innovative marketing, knowledge discovery and online decision making. In addition, five research propositions are developed for further discussion and future research.

Originality/value – To the best of our knowledge, this study is the first to cover this research topic applying the emerging programming language R for the development of an MCA under the HOMALS framework.

Keywords Marketing, Decision making, Family firms, Information communication technology

Paper type Research paper

Introduction

Technological advances in the last decade have caused the economic sector to seek for new ways to adapt their business models to a digital and connected environment (Veile *et al.*, 2022). In this interconnected ecosystem, strategies in digital channels have become cornerstone for marketing, management, processes, production, and the development of new products and services, among others (Verhoef and Bijmolt, 2019; Palmié *et al.*, 2022).

In response to the changing professional ecosystem, companies had to adapt their business models to this new paradigm. Family businesses, an important part of the business industry in many countries, play one of the central roles in economic development (Mallon



International Journal of
Entrepreneurial Behavior &
Research

© Emerald Publishing Limited
1355-2554

DOI 10.1108/IJEBR-03-2022-0228

The authors acknowledge the funding support by the Ministry of Science, Innovation and Universities and the European Regional Development (RTI2018-096295-B-C22).

et al., 2018). While some scholars believe that in family businesses, which are based on traditional structures, managers are unlikely to make radical decisions or prioritize innovation (Cassia *et al.*, 2012), family businesses must adapt their business models to the new era, as online strategies have become a key factor for success (Garzella *et al.*, 2021).

Indeed, several previous studies revealed that family businesses can effectively adapt their business models to the challenges of digitalization, making better decisions focused on digital environments, and modifying the structure of their traditional businesses (Leppäaho and Ritala, 2021; Eller *et al.*, 2020). A family business, which normally includes several members of the same family, should remain flexible and agile to adapt its strategies to a global era that requires companies to constantly modify their strategies (Han *et al.*, 2021). As indicated by Mani and Lakhal (2015), family businesses must understand the new digital ecosystems, make use of social networks and identify key performance indicators that allow them to make better data-centric decisions. In a globally connected business context where digital strategies provide added value and competitive advantage, family businesses should apply the main digital marketing techniques, digital business models, and be open to the development and adoption of novel technologies (Riswanto, 2021).

Since family firms are expected to take resilient action to propose strategic changes, it is necessary to develop new information and communication research. However, relevant studies on this topic are scarce. To fill this gap in the literature, the present study addresses the following research questions (RQ): RQ1: What are the main marketing strategies used by family businesses in digital environments? RQ2: What are the business models used by digital family businesses?

Additionally, the specific objectives of this study are as follows:

- (1) To identify and define the main digital marketing strategies used by digital family businesses
- (2) To classify and define the main business models used by digital family businesses
- (3) To create knowledge about the adaptability and adoption of new technologies and business models by digital family businesses
- (4) To provide guidelines for the use of marketing strategies in digital business models by family businesses

To answer the research questions and to accomplish the aforementioned objectives, we conducted a systematic literature review of the main contributions made to date in this field of research. In order to visualize the results, we use a multiple correspondence analysis (MCA) under the homogeneity analysis of variance by means of alternating least squares (HOMALS) framework programmed in the R language. The remainder of this paper is structured as follows. Upon an outline of the theoretical framework, we discuss the methodology used in the present study. Subsequently, the results and the discussion section are presented. Finally, the conclusions are drawn, and the main implications of the study are outlined.

Theoretical framework

From traditional family businesses to digital business models

The rapid advances of the digital economy and the technological changes driven by globalization have had important consequences for business models and the typical organization of traditional families (Soluk *et al.*, 2021a, b, c). Specifically, new technologies – such as smartphones, connected devices and robots that work with artificial intelligence (AI) (Saura *et al.*, 2021a, b) – have had a dramatic impact on business practices around the world.

Driven by digitization that promotes flexibility, family businesses have modified their business models (Chatterjee *et al.*, 2021). In an era when traditional strategies do not match hyper connectivity and rapid digital evolution, family businesses should focus on the

exponential development of their businesses and the digital economy (De Massis *et al.*, 2018). At the same time, although family businesses are aware of the changes caused by digitalization, they frequently lack relevant guidelines or instructions for the appropriate development of Internet-centric strategies (Ratten and Tajeddini, 2017).

Digitization is defined as the process of adopting and using digital technologies to improve business development, processes and organization performance (Legner *et al.*, 2017). However, if digitization and Internet strategies are not appropriately adopted by family businesses, investment in the digital economy and digitization may not yield the expected return.

Rashid and Ratten (2020) argue that, while most family businesses consider digital business to be an adaptation to the new era, they fail to see it as an opportunity to increase profitability. The approach to innovation may be directly linked to corporate culture, which may lead family businesses to disregard the fact that the adoption of new digital business models can promote innovation as a driver of change (Saura *et al.*, 2022). Indeed, Hess *et al.* (2016) noted that family businesses can sometimes be vulnerable due to the inertia of senior managers. Emotional relationships among family members and the traditionality in the development of product and service strategies are also key factors for the adoption of new forms of marketing and technology (Arzubiaga *et al.*, 2021). Therefore, one crucial challenge for innovation development and its application on digital business models is to acknowledge their potential to boost profitability and innovation in traditional business models.

Moving from traditional marketing strategies to digital marketing

Along with the development of new technologies that has driven the creation and adaptation of new business models, marketing has also adapted its strategies to the new ecosystem. While traditional marketing focused its objectives and strategies on traditional media, the new marketing prioritized connected devices and data analysis to improve decision making.

Marketing strategies focused on new digital environments – such as social networks and digital platforms – have become companies' professional habits in many industries (Bharadwaj *et al.*, 2013). In this novel paradigm of evolution and change, data and innovation-centered strategies have become fundamental options for companies to sell products and services globally (Bortolotti *et al.*, 2002).

