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Review

Evolving Consumption Trends, Marketing Strategies, and Governance Settings in Ornamental Horticulture: A Grey Literature Review

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Abstract: Ornamentals are the most diversified products and fast-changing industry of horticulture. A new flower and ornamental plant market scenario is developing: remarkable opportunities are emerging, but more efforts are required by both public and private stakeholders to seize them and assure a high-value positioning. Our paper aims at filling the gap in the availability of integrated data sources and structured theoretically sound studies on new consumption trends, marketing strategies, and governance settings. Specific objectives are: identifying an innovative ornamental horticulture market data framework; evidencing evolving dynamics of competition in Europe and necessary adaptions of public and private action; defining a new action-research agenda, capable of stimulating the interest of businesses, researchers, and institutions. In terms of methodology, we carry out an innovative integrative review analysis of the wide and most reliable grey literature and statistics, using a comprehensive approach. Results show the emerging consumption dynamics and high-value consumer profiles characterizing the European market, expected to significantly expand and transform, according to the impact of globalization, climate change, urbanization, digitalization, and the affirmation of neo-luxury and sustainability-oriented consumption patterns. The evolution of marketing strategies and governance settings is also highlighted, together with the necessity of developing and integrating public and private initiatives for realizing high-value sustainable and transparent production systems and supply chains. Accordingly, relevant action-research directions are described. These findings are expected to improve the current debate on the competitiveness of the European ornamental industry and contribute to taking a step towards a synergic combination of new differential advantages and wider sustainability goals.

Keywords: market competition; consumer dynamics; market niches; high-value positioning; management approaches; collaborative governance; supply chain; quality products; origin; sustainability transformation

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1. Introduction

Ornamentals are the most diversified products and fast-changing industry of horticulture [1]. They include a very big and hugely diverse group of whole plants or parts of plants that are grown usually for decorative purposes [2]. Building on Oxford Economics (2018) [3], we define Ornamental Horticulture as the set of the different sectors engaged in the ornamental horticultural activity: from firms that grow ornamental plants and flower to manufacturers of garden equipment and supplies, to the wholesalers and retailers, as well as floral designers and landscape and arboriculture professionals.

Nowadays, the world ornamental sector is characterized by a significant expansion of both production and consumption, that underpins the growth of international trade and globalization [4–8]. Consequently, major country markets have increased their interdependency and permeability. Accordingly, both flowers' and plants' supply and demand have increased their seasonality and mutability and caused higher volatility of prices [9,10].

From a global perspective, Europe represents one of the main markets for ornamentals, and it is expected to register, over the next decade, one of the highest performances of growth of both production and consumption, in line with the development of other mature producer countries, such as China, Japan, and North America [5,6,9].

Noteworthy, current expectations of the European ornamental demand have evidenced a perspective of unprecedented increase in purchases and price premiums, considering both private and institutional market segments [8,11,12]. As a matter of fact, the affirmation of neo-luxury and sustainability-oriented consumption patterns, together with the expansion of urban upper and middle classes, has generated a new need for both consumers and citizens to green their lives [13–16]. Accordingly, individuals and institutions have shown a higher willingness to buy and pay for flowers and plants and behave as attentive and responsible consumers in choosing sustainability and transparency [11,17,18].

These trends are confirmed by the early insights on the impact of the ongoing COVID-19 pandemic [4,19,20]. Specifically, they highlight the strengthening of new consumer perception of flowers and plants as functional goods, with essential advantages for the environment and human well-being [11,21–23].

In light of the above, we consider the increase in new market opportunities for European domestic producers that show the power to drive processes of requalification and sustainability transformation of the European ornamental sector [24]. The good performance of European demand has also incentivized the growth and higher quality of imported productions, coming from exporting producer countries of Africa and South America [4,5]. This causes new relevant challenges for the competitiveness of high-cost domestic supply systems [6,10,25,26].

The seizing of new opportunities for the sustainable development of the European ornamental sector requires an increase in efforts from both private and public stakeholders. In other words, the enhancement and adaption of existing marketing strategies and governance settings appear essential to face the competition and also favor the realization of win-win approaches among different countries and stakeholders [10,12,27–32]. On this basis, the industry shows a gap in the capacity of prediction, planning, and coordination of relevant actors, thus evidencing a need for improving their knowledge and practices [25,33,34].

In this sense, market research plays a fundamental role [12,35]. Notwithstanding, in the European context, flower and ornamental plants' marketing and governance systems usually receive limited attention from the scientific literature; in addition, the chronic outdatedness and fragmentation of relevant data and information affect the availability of official statistics and institutional sources [36]. As a result, the current economic debate is weak.

Our paper aims at filling the gap in the availability of structured and theoretically sound studies and integrated data sources on new consumption trends, marketing strategies, and governance settings. In particular, the following objectives are pursued: (i) identifying an innovative ornamental horticulture market data framework; (ii) evidencing evolving dynamics of competition in Europe and necessary adaptions of public and private action; (iii) defining a new action-research agenda, capable of stimulating interest from businesses, researchers, and institutions.

As far as methodology is concerned, we carry out an integrative grey literature review. Considering the abovementioned limits of official data and scientific research, the grey literature represents an essential source of information within the sector. Innovatively, the integrative review strategy allows us to overcome the dispersion of grey literature sources and to integrate and synthesize the most reliable and representative data.

We believe our findings give an innovative contribution to the information, enhancement, and coordination of decisions and actions of policymakers, businesses, and industry organizations operating in the European ornamental sector, and sustain the realization and fair remuneration of high-value sustainable ornamental supply chains, with multiple functions for the society and ecosystems [37–39].

Specifically, we illustrate the followed review methodology in Section 2. Results are presented in Sections 3–5. Lastly, Sections 6 and 7 are dedicated to the identification of the new action-research agenda and the conclusions.

2. Methodology

The methodology of this paper is based on an integrative grey literature review [40,41]. We classify the grey literature as a non-systematic aggregate of material and research, produced by different organizations outside of the traditional academic or commercial publishing and distribution channels [42].

The panorama of the economic literature on the European ornamental horticulture industry is limited. At the same time, relevant official statistics are often poor and inconsistent. In light of this, we consider grey literature to be the main source of knowledge on the European ornamental horticulture sector structure and dynamics, although characterized by high variability and fragmentation of related institutional sources and documents, as well as dataset types.

In line with this, the adoption of a grey literature approach and integrative review strategy allowed us to select the most reliable and representative institutional sources and providers of grey literature. This led us to identify and review their most recent and comprehensive contributions valuable for the topic [40,43].

The review design does not follow any specific standard [41,44]. The sampling of sources was realized by adopting a purposeful approach, aiming at an inclusive selection of material [40,44].

As a first step, we identified a set of key terms to define the research topic (Table 1). We used the identified terms as keywords to conduct an online search of relevant grey literature. The research was realized by the means of the Google Search engine [45]. The web searching method combined with the key terms identified permits to include in the sample grey literature that is open or easy to access, thus enhancing the study replicability.

Table 1. Key terms for research topic definition and online searching.

Definers	Key Terms
Market and Industry	Floriculture Flower industry Ornamental industry Nursery industry Flower market Ornamental plants market
Product Category	Flowers and ornamental plants Ornamentals Cut flowers and pot(ted) plants Cut flowers and indoor plants
Supply Chain Structure and Characterization	Supply chain structure and dynamics Production Trade Consumption Consumption patterns Sales and spending
Geographical Area	World/Global Europe European Union (EU), i.e., EU (28)/EU (27) + United Kingdom (UK)

Source: our elaboration.

As a preliminary result, we selected 10 institutions that are among the major providers of grey literature concerning the European flower and plant market (i.e., industry organizations, trade fairs, flower auctions, commercial services, governments, and other national

and international institutions) and identified their official websites to gather relevant documentary materials and statistics (Table 2).

Table 2. Major institutional sources in the European ornamental sector.

Name of the Institution	Country	Official Websites [1]
International Association of Horticultural Producers (AIPH)	Belgium	http://aiph.org/
International Flower Trade Association (Union Fleurs)	Belgium	https://unionfleurs.org/
Messe Essen GmbH Press Media Centre for IPM Essen	Germany	https://www.ipm-essen.de/world-trade-fair/
Royal Flora Holland (RFH)	The Netherlands	https://www.royalfloraholland.com/en
Association of the German Flower Wholesale and Import Trade (BGI)	Germany	https://bgi-ev.de/en/the-association/
RaboResearch Food and AgriBusiness (Rabobank)	The Netherlands	https://research.rabobank.com/far/en/home/index.html
European Commission Directorate-General for Agriculture and Rural Development (DG AGRI) Unit G2-Wine, spirits, and horticultural products	Belgium	https://ec.europa.eu/info/food-farming-fisheries/plants-and-plant-products/live-plants-and-flowers_en
International Trade Centre (ITC)—Trade Map	n/a	https://www.trademap.org/Index.aspx
Centre for the Promotion of Imports from developing countries of the Netherlands Ministry of Foreign Affairs (CBI)	The Netherlands	https://www.cbi.eu/
Assembly of European Regions producing Fruits, Vegetables and Ornamental Plants (AREFLH)	France	https://www.areflh.org/en/

Source: our elaboration. [1] Accessed on 2 February 2022.

Among the latter, we selected a purposeful sample of 58 secondary data sources. The adopted inclusion criteria are reported in Table 3. We added literature to the sample until achieving the saturation of information [46].

Table 3. Inclusion criteria and sample description.

Inclusion Criteria	Description of the Included Grey Literature
Relevance and reliability	• Published or distributed by the most reliable and representative institutional providers of grey literature for the European ornamental industry • Reporting proprietary elaborations that integrate secondary data-official statistics or other reliable grey information—with primary data—interviews and surveys involving experts and practitioners
Document typology and accessibility	• Including different typologies of documents and datasets, i.e., project reports, periodicals, statistics, yearbooks, press texts, lectures, working documents, opinion statements • Accessible from open-or-easy-to-access online institutional sources, i.e., official websites of the selected institutions
Year of publication	• Published in the timeframe 2015 [1]–2022 (most recent disposable year)
Scope	• Not limited to a single country or product category
Language	• Using English language

Source: our elaboration. [1] We used 2015 as the base year for the gathering of grey literature. Indeed, it represents a turning point in the evolution of European ornamental industry and market dynamics [25,47].

The sampled grey literature was analyzed by the means of a comprehensive qualitative approach [40,41,44]. Accordingly, through the full-text reading of documents and the querying of datasets, we extracted the most relevant text parts and statistics. The extracted information was compared and integrated, based on criteria of logic and conceptual reasoning. The results were elaborated in a narrative synthesis form.

3. The World and European Ornamental Sector

3.1. A Description of the Global Scenario

At the global level, the ornamental sector is expanding in both production and trade, with a consequent increase in market globalization and competition [4–6,15,30,48,49].

On the side of production, flowers and ornamental plants count for a total world value of about EUR 35.5 billion, corresponding to an area of 745,000 Ha [50].