The acquisition of knowledge about users and their behavioral actions in digital environments allows companies to pay increasing attention to user data collection and analysis (Ribeiro-Navarrete *et al.*, 2021).

The new digital marketing techniques are directly linked to digital business models. For instance, electronic commerce is being directly promoted through the application of digital marketing techniques such as search engine optimization (SEO), social networks and influencers (Saura, 2021). However, these strategies should be applied in full consideration of the sector where family businesses carry out their activities, as they are a fundamental piece for the successful adoption of digital business models (Schiafone *et al.*, 2021).

The use of digital marketing technologies by family businesses can also cause changes in the organizational structure of this type of company and lead to the expansion of their business models from the traditional to the digital sphere (Peter and Dalla Vecchia, 2021). In an ecosystem characterized by extensive data, the use of digital tools for acquiring user data allows companies to focus their strategies on user behaviors, known as marketing intelligence or business intelligence. By using new data analysis strategies focused on AI, companies can predict users' short- and long-term behavior, and consequently anticipate the demand (Huang and Rust, 2021) and take better decisions regarding the development of new products and services (Olson *et al.*, 2021). However, the use of all these techniques and the approach of new business models should focus on understanding how traditional family businesses have gradually adapted new business paths to date.

Methodology

Systematic literature review

Systematic literature review is a method used to better understand emerging events in an research field. As argued by [Brereton et al. \(2007\)](#), systematic literature reviews are convenient when the object of study is innovative and has not yet been extensively analyzed. A theoretical framework that highlights the main problems to be explored should first be developed, followed by the identification of the research objectives. Therefore, with the development of a systematic literature review, the main gaps in the literature within a specific research area can be identified and covered ([Di Vaio et al., 2021](#)).

The aim of this article is to identify major digital marketing strategies used by family businesses as well as to establish their main digital business models. As noted by [Cao and Shi \(2021\)](#), the emerging nature of this problem can be justified by the analysis of the main contributions of the industry that, while not yet comprehensive, analyze and discuss the use of certain marketing strategies and digital business models in family businesses. Hence, this systematic literature review can propose objectives for future research related to this field.

First, the systematic approach enables to identify the problems linked to the object of study. Second, the search terms in scientific databases are proposed to solve the problems. Third, the results are analyzed in relation to each of the research questions and objectives. Thus, and as argued by [Tiberius et al. \(2021\)](#), the identification of major marketing strategies and digital business models developed in family businesses can be proposed.

To this end, and following [Saura et al. \(2021a, b\)](#), we used the ACM Digital Library, AIS Electronic Library, IEEE Explore, ScienceDirect and Web of Sciences databases. The search terms were “Family Business” OR “Family firm” AND “Digital Business” OR “Digital Business Model” OR “Marketing” OR “Digital strategy” OR “Online Strategy”. The searches were carried out between December 2021 and January 2022. In order to filter the content of the searches, the title, abstract and keywords of the different sections of the articles identified in the results were analyzed. Then, following the PRISMA recommendations ([Tricco et al., 2018](#)), the checks presented in the results analysis section were performed.

Multiple correspondence analysis developed in R

In order to provide a statistical and visual representation of the results that complement the systematic literature review, an MCA was developed in the programming language R ([Morandat et al., 2012](#)). This language belongs to the Open Source types and is used for the statistical development and exploration of events and variables. Due to its great flexibility and adaptability, R has become a relevant programming language in research ([Ramlall, 2016](#)).

Specifically, the R language was used for data analysis and statistical representation through the generation of graphics on the weight of the variables identified in a sample ([Morandat et al., 2012](#)). Due to its ability to identify patterns and statistically fit results graphically, it is a powerful tool that can represent both small and large samples ([Patten and Newhart, 2017](#)).

Similarly, MCA is statistical approach that visually summarizes more than two categorical variables in a database ([Ihaka and Gentleman, 1996](#)). Using this approach, the main components and categorical variables in a sample can be identified, and the characteristics of the sample and its main indicators can be understood. The MCA approach has been previously used to group independent variables and associate them with each other with a common variable ([Di Franco, 2016](#)). In the present study, the common variable was family business. Furthermore, the main digital marketing techniques, digital and social media strategies, the use of digital technologies and digital business models were identified and codified as other variables and their influence on the weight and distance in relation to the main categorical variable (i.e. family firms or family business) were measured.

The remaining categorical variables coded after their identification in the literature review were as follows: mobile marketing, eCommerce, cost per click (CPC), cost per mile (CPM), cost per acquisition (CPA), search marketing, social media marketing, social ads, social selling, websites, online reputation, digital innovation, digital tools, innovative marketing, knowledge discovery and online decision making.

Regarding the statistical representation using MCA, the approach is linked to the theoretical framework of HOLMAS. According to [Wagner et al. \(2011\)](#), a variable is coded as 1 for those keywords or indicators (variables) that are found in relation to the subject of study and as 0 for those unrelated to the object of study. The analysis of the two variables together was interpreted as two dimensions, and distances between these dimensions were measured. Carrying out this multivariable analysis, it is possible to understand the distances and influence of the variables on the central variable, i.e. the one that receives the greatest relevance in terms of the coded values ([Gonzalez-Loureiro et al., 2015](#)).

When the MCA using R was developed, the following statistical variables were obtained that justify the visualization of the data and the computation in R: chi-square, p -value, variance, percentage of the variance and cumulative percentage of variance. Chi-square is a statistical variable that determines the meaning between the expected distributions and the actual calculated distributions. Variance is the squared deviation of a variable from its mean, measuring the diffusion of the data in a set of its meanings and mean values ([Soetaert et al., 2010](#)). Accordingly, the percentage of variance and cumulative percentage of variance aim to calculate and measure the cumulative percentage of the parameters in the analyzed databases. Finally, the p -value indicator is the probability of, when the hypotheses are null, the statistical summary that would be equal to or greater than the observed results. In relation to p -value and HOMALS, these variables were used to measure the level of accuracy of the visualization of the variables ([Gonzalez-Loureiro et al., 2015](#); [Soetaert et al., 2010](#)).

Analysis of results

Systematic literature review results

As indicated above, we used the databases of ACM Digital Library, AIS Electronic Library, IEEE Explore, ScienceDirect and Web of Science. After the searches were carried out, the results for each of the databases were as follows: ACM Digital Library – 60 results, of which 5 were included in the dataset; AIS Electronic Library – 580 results in total, of which 5 were included in the dataset; IEEE Explore – 88 results in total, of which 0 were included in the dataset; ScienceDirect – 126 results in total, of which 5 were included in the dataset; and, finally, Web of Sciences – 96 results in total, of which 10 were included in the dataset.

Hence, of the total of 950 articles identified in the searches, after the detailed analysis process, a total of 25 articles were included in the dataset based on the selection criteria following the PRISMA framework ([Tricco et al., 2018](#)). In this process, a total of 342 of the articles were eliminated as inappropriate or non-inclusive. This reduced the number of articles to 610. At this point, a process of filtering the articles was developed to analyze them in depth, understand the objectives and methodology, as well as identify non-inclusive objectives or non-direct relationships. In this way, a quality assessment was developed globally in relation to the description, summary and detailed specifications. At this stage, the total number of articles included in the study was 605. After the complete analysis of these studies, 583 articles were removed. In the final step, after the complete systematic review, a total of 25 articles were included in the study (see [Table 1](#)). To provide more detail on the article selection process, as well as the literature review process and the inclusion and filtering criteria used to develop the method based the PRISMA indications are shown in [Figure 1](#).

As indicated above, the searches were carried out in the databases selected for the present study. In this way, the research objectives were fully covered, since the terms used in this

Table 1.
Articles identified in
the literature review

Authors	Journal	Purpose	Main topics	Concepts analyzed
Soluk <i>et al.</i> (2021a, b, c)	<i>Entrepreneurship Theory and Practice</i>	To measure the influence of digital business models on family businesses	digital business model innovation, dynamic capabilities, family firms, digital economy and environmental dynamism	<ul style="list-style-type: none"> ■ The adoption of digital technologies in family businesses ■ Analysis of the concept of digital business model innovation ■ Identify dynamic capabilities of family businesses in relation to digital marketing ■ The use and adoption of digital market tools and technologies ■ Resilience ability of family businesses in the Internet ■ Digital marketing technologies and strategies ■ Identification and assignment of roles on web pages ■ Digital marketing strategies applied to the food sector ■ Types of digital strategies in family business
Rashid and Ratten (2020)	<i>Journal of Family Business Management</i>	To analyze the capabilities to survive in a digital ecosystem of family businesses in Pakistan	digitalization, dynamic capability, family business and digital business models	<ul style="list-style-type: none"> ■ Use of international entry strategies through the Internet ■ International information management ■ Use of technology in family businesses on an international level ■ Analysis of family firms in the digital economy ■ Digital entrepreneurship, strategies and technology adoption
laia <i>et al.</i> (2017)	<i>British Food Journal</i>	To identify digital marketing strategies effectively applied in family wine businesses	websites, web communication, digital marketing and online strategies	<ul style="list-style-type: none"> ■ Use of international entry strategies through the Internet ■ International information management ■ Use of technology in family businesses on an international level ■ Analysis of family firms in the digital economy ■ Digital entrepreneurship, strategies and technology adoption
Plakoyiannaki <i>et al.</i> (2014)	<i>Marketing Intelligence and Planning</i>	To plan of international strategies using digital marketing techniques in family businesses	international business, digital marketing and online family business	<ul style="list-style-type: none"> ■ Use of international entry strategies through the Internet ■ International information management ■ Use of technology in family businesses on an international level ■ Analysis of family firms in the digital economy ■ Digital entrepreneurship, strategies and technology adoption
Basly and Hammouda (2020)	<i>The Journal of Entrepreneurship</i>	Family business digital entrepreneurship	Family firms, digital entrepreneurship and digital transformation	<ul style="list-style-type: none"> ■ Use of international entry strategies through the Internet ■ International information management ■ Use of technology in family businesses on an international level ■ Analysis of family firms in the digital economy ■ Digital entrepreneurship, strategies and technology adoption

(continued)

Authors	Journal	Purpose	Main topics	Concepts analyzed
Soluk <i>et al.</i> (2021a, b, c)	<i>Technological Forecasting and Social Change</i>	Entrepreneurship in digital ecosystems and use of online techniques for developing countries	Entrepreneurship, Developing countries, Digital technology and Openness	<ul style="list-style-type: none"> ■ Analysis of the support of the family community in digital businesses ■ Use of technologies and marketing techniques for the development of digital businesses ■ Analysis of applications and smartphones as technology adoption tools in family businesses ■ To understand the adoption of digital technologies for business promotion ■ To analyze digitization from the perspective of innovation ■ To adapt products and services to digital transformation ■ Development of digital communication strategies ■ Value human capital in the process of digital transformation of family businesses
Soluk and Kammerlander (2021)	<i>European Journal of Information Systems</i>	Digital transformation of family firms and uses of digital marketing techniques and tools for digitization	Digital transformation, digital innovation, technology adoption and SMEs	<ul style="list-style-type: none"> ■ To identify of knowledge creation processes in the digital ecosystem ■ To highlight the main strategies in the digital environment for family firms
Ano and Bent (2021)	<i>Journal of Family Business Management</i>	To understand the role of innovation in the development of digital strategies of family businesses	Digital transformation, millennials and adoption of digital technologies	<ul style="list-style-type: none"> ■ To analyze the role of AI and other similar technologies in digital family businesses
Zapata-Cantu <i>et al.</i> (2022)	<i>Journal of the Knowledge Economy</i>	To identify and develop the main digital challenges and opportunities for family businesses	Digital knowledge, digital transformation and digital opportunities	<ul style="list-style-type: none"> ■ To identify of knowledge creation processes in the digital ecosystem ■ To highlight the main strategies in the digital environment for family firms

(continued)

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Table 1.