As for trade, Rabobank (2022a) [4] evidences a steady increase in global export, at a compound annual rate (CAGR) of 3.9%. Considering the categories of cut flowers, foliage, and live plants, a twenty-year positive trend in export growth can be identified, which led to an aggregate world value of around EUR 18 billion in 2020 [5,51] (Figure 1).

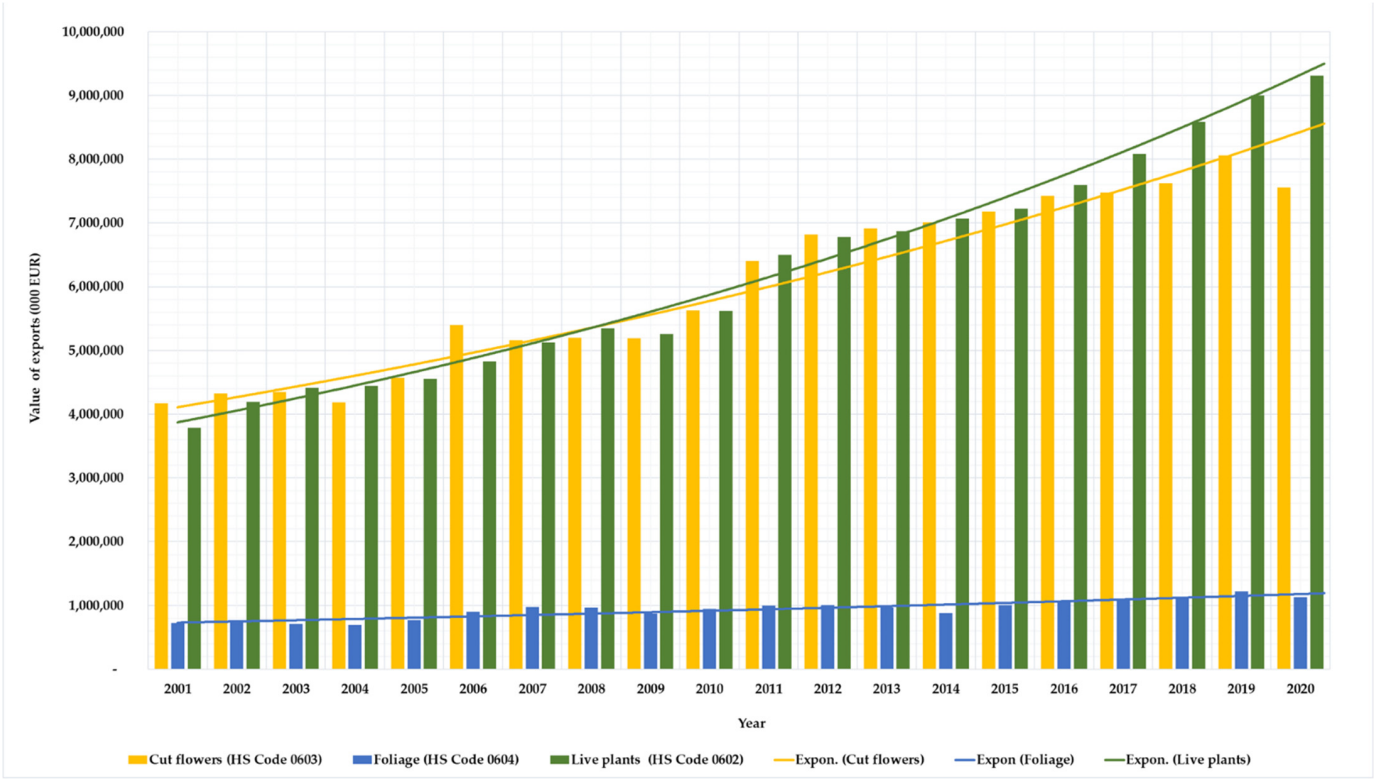

Figure 1. The international trade of flowers and ornamental plants: the trend of world exports (000 EUR, 2001–2020). Source: our elaboration on [51] (data extraction: 24th January 2022). The identified product categories follow the Harmonized System Nomenclature [52], HS Codes: 0603, 0604, 0602.

In order to identify and describe global main flower and ornamental plant markets, we consider a recent classification elaborated by AIPH (2019b) [6]. The latter characterizes four homogenous geographical groups, consisting of the major production and consumption markets at the global level.

Each group includes flowers and plants producer countries that have in common the same market determinants, and report similar conditions of both demand and supply. Building on AIPH (2019b) [6], in Table 4, we present a framework of the current World ornamental market scenario.

Table 4. The World ornamental market scenario: a classification.