Table 1.

Authors	Journal	Purpose	Main topics	Concepts analyzed
Obermayer et al. (2021)	<i>European Management Journal</i>	To analyze how family businesses make use of social networks	Family business, SME and social media marketing	<ul style="list-style-type: none"> ■ To identify the main social networks used in family business digital strategies ■ To identify social media marketing tools ■ To analyze the actions developed in social networks and identification of tools and opportunities
Alonso-Dos-Santos and Llanos-Contreras (2019)	<i>Journal of Business Research</i>	To study the main strategies developed by family firms after the COVID-19 pandemic	Entrepreneurial orientation, online strategies, post-pandemic strategies	<ul style="list-style-type: none"> ■ To study the main strategies developed by family firms after the COVID-19 pandemic in relation to innovation ■ To analyze of barriers to entry to international markets online after COVID-19
Beliaeva et al. (2022)	<i>Journal of Business Research</i>	To analyze the main theoretical roots and future research topics for family firms and marketing strategies	Marketing, branding, reputation and family firms	<ul style="list-style-type: none"> ■ To understand future implications for the reputation of family firms ■ To identify strategies linked to the branding of family firms ■ To understand image techniques and brand reputation of family firms
Matarazzo et al. (2021)	<i>Journal of Business Research</i>	To understand the digital transformation of family SMEs	Digital transformation, customer value creation and dynamic capabilities	<ul style="list-style-type: none"> ■ To identify strategies for the digital transformation of family SMEs ■ To understand the digital ecosystem for the development of digital marketing strategies ■ To analyze the main digital capabilities of family SMEs

(continued)

Authors	Journal	Purpose	Main topics	Concepts analyzed
Hess et al. (2016)	<i>MIS Quarterly Executive</i>	To evaluate the risks of digital transformation for Senior CEOs	Digital strategy, digital decision making and digital management	<ul style="list-style-type: none"> ■ To analyze decision making in digital environments in traditional family businesses ■ To identify digital marketing strategies for company management ■ To identify future research questions in relation to the digital strategies of family firms ■ To evaluate activities related to digitization ■ To describe how old companies can combine knowledge and technology to improve digitization ■ To make decisions based on digital strategies and techniques ■ To identify trends in the development of innovation strategies in digitization ■ To understand digital transformation based on innovation ■ To understand digital marketing strategies focused on innovation ■ To propose uses of digital technologies for family firms ■ To develop communication strategies to improve the identity of the business, communication behavior ■ To identify digital communication strategies
Pöschl and Freiling (2020)	<i>International Journal of Information Systems and Project Management</i>	To understand digital marketing strategies and digitization decisions in SMEs in the family environment	External processes in family firms, digital strategy and digital promotion techniques	
Sebastian et al. (2020)	<i>Strategic information management</i>	To measure customer engagement in digital solutions in family firms	Digital transformation, digital strategies and digital adoption	
Drechsler et al. (2020)	<i>Communications of the Association for Information Systems</i>	To understand the boundaries between digital innovation and digital transformation	Digital innovation, digital transformation, innovation and strategy	
Nambisan et al. (2017)	<i>MIS quarterly</i>	To understand the relationship between innovation and the outcomes of digital strategies	Innovation, digital innovation, management and digital strategy	
Baù et al. (2021)	<i>Entrepreneurship and Regional Development</i>	To analyze client behavior to identify the identity and reputation of a family firm	Consumer behavior, digital transformation and online marketing communication	

(continued)

Table 1.

Table 1.

Authors	Journal	Purpose	Main topics	Concepts analyzed
Ibáñez et al. (2022)	<i>International Journal of Entrepreneurial Behavior and Research</i>	To understand the development of sustainable strategies at the international level using digital communication	Family business, internationalization and online communication	<ul style="list-style-type: none"> ■ Use of new technologies to improve internationalization ■ Sustainable strategies, international communication in family firms
González-López et al. (2021)	<i>Journal of Small Business Strategy</i>	To compare the digital strategies of family firms between Ibero-America and the US	Digital marketing, family firms and digital business models	<ul style="list-style-type: none"> ■ To understand digital marketing techniques applied to family firms ■ To analyze the online presence of family firms
Arzubiaga et al. (2021)	<i>European Management Journal</i>	To understand the use of big data-centric strategies in family firms	Big Data analytics; Big Data, marketing and family firms	<ul style="list-style-type: none"> ■ To identify the main data analytics strategies in family firms ■ To measure the adoption of data technologies in family firms ■ To understand the use of data-centric strategies
Setkute and Dibb (2022)	<i>Industrial Marketing Management</i>	To identify barriers to the application of digital marketing for family SMEs	Family SMEs, digital marketing and marketing strategy	<ul style="list-style-type: none"> ■ To understand the main barriers for the adoption and development of digital marketing in SMEs ■ To identify digital marketing strategies in B2B ■ To understand the use of digital marketing strategies according to the size of the company
Lee-flang et al. (2014)	<i>European management journal</i>	To understand the main challenges and solutions of digital marketing in a digital era	Marketing, marketing design, digital era and digital marketing	<ul style="list-style-type: none"> ■ To understand the development and design of digital marketing strategies in a connected era ■ To identify future research areas for family firms in relation to digital marketing
Murakami et al. (2021)	<i>Journal of Marketing and Communication</i>	To link digital marketing strategies to large manufacturing firms	Digital marketing, manufacturing firms and family firms	<ul style="list-style-type: none"> ■ To identify digital marketing strategies in manufacturing firms ■ To analyze the applications of digital marketing to family firms

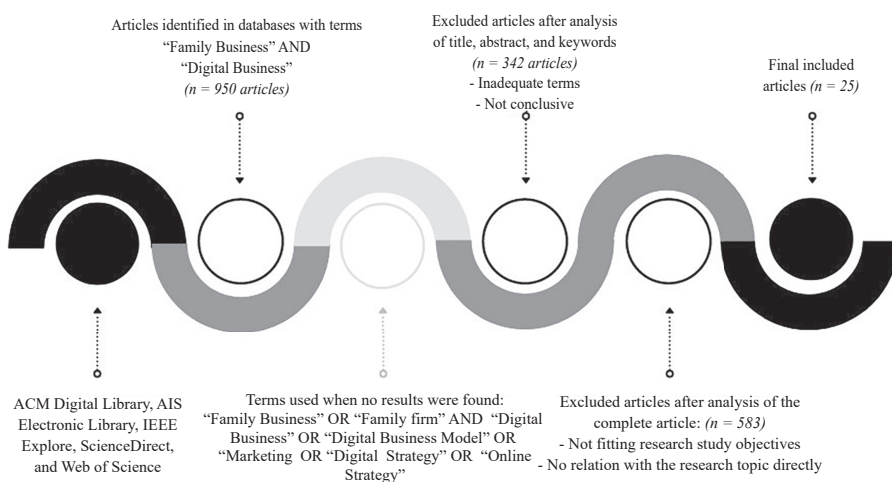


Figure 1.
PRISMA flow diagram
for the systematic
literature review

Source(s): The authors

research area to refer to “family firms” and “digital marketing” or “digital business models” were the concepts included in the search term list. In the next step, the titles, abstracts and keywords of the selected 342 articles were analyzed in depth. In this process, themes and research areas irrelevant for this study were identified to determine our decision concerning the inclusion of these articles. Therefore, the articles not conclusive in relation to the object of the study were removed (see the PRISMA flow diagram in Figure 1). In the next step, following the recommendations of Kitchenham *et al.* (2009) and deMatos *et al.* (2021), the articles were analyzed to identify specific objectives not linked to the aims of the present study, including the objectives unrelated to the area of family firms and digital marketing, as well as quality criteria. We also considered the type of methodology and its justification, selection and explanation of the sample used in each study, as well as validity criteria discussed in the conclusions. After this filtering, a total of 25 articles were included in the final sample.

Of note, the identified contributions were related to the areas of business, marketing, computer sciences, as well as innovation and technology. These categories created the ideal digital ecosystem for the development and adoption of digital marketing strategies in family businesses (Pöschl and Freiling, 2020). Likewise, the articles included in the study were analyzed in relation to their main objectives and keywords, as well as directly linked to the objectives of this research (see Table 1).

MCA and HOMALS results

In order to develop the MCA, we adopted the programming language R using HOMALS as a theoretical framework. Previously, several studies used similar approaches (e.g. Kaciak and Louviere, 1990; Gonzalez-Loureiro *et al.*, 2015; Kiessling *et al.*, 2019). Of note, HOMALS is an approach for developing a data matrix (Furrer *et al.*, 2008; Hoffman and De Leeuw, 1992). Initially, this type of approach was conducted with the well-known SPSS software. However, with the evolution of technology, the expansion of research methodology to new areas, and particularly due to their flexibility and statistical value, the interest in developing HOMALS and MCA in R gained popularity. With HOMALS, the results of MCA can be visualized in dimensional maps where the relevant keywords are highlighted in relation to their associations and proximity to a point of interest between two axes (Furrer *et al.*, 2008).

Therefore, although the procedure for MCA was identified in the literature, HOMALS theoretically justifies the design of statistical explorations and their analysis based on the identification of descriptions shown on a graphical map (see also [Gonzalez-Loureiro et al., 2015](#)). [Hoffman and Leeuw \(1992\)](#) argued that MCA can be a successful approach to understand emerging events through the identification of the distance between several classified variables. Accordingly, MCA and HOMALS can be used to visually identify gaps and understand problems in relation to the coded variables. MCA and HOMALS are valid methods to group categories of individual variables and multivariable. In the present study, there were three categorical variables grouped into a total of 16 individual variables. These variables were identified individually and collectively based on a sample of 25 articles identified in the systematic literature review. The group of variables represented in the same dimensions indicated that these variables were used for the same purpose. Consequently, the uses of the digital marketing techniques and the types of strategies and business models could be identified and highlighted ([Kießling et al., 2019](#)).

Within the first categorical variable, “Digital Business Models”, the following five variables were identified: mobile marketing, eCommerce, CPC, CPM and CPA. These variables were linked to the different business models that could be adopted in digital family firms and had previously been identified in the literature. The next categorical variable, “Digital Marketing Techniques”, included search marketing, social media marketing, social ads, social selling, websites and online reputation. Finally, the third categorical variable, called “Technology application”, included the following individual variables: digital innovation, digital business models, digital tools, innovative marketing, knowledge discovery and online decision making.

The analyses were performed using chi-square, p -value, variance, percentage of variance and cumulative percentage of variance ([Saura et al., 2021a](#)). In the results, the chi-square of independence between the two variables amounted to 393.8361. In relation to p -value, its value was 1, thus indicating that, if the results of chi-square are greater than the critical value calculated from $df = (\text{row} - 1)(\text{column} - 1)$ degrees and $p = 1$, then the row and the column variables are not independent from each other. This implies that the viable ones can be associated with each other (see [Figures 1 and 2](#)) ([Gonzalez-Loureiro et al., 2015](#)).