Country Group	Included Country/Area [1]	Market Determinants	Characteristics of Demand and Supply	
Mature domestic producer countries	Europe Canada United States (US) China Japan	• Good economic performance of included countries • High urbanization rate • High occupation growth • High population aging rate • Interest of individuals in pursuing a higher well-being and life quality • Flowers and plants are core elements of local biocultural heritage • Long-standing tradition of ornamental production • Presence of highly functional logistics networks and hubs for the trade of large volumes of perishables • Subsistence of high flowers and plants production costs, especially due to climate, labor conditions, relevant regulations, and fiscal regimes	High-value domestic demand	• Highest share of world total consumption value • Expected rapid and significant growth of demand, in both volumes and value • High demand fragmentation • Growing attention of consumers to flowers and plants multiple functions
			Strong domestic production base	• Domestic productions cover the highest share of internal demand • China and Japan: expected growth of domestic productions volume to maintain the highest share of consumption growth • Europe and North America: expected growth of domestic productions differentiation to compete with the increase in quality and volume of flower imports from Africa and South America
Emerging domestic producer countries	India Mexico Brazil	• Increase in economic performance of included countries • Growth of per-capita income and purchasing power • High urbanization rate • Upsizing of urban upper-and-middle classes • Favorable climate and soil conditions for flowers and plants cultivation • Low cost of production inputs • Proximity to high-value demand markets pertaining to the group of mature domestic producers	High-growth domestic demand	• Domestic demand exceeds domestic supply • Expected sharp growth in demand volume and value due to the expansion of urban upper and middle classes
			Expanding domestic production base	• Expected increase in domestic production to obtain the major share of growth of internal demand • Domestic production will almost exclusively cover the growth of internal demand • The volume of exports will remain early negligible
Mature exporting producer countries	Colombia Kenya Ecuador	• Unstable economic performance of included countries • High political instability • Low urbanization rate • Low occupation rate • Optimal soil and climate conditions for flower and plant breeding and cultivation • Minimum flower and plant production costs, due to low price of energy and labor, supportive regulations and fiscal regimes • Proximity to fast-growing and high-value markets pertaining to the groups of both mature and emerging domestic producers • Localization of both European and North American production activities that bring with them advanced knowledge and skills, high investment capacity and professional services	Low-growth domestic demand	• Small size of internal demand (Europe and North America currently represent main destination markets) • Low expected growth in consumption (India, Mexico, and Brazil represent new accessible and attractive destination markets)
			Strong domestic production base	• Expected growth of domestic production following a significant expansion of exports • Dominant role of major crops production, i.e., roses, chrysanthemum and carnations • Domestic producers will maintain the role of World cost leaders
Emerging exporting producer countries	Ethiopia Vietnam		Low-growth domestic demand	• Small size of domestic demand • Low expected growth in consumption
			Expanding domestic production base	• Expected increase in domestic production volume and competitiveness to capture a growing share of demand in fast-growing and high-value markets of Europe and Asia • Expected significant increase in the share of domestic productions of world total export

Source: our elaboration on [4–7,9,11,25,53–55]. [1] Countries/areas with either production or consumption above 100 million EUR.

3.2. Relevant Insights from Europe

According to the presented market scenario, the European ornamental industry is transforming, with evolving dynamics of production and trade and the emergence of new strategic orientations [4,5,11,56,57]. Specifically, already since the biennium 2015–2016, the sector entered a period of profound change, determined by market globalization and the evolution of the socio-economic and bio-physical context [25,47,58,59].

In line with the above, in Europe, the flower and plant supply is expanding and structurally mutating, although the effects of climate change contribute to the higher instability and unforeseeability of prices and quantities [15,49]. Dynamics of change are affected by key determinant factors, such as globalization, demand growth, technological development, and favorable commercial policies.

To illustrate, from 2015, significant growth has been characterizing the European flower and plant production [60–62], covering an area of 60.000 Ha for a value of about EUR 11 billion [50]. In terms of value, the major contribution has been made by mature producer countries, i.e., The Netherlands, Italy, Germany, France, Spain, and the UK, which together cover a share of 70% (approx. EUR 7.7 billion) of the European total [50]. At the same time, new domestic producers have emerged, such as the cases of Baltic states, Malta, and Luxembourg, that significantly record percentages of growth between 14% and 15% [60].

Important current dynamics of recovery and qualification of European domestic productions are expected to maintain and even accelerate [4,30], flanked by continuing growth of the flower and plant trade [4,5,30,48,49,54,61–66].

In that regard, Europe is consolidating its position of attractive and accessible target destination for both domestic and exporting producer countries. Hence, intra and extra EU trade is expanding due to: the growth of production, the innovation of information and communication technologies (ICT), the enhancement of logistics, the actualization of free trade agreements (FTA) and preferential trade schemes (GSP), the expansion of mature demand markets, and the emergence of attractive North-Eastern and Middle Eastern destinations (e.g., Denmark, Poland, Russia, Turkey) [4,5,11,12].

The European flower and plant trade is characterized by its dominant role of high-quality low-cost imported productions, originating in the Southern countries of Africa (primarily Kenya and Ethiopia) and Latin America (primarily Colombia and Ecuador), mainly distributed by the Dutch wholesale market [4,5,48]. Nonetheless, a stable positive trend can be identified in the improvement of the European trade balance.

To that end, Figure 2 reports our elaboration of ITC trade map data [51] concerning the country group EU (27) + UK in order to evidence the performance of the trade balance in the period 2001–2020 for the categories cut flowers, foliage, and live plants. Figure 2 shows a consistent improvement of the balance during the considered period, leading to a total value of about EUR 191 million in 2020.

In light of the above, European market high internationalization increases its permeability to the political turmoil, economic turbulences, shocks, and crises occurring at the world or country level [54,66], with significant effects on its evolution dynamics and predictability.

To illustrate, among the latest developments affecting the European ornamental market, particular consideration is given to Brexit. On the one hand, the UK maintains its position as one of the major destinations in the European area. As a matter of facts, according to 2021 data, British consumers' demand is very high and Great Britain leads the rankings of Dutch exports growth [11]. On the other hand, current institutional changes (e.g., regulations, fiscal regimes) are partially reducing the attractiveness of the destination (e.g., higher transport and administrative costs) and challenging the European flower and plant exporters and producers [49,65,67,68].

Messe Essen (2022) [11] outlines the high market uncertainty deriving from the forthcoming introduction of a UK policy for the "comprehensive and full monitoring of flowers and plants from The Netherlands". This policy will come into force from the 1 July 2022 and will require flowers and ornamental plants to be physically checked at the border to be imported into the UK.