In the visual representations in [Figures 1 and 2](#), whenever two variables are close to each other, they belong to the same category that may or may not be in the same dimension. This must be theoretically interpreted by researchers to identify clusters. Therefore, the difference in spaces between the X and Y axes represents the groupings of the variables and their distances. The variables and categories are close to each other whenever their linkage is greater. The distance of a variable or keyword from the origin is interpreted as the average response pattern in relation to the main theme of the study – in our case, family firms. Similarly, the centered variables and their mean correspond to the category analyzed and that appears most frequently in the results of the literature review. On the other hand, those words or variables that appear far from the center of the dimensions refer to variables or indicators that are not directly linked to the center of the dimensions.

[Figure 2](#) shows the eigenvalue and variance results with two dimensions (in the axes X and Y). Dimension 1 accounted for 18.91% and Dimension 2 for 14.38% of the total variance in the dataset. Of note, the \cos^2 value measures the distance between the central axis of the graph represented between the values 0 to 0.8 points. As can be seen in [Figure 1](#), the center of the graph formed by the crossing of the axes X and Y represents the mean of correlations that exists in relation to the variables that make up the study. Similarly, [Figure 2](#) represents the biplot of individual and variable categories used to identify and emphasize variations in the trends and patterns identified. In this case, Dimension 1 is represented with a total of 24.29% of the sample and Dimension 2 with 17.8% of the total. The values for \cos^2 are the same as in the calculation of eigenvalues and variances. In this sense, the two graphs were analyzed in

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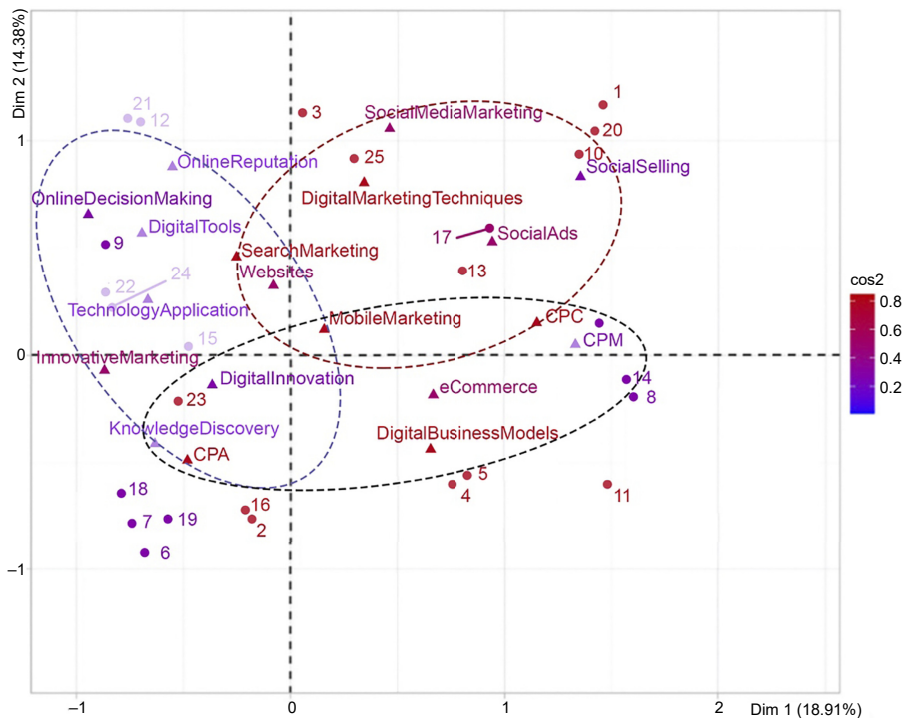


Figure 2. Eigenvalues/Variates using MAC and HOMALS analysis with R

relation to the objective of the research, i.e. identification of the main digital marketing techniques, application of technology and business models developed by family firms and identified in the literature.

Furthermore, in [Figure 1](#), the variables identify and show the relationships established by the clusters linked to each classificatory variable, including digital business models, digital marketing techniques and technology application. Multivariable groups corresponding to the results of the computation of the MCA in the R language are also identified. In [Figure 2](#), the cluster formed by digital marketing techniques can be seen in the upper right part, where they have been identified by their closeness and relationship with the individual variables of: search marketing, social media marketing, social ads, social selling, websites and online reputation, being the furthest social selling and the closest search marketing and social ads. In the lower right part, the cluster linked to digital business models can be identified, where the individual variables of mobile marketing, eCommerce, CPC, CPM and CPA are identified, in which the strongest relationship is the one linked to eCommerce and the weakest variable is the one linked to CPA.

On the other hand, [Figure 3](#) shows the results linked to the groups of multivariable where the center is again characterized by the categorical variables of digital business models, digital marketing techniques and technology application that appear highlighted. In this case, the difference in relation to the results of [Figure 3](#) is that the variances are shown and the number of studies in the sample is represented in blue dots. That is, the categories are presented individually and grouped in the categorical and individual variables to highlight their weight in Cos2. Accordingly, the weak link between strategies such as social selling,