As a result, higher administrative and transport costs, as well as shipping delays, are expected to affect both the volume and value of EU exports to the UK and influence European traders' and producers' marketing strategies and governance systems. In addition, other similar effects could be generated by the decision of the UK government to look for trade agreements outside the EU, particularly with members of the British Commonwealth, such as Kenya [4].

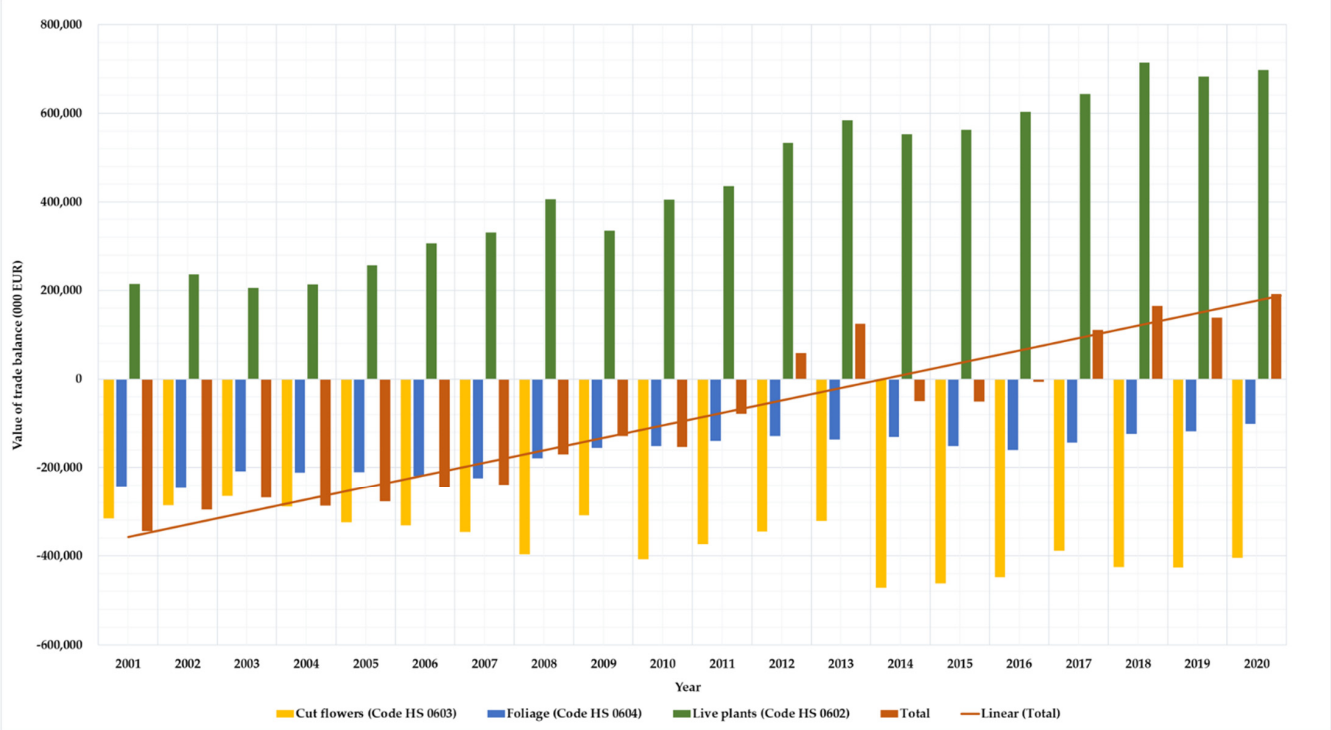

Figure 2. The European market for flowers and ornamental plants: EU (27) + UK trade balance (000 EUR, 2001–2020). Source: our elaboration on [51] (data extraction: 24th January 2022). The identified product categories follow the Harmonized System Nomenclature [52], HS Codes: 0603, 0604, 0602.

Lastly, the ongoing COVID-19 pandemic serves as a game-changer in the European scenario, with breakthrough effects on the flower and plant market. In spite of the limited information available, a few relevant contributions already allow outlining major negative outcomes and positive long-term expectations.

In particular, despite the unpredictable market shock of spring 2020, determined by the sharp brake of trade and sales during the peak season, in the long run, the pandemic is working as an accelerator in the growth of the European flower and plant demand [11,69–72]. A rapid upturn of sales started in the second part of 2020 and accelerated during 2021 affecting a dramatic positive performance of the European flower and plant trade [4,73,74].

As illustrated in detail in Sections 4 and 5, the impact of COVID-19 on ornamentals consumption and competition will drive the emergence of new spaces for growth and profitability of European traders and producers, based on major institutional changes and a with-no-precedent good mood of European consumers [11].

4. Ornamentals Consumption Trends in the European Context

4.1. The New Determinants of Consumption Trends: A Classification

Europe is part of the group of mature domestic producer countries, identified by AIPH (2019b) [6] (Section 3.1). In that regard, in the European context, ornamentals consumption is expanding and changing, due to a selection of key socio-ecological determinants.

In particular, a shift in consumer behavior drives an upturn in the number of consumers and an increase in purchased quantities that both reached record-breaking numbers at the end of 2020 and in 2021 [11]. In addition, it generates a reduction in demand elasticity that makes quality prevail to the detriment of price [68].

In light of that, Table 5 reports a classification and description of the drivers we identified as the most relevant in affecting the evolution of the European flower and plant consumption trends.

Table 5. Main determinants affecting the evolution of flower and plant consumption trends in Europe.

Determinant	Drivers for Change of Consumption Trends
Globalization	• Globalization is the most affecting driver of change in the ornamental sector. The increase in cross-border flows of products, technology, investments, people and information is leading to a strong interdependence of world economies, cultures, and populations. • In the ornamental sector, the high globalization causes a higher permeability among different geographical markets, thus generating a greater variability and mutability of consumer preferences and behavior. • The flower and plant fashion and consumption trends mutually affect each other and rapidly change. As a consequence, the demand for ornamentals appears more fragmented and unpredictable in major consumption markets as Europe. • New high-value demand markets are emerging in growing-income countries of Northern and Eastern Europe, as well as in the areas of Far East and Middle East.
Climate change	• Climate change causes significant alterations in seasonal weather and temperatures and determines a general increase in heat and drought. These changes lead to an upheaval in flower consumption trends compared to regular seasonal dynamics and flower holiday calendars. Flower demand increases its instability and shows sudden unpredictable peaks, thus causing high volatility of exchanged volumes and prices. • Both private and institutional consumers are showing growing attention to the functionality of ornamental plants in dealing with climate issues, thus increasing their demand and willingness to pay.
Urbanization and new city living	• Urbanization is a key driver of flowers' and plants' consumption evolution. AIPH (2019b,c) [6,7] estimates that about 9 billion people will live in cities by 2050. In urban areas, people worry about the adverse effects of cities on the environment and life quality. At the same time, they feel the need to restore direct contact with nature. • By 2030 upper and middle classes are expected to expand to about 2 billion people. The growth of high-income urban consumers is seen to accompany the emergence of a new essential need for greening their lives. This fact increases flower demand volumes and value and reduces its elasticity to price. • Currently, new programmes, regulations, and plans have been realized, intended to requalify urban environments and facilities, thus supporting their capacity to adapt and serve the present and future generations. In that regard, flowers and plants are furtherly considered as essential goods for improving the quality and livability of cities and their surroundings.
Evolution of the socio-demographic context	• The aging rate of populations is rising together with the rate of retirement. Old people are keen to buy and pay for keeping well their houses and gardens and care for their personal health and families. • The segment of urban young workers is expanding. People in this segment show an increase in the caring of their personal image, health, and happiness and in their per-capita spending. • Population aging together with the expansion of the class of young workers are boosting the increase in flowers' and plants' consumption. Old and retired people together with well-off attentive young workers increasingly perceive flowers and plants as lifestyle products, capable to symbolize their identity values and to enhance their well-being • A new biophilia sentiment is emerging that boosts the use of flowers and ornamental plants both as luxury gifts and specialty daily-use goods.
Neo-luxury and sustainability-oriented consumption patterns	• In Europe, a large portion of consumers—even in older age groups—seem to be aware of main global sustainability issues at the social, economic, and environmental level, and are committed to making responsible consumption choices. • With reference to the issue of sustainability, a "neo-ecology" megatrend can be identified, transforming values of individuals, policymakers, and society [11], on Zukunftsinstitut (Future Institute) (p. 18). • Neo-luxury and sustainability-oriented consumption patterns are emerging, thus affecting the evolution of demand and consumption in agri-food markets. • Consumers seem to orient their choices to: valorize hedonistic and ethical principles; value quality instead of price; favor specialty products instead of standardized goods; consider information and transparency as fundamental value attributes; pay a premium for products qualities linked to origin and sustainability; recognize the value of products functionalities for higher life quality. • High value-added goods and services (e.g., compositions, arrangements) are preferred by flower and plant consumers. At the same time, new sustainability values play a dominant role in boosting ornamentals consumption and orienting consumer preferences.
Evolution and spreading of the Internet and ICT	• ICT and Internet are increasingly diffused and accessible in Europe. In line with this, they serve as game-changers in the ornamental sector. • The use of online channels and digital devices is rapidly spreading among flowers and plants consumers of all ages, for both information gathering and product purchasing. The UK is a pathfinder in this area. • The online channel (e.g., web and social media) becomes the primary source of information on ornamental products and brands; at the same time, online sales experience a significant growth which has accelerated due to the current COVID-19 pandemic. • A fundamental role is played by the activities of influencers and bloggers that discovered and promote a new passion for flowers, plants, and gardening. • Multi-channel shopping experiences are increasingly appreciated.

Table 5. *Cont.*

Determinant	Drivers for Change of Consumption Trends
COVID-19 Pandemic	• The ongoing COVID-19 pandemic is expected to positively affect ornamentals consumption in the long run. This is a consequence of the structural changes the pandemic is causing, both socio-cultural and economic. • From a long-term perspective, the pandemic seems to accelerate and amplify the effects of the other identified determinants, thus in particular due to people's reaction to solitude, lockdown, smart working, and fear of new calamities. Consumers came to appreciate flowers and plants during the pandemic and seem to confirm their appreciation and propensity to buy and pay. • Specifically, consumers increase their desire for nature and natural resources (AIPH, Sustainability group) [75]; augment their interest in local products and short supply chains; corroborate their perception of flowers and ornamental plants as everyday products (e.g., to decorate their home offices and gardens); and improve their familiarity with the use of the online channel. • The ornamental plants' segment presents the highest perspective of growth due to the expansion of urban gardening, even including the cases of expanding public green areas and social gardening. In addition, the growing number of people working from home demands rare green plants to qualify home workplaces. At the same time, even cut flowers and foliage are beating the market, based on the recovery and speed up of events and the wedding market. • Flowers and ornamental plants are increasingly recognized by public administrations, businesses, and society as primary goods for enhancing individual well-being and collective life quality. Florists and garden centers have been included in the group of stores rapidly reopened, because of providing essential personal services. In some countries, public campaigns promoted the purchase of ornamental products as a remedy against the negative effects of lockdown solitude and isolation.