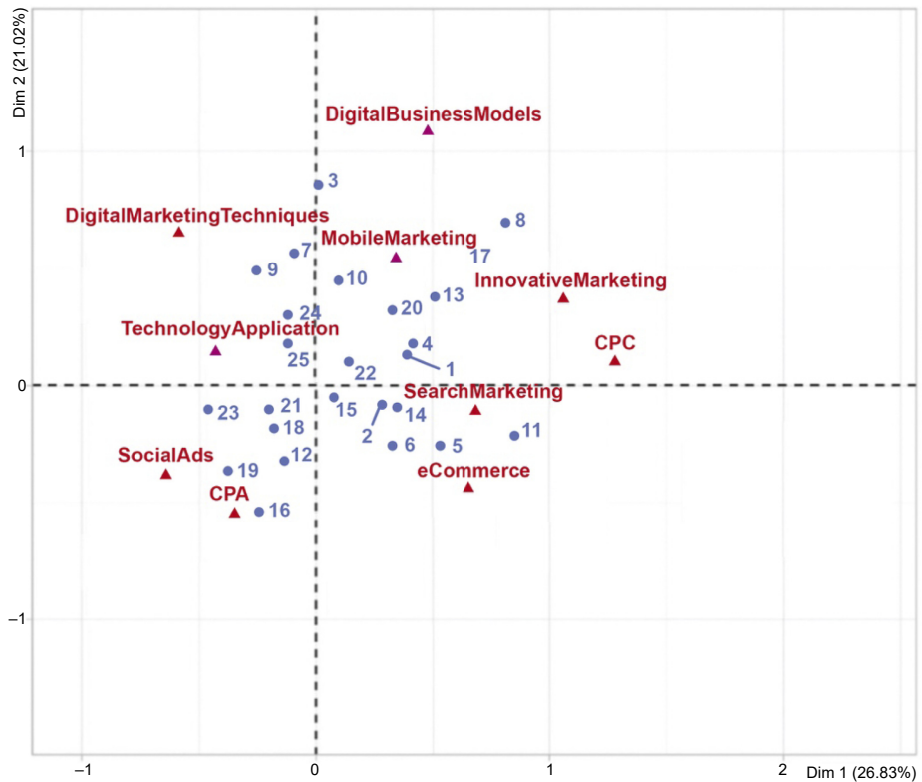


Figure 3.
Biplot of individuals
and variable categories
using MAC and
HOMALS analysis
with R

online decision making or online reputation stands out in relation to the clusters analyzed in Figure 3. These results are further discussed below in the Discussion section.

Discussion

This study investigates the importance of online strategies, digital business models, and the adoption and application of new technologies by family businesses. Based on the results of the systematic literature review and its visualization with MCA computing in R, the following relevant insights were obtained.

As argued by Palmié *et al.* (2022), in the last decade, digital business models formed an important part of family businesses. Furthermore, due to the adaptation to the coronavirus disease 2019 (COVID-19) pandemic and the increased use of the Internet, the development of digital business models has become a key factor for business success in family businesses. In this respect, we agree with Paavilainen (2002) who highlighted the importance of identifying mobile marketing as a relevant indicator of digital business models, driving strategy transformation by family businesses (Ratten and Tajeddini, 2017; Setkute and Dibb, 2022).

In addition, as revealed by our results, eCommerce is configured as the digital business model most used by family businesses due to its link to mobile marketing in the MCA results. Similarly, three payment models for digital advertising appear that have also been linked to the different digital business models developed by family businesses in the digital ecosystem. Specifically, CPC, CPA and CPA serve as the main analytical indicators that reveal the use of

digital marketing and advertising strategies, while programmatic advertising, the calculation of the CPA of a client in digital environments, and the method of pay per click are configured as the main variables to measure performance in digital business models. These variables were also studied, defined and presented in relation to family firms in previous research (e.g. [Alonso-Dos-Santos and Llanos-Contreras, 2019](#)).

Similarly, in relation to the identification and use of digital marketing strategies and techniques developed by family businesses, we identified six strategies directly linked to digital marketing techniques ([Murakami et al., 2021](#)). The first one, search marketing, is mainly linked to two digital marketing actions: SEO, a series of indicator optimization techniques on websites to improve search results in search engines in relation to information of the companies' website, and search engine marketing (SEM), which is linked to the promotion and payment of sponsored advertising in digital ecosystems.

As previously argued by [Saura \(2021\)](#), search marketing has become a fundamental source of customer acquisition in digital environments. Therefore, the variables of social media marketing, social ads and social selling are configured as strategies developed by family businesses to attract leads in digital environments and social networks. While the link between social media marketing and social ads strategies are more relevant in the results obtained, social selling is also positioned as an emerging digital strategy to promote the sale of products through social networks ([Obermayer et al., 2021](#)).

Furthermore, as indicated by [Iaia et al. \(2017\)](#), websites were identified as one of the keys to successfully develop digital marketing strategies, which are also directly linked to online reputation management of family businesses in digital environments. As argued by [Keegan and Rowley \(2017\)](#), these last two strategies are essential for the digital presence of family businesses to be successful, where profitable benefits are obtained.

Finally, in relation to the application of technologies and their adoption, we identified five relevant variables. In relation to digital innovation and the use of innovative marketing strategies, in line with [Leppäaho and Ritala \(2021\)](#), we found that it allows family businesses to optimize their presence and flexibly adapt their strategies to digital ecosystems. Therefore, innovation is configured as a key factor for marketing strategies in family businesses to be successful and break with the traditional ties of offline strategies.

In addition, the importance of adopting and applying digital tools was identified with two main objectives — the first being to discover knowledge and the second to make decisions based on digital data. As indicated by [Murakami et al. \(2021\)](#), these two actions are essential for the success of advertising in the new digital channels and for businesses to be relevant and stand out from the competitors. Finally, digital business models, the main digital marketing strategies and the application of technology were found to be configured as fundamental actors for the development of digital strategies linked to the growth and optimization of family businesses ([Soluk et al., 2021a, b, c](#)).

The future of family firms and digital marketing: research propositions

Based on the results identified in the systematic literature review, as well as following [Dwivedi et al. \(2021\)](#) and [Saura \(2021\)](#), five research propositions to be considered by family businesses and researchers to further development in the short future are presented below.