Source: our elaboration on [4–7,9–11,13,15,22,23,25,26,30,47,49,54,55,58,64,65,68–70,72,76–85].

Determinants reported in Table 5 show evident effects on the expansion and transformation of ornamentals consumption trends. In perspective, further expansion and qualification of the ornamentals consumption may result from the implementation of the EU Green Deal strategy together with the possible adaptions of the new Common Agricultural Policy (CAP) [12,86–90]. Indeed, flowers and plants seem to be gaining increasing consideration from policymakers as part of the solutions of the overall EU Green Deal objectives (e.g., climate neutrality, natural resources and biodiversity preservation, social inclusion, and well-being) [12,87,90] and the related Biodiversity 2030 strategy [91].

In line with that, expected changes in EU and national (agricultural, environmental, social) policies, flanked by possible transformations of programmes and legislations, and the actualization of pledges and other concerted initiatives concerning life greening, biodiversity, and replanting [92,93], may foster the demand for flowers and plants to mitigate climate change impact, increase social welfare, support green city planning, as well as forestry and agro-forestry activities.

Actually, how and to what extent the new policy orientation will concretely translate in a further and long-lasting expansion of the ornamentals consumption will depend on the capacity of industry and stakeholders to properly organize and effectively sensitize and dynamize both citizens and institutions [89,94].

4.2. Consumer Profiles and Dominant Consumption Trends

According to the presented evolution of the socio-ecological context, over the next decade, a positive trend in the growth of flower and ornamental plant consumption is expected to characterize the European market. This trend will concern both private and institutional segments [6,95].

In line with the opinion of the most reliable institutions in the sector, the main engine of this growth is represented by the increase in the number and consumption of high-income urban consumers, which will be profiled in the next paragraph (Section 4.2.1). Consistently, new consumption trends arise and consolidate, concerning both individuals (Section 4.2.2) and institutions (Section 4.2.3). Remarkably, businesses and public administrations are raising their expenditure for flowers and plants to improve the quality of working and living conditions [6,9,11,21,65].

4.2.1. New High-Value Consumer Profiles

In line with the good performance of consumer demand, various attempts are made by the sampled institutions to identify emerging high-value consumer profiles, evidencing dominant consumption trends, and attractive markets.

Among them, we consider the relevant contributions of AIPH (2019b) [6] and Rabobank (2017a) [9]. The latter adopts the criterion of age to identify the most relevant consumer profiles in mature domestic producer countries in Europe, Asia, and North America. Specifically, they highlight two generational segments including the majority of present and early future consumers of flowers and ornamental plants in the considered markets. The first segment is the one of "Millenials", i.e., including people born between 1980 and 2000, while the second is the one of "Baby Boomers", consisting of people born between 1945 and 1964.

In line with these results, Rabobank (2017a) [9] describes the two consumer groups of "Old age people, retired or approaching retirement" and "Young adult people, working or about to get a job" as the most representative ones to be considered in the analysis of prevailing consumption habits in the European market for flowers and plants.

Furtherly, with special consideration of the segment of cut flowers and indoor plants, RFH (2017) [96] uses a multivariable approach to group and classify consumers based on their psychographics and behavioral characteristics, also including flower and plant purchasing frequency and willingness to pay. As a result, three high-value consumer profiles are identified: the "Cultivated performers", the "Cosiness seekers", and the "Individualistic performers" (Table 6). They represent the ones covering the highest share of both the number of consumers and turnover.

Table 6. High-value consumer profiles in the European market for cut flowers and indoor plants: a multivariable approach.

Classification Criterion	Description of Consumer Profile			
	Cultivated Performers	**Cosiness Seekers**	**Individualistic Performers**	
Psychographic	• Pursue high living standards • Are involved in social and cultural life • Are interested in sports, personal care and good nutrition • Perceive creativity as a value • Love to show their knowledge and expertise • Pay for higher quality • Appreciate exclusivity, choice variety and professionalism	• Care of the family • Love travelling and hosting • Have a busy life both at home and outside • Are interested in new technologies • Play sports occasionally • Pursue personal happiness • Are fashion conscious and attentive to seasonal trends • Are careful about price	• Look at appearances • Care of their own image • Consider the importance of style and creativity • Are interested in innovation • Seek and trust experts' advice • Pay for higher quality • Appreciate products sustainability and ecological benefits	
Behavioral	• Buy flowers and plants with a high frequency • Are used to shop through the specialized channel (especially florist shops) • Show a positive attitude towards the purchase of specialty crops and high-value bouquets and arrangements • Pay a premium for products assortment, craftsmanship and experience	• Buy flowers and plants with a high frequency • Are used to shop through supermarkets and garden centers • Buy flowers and plants as a vehicle of happiness • Show a positive attitude towards the purchase of seasonal species and trendy varieties • Consider wide and deep assortment as a choice discriminant	• Buy flowers and plants with a medium frequency • Are used to shop through the specialized channel • Pay a premium for products specialty, creativity and experience	
Market share				**TOT**
% total consumers	14.6	8.5	14.7	37.7
% total turnover	38.2	15	15.5	68.7

Source: our elaboration on [96].

With reference to the profile characterization reported in Table 6, RFH (2017) [96] validates the dominant role of urban young generations and high-income workers, together with old and retired people in boosting the outstanding performance of the European flower market.

4.2.2. Dominant Trends in Flower and Plant Consumption Preferences and Behavior

The evolution of consumer preferences and behavior in major European country markets is permeated by a relevant transformation, based on a new consumer perception of flowers and plants.