As suggested by the results of our study, it is relevant to propose the analysis of the influence on sales of digital business models whose strategy is based on the use of mobile marketing. In addition, considering that mobile marketing is linked to eCommerce platforms and digital marketing strategies based on CPC, CPM or CPA, a link must be established in terms of profitability, efficiency and optimization of results as compared to the performance of more traditional models. In this way, family businesses can better understand the main benefits that this type of strategy provides to business models. Based on these findings, the following research proposition can be formulated:

Research Proposition 1. New models to measure the effectiveness and profitability of adopting mobile marketing and ecommerce strategies in digital family firms should be developed, tested and measured.

As concerns search marketing techniques, such techniques have gained presence in recent years in business ecosystems around the world. Accordingly, digital and family business models should attend to the use of these techniques since their relevance in digital strategies is becoming more and more pronounced. Based on evaluations similar to those made by [Berman and Katona \(2013\)](#) who indicated that, for digital-based business models to be successful, search marketing strategies must be combined with other digital marketing strategies, the following research proposition can be proposed:

Research Proposition 2. Well-defined guidelines and actions to optimize search marketing techniques in family firms must be developed and linked to the success of the online reputation of family businesses in digital environments.

In addition, many digital business models focus on the development of advertising strategies on social networks (social ads). Therefore, it is important for family businesses to explore and understand whether advertising on social networks is effective in both B2C and B2B models. Based on these considerations, the following research proposal can be made:

Research Proposition 3. Efficient and optimized social media advertising strategies developed and adopted by family businesses should be further explored and tested.

As demonstrated by the results of the present study, innovation and adoption of technologies together with digital marketing strategies are positioned as a new channel for family businesses to appropriately develop new digital models. Accordingly, and taking into account that the applications of technologies can improve the performance of digital business models of family businesses, the following research proposition can be formulated:

Research Proposition 4. Protocols for the development of digital and innovative business models in family businesses must be studied, proposed and tested so that family businesses can adopt new digital technologies.

Finally, the success of the development of digital business models by family businesses is directly linked to the use of technologies that promote the concepts of knowledge discovery and online decision making ([Ribeiro-Navarrete et al., 2021](#)). In this context, it is relevant for future research to develop theoretical and practical models, through the use of new AI or Big Data techniques, which family businesses can discover and create knowledge to improve their online decision making. Consequently, the following research proposal can be proposed:

Research Proposition 5. A list of techniques working with AI, such as data mining or Big Data Marketing techniques, must be applied and studied on digital family business models. In addition, it should be investigated whether these technological adoption processes improve online decision making in family businesses.

Conclusions

In this study, we conducted a systematic literature review and analyzed the results using the R programming language and the MCA approach supported by the HOMALS theoretical framework. Based on the results, we identified three categories of relevant indicators for the successful development of digital family businesses. These classification categories were

defined and explained in relation to the following areas (1) digital business models, (2) digital marketing techniques and (3) technology applications. The first category consists of four digital business models (mobile marketing, e-commerce, CPC, CPM and CPA), the second one consists of six digital marketing techniques (search marketing, social media marketing, social ads, social selling, websites, online reputation), and the third one consists of five variables (digital innovation, digital tools, innovative marketing, knowledge discovery and online decision making).

With regard to the first research question addressed in this study (RQ1: *What are the main marketing strategies used by family businesses that have adapted to the digital environment?*), we identified the main marketing strategies developed by family businesses in both digital environments and social networks. In addition, the main uses were linked to innovation and the creation of knowledge. In relation to the second research question (RQ2: *What are the business models used by digital family businesses?*), we established and analyzed the main business models developed by family businesses and linked to the adoption of technologies promoted by digital companies.

Concerning the specific objectives of our study, we identified the main digital marketing strategies and business models, as well as their adaptability and adoption in relation to innovation and knowledge creation. Likewise, these actions were linked to online decision making and the acquisition of leads from digital platforms. In this regard, five research propositions were developed for further exploration in future research.

Of note, the presence of digital family businesses in search engines, as well as in social networks, has become a fundamental indicator for appropriate development of strategies in digital environments focused on payment models for advertising such as CPC, CPM or CPA. The adoption of new technologies that use marketing as an innovation in digital ecosystems and the promotion of websites to improve online reputation are the main insights identified in our methodological process.

Theoretical implications

This article highlighted the main contributions in available literature on digital marketing strategies, business models and technology applications in digital family businesses. Since the nature of this study is linked to exploratory statistics, our results may be used in further research to build empirical models focused on the different areas of study. Similarly, this research marks future lines for the theoretical development of new content linked to digital family businesses, since the main business models and digital marketing strategies were identified. As concerns the adoption of technology, there are multiple approaches to measure the adoption of new technologies in family businesses, so this study can serve as a roadmap for future research that would use and create knowledge based on the strategies identified. Likewise, the five research proposals developed in the study enhance the current understanding of the application of digital marketing strategies and their benefits for family businesses from the construction of theory.

Practical implications

This study offers several practical implications. First, the identification of the variables presented above enable family businesses to better understand the importance of digital strategies in the 21st century. In addition, our findings can be used to identify the main strategies in digital environments developed by similar companies. These contributions will allow family businesses to develop better strategies and provide better quality services to their target audiences. Accordingly, the society will benefit from more effective marketing and communication strategies and promotions. Our results can also help family businesses to develop their presence, reputation, as well as improve results in digital environments.

Furthermore, the analyzed variables can be taken by family businesses as the beginning of the improvement and optimization of their strategies in digital environments and in social networks. In addition, the results of our literature analysis provide a summary of the main activities carried out and analyzed to date in the scientific literature in relation to digital family businesses.

Limitations

The present study has several limitations. First, we reviewed articles from a predefined set of databases, and focused exclusively on publications in English. This limitation should be addressed in further research that would use a large set of papers published in several languages. Another limitation of our study is that the process developed in R and the improvement and application of this type of programming language to research should become more effective over time. Third, a limitation of the present study in the medium and long term is that we analyzed a limited number of papers, so further research would benefit from the analysis of ever-growing amount of new content related to this topic.

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