In general terms, consumers, especially the younger generations, seem firstly reinforcing their recognition of the unique value of flowers and plants as precious gifts or event arrangements; secondly, developing a new cognition of ornamental products as primary goods and essentials for enhancing their quality of life [11,22,23,55,64].

In more specific terms, new dominant consumption trends characterize the change in consumer beliefs and attitudes in Europe. We categorize these trends according to the following descriptions.

I. Consumers mostly prefer quality over price Consumers ever more valuate and choose flowers and ornamental plants that are qualified as specialty goods and that offer multiple functional and emotional advantages [6,9,11,53,54]. Specifically, they recognize and pay a premium for flowers and plants capable of symbolizing their identity values and tastes, and to provide them with specific benefits, not only in terms of aesthetics but also with reference to their personal realization and well-being. Accordingly, the European market registers an increase in the number and frequency of purchases of high value-added ornamental products. In line with this, refined bouquets and flower arrangements consolidate their positioning in both the segments of luxury gifts and events [4,11,49,81]. In these segments, main differentiation attributes become the following: rareness, creativity, branding, craftsmanship, and personalization. At the same time, flower and plant customized compositions acquire a growing market share in the segment of daily-use goods [5], as either decorations for homes and gardens or horti products [15,81]. In particular, with reference to flower and plant material, consumers choose and remunerate the quality of specialty crops, i.e., using branded seeds, valorizing innovative and trendy species and varieties as well as traditional essences. In particular, good market performance is registered by seasonal off-the-cuff landraces and hardy and heat resistant crops [49,64,65,81]. Besides that, high-value aesthetics and designs reinforce their role in winning the favor of consumers. To that regard, a new ethic-oriented canon is emerging in flower beauty: consumers request and value new organic and fresh-from-the-field styles of flowers and compositions, valorizing effortlessness and naturalness [97–99].

II. Sustainability and transparency play as primary determinants of choice An increasing number of consumers, especially in the group of young educated people, make responsible consumption choices when purchasing flowers and plants. For example, in the representative German market, a share of about 20% of total consumers consider sustainability as a primary determinant of choice [21–23,49,65]. Furthermore, according to a survey carried out by Statista in June 2021, the ongoing pandemic furtherly focuses flowers and plants trade and consumption on the value of sustainability and regionality. In addition, it increases consumer willingness to pay for environmentally friendly and socially sustainable production and distribution processes [11]. The growing consumer desire for sustainability is accompanied by a higher consideration for product transparency. As a consequence, flower and plant consumers are increasingly prepared to listen, learn and appreciate the value of product information [81]. Accordingly, consumers appear to increase their desire and willingness to pay for new quality attributes intended to: disclose products origin; communicate their low environmental impact and high social fairness; promote their contribution to biodiversity preservation; highlight their functionality for a better quality of living [9,11,22,23,55]. Therefore, higher price premiums are obtained by products that strategically use specific signaling tools. For example, a growing number of consumers perceive and remunerate the added value of quality and safety standards as well as origin marks and sustainability certifications

schemes (e.g., fair trade, organic, GLOBAL GAP, etc.) [4,26,54,57,65,76,95,96,100]. Likewise, consumers even consider the communicative value of packaging. In particular, they appreciate eco-friendly and plastic-free containers, vases, cartons, and wraps, either recycled or biodegradable [11,101], and appreciate their capacity to claim the product story, identity, and unique benefits. Lastly, consumers show a new attitude for the use of web and social media as the main source of information as well as a channel of dialogue with breeders, producers, and traders [15,55,64].

III. Consumers recognize and remunerate ornamental products for their socio-ecological and therapeutic functionality Ever more consumers are interested in discovering the unique and superior benefits flowers and plants can provide for multiple uses [6,102]. Accordingly, especially in cities, both private ambiances and public spaces are changing their design, focusing on the valorization of the beneficial role of flowers and plants [11,64]. Indeed, in the consumers' intention, the latter is used with multiple functions of: softening and beautifying urban landscapes, home, and commercial spaces; recalling a contact with nature; mitigating temperatures; purifying the air; treating stress disorders, concentration problems, and mental illnesses. In that regard, particular consideration should be given to the new role of plants in the transformation of home environments, such as livings, gardens, balconies, and workspaces. Specifically, concerning the indoor segment, consumers increase their spending on green plants, e.g., split-leaf species, scented, and air-cleaning, as well as on woody plants [49]. In addition, the gardening segment is characterized by an unprecedented positive trend in consumption. As a benchmark, in 2019, it registered a turnover of about EUR 4.4 billion in the representative German market [55]. Moreover, Messe Essen (2022) [11] reports recent estimations by Statista, evidencing that in 2021 around 15 million people aged over 14 spent time working in the garden several times per month, as far as around 9 million people doing it more times per week. Moreover, consumers increasingly perceive home gardens as unique places for happiness, absolving also to the purposes of recreation and food production [11,49]. Specifically, they find satisfaction in the creation and caring of near-natural spaces, providing them with joy and peace of mind, contributing to the surviving of insects and small animals, valorizing regional and native plants, and producing healthy zero-mile food. Consequently, a good market performance is registered by space-saving ornamentals (e.g., flowering perennials, beddings, and balcony plants), trees and shrubs as well as by fruit trees, cacti, vegetable crops, and herbs [11,49,55,65,81]. For example, a new trend for "nibbles gardens" is emerging [49,65]. In that regard, consumers research and pay for the specialty of snack and dwarf vegetable crops, fruit nibbles, aromatics, and officinal plants as well as easy-care and insect-friendly ornamental plants [11,49,55,64,81]. Lastly, the expansion of the gardening segment boosts the growth of complementary markets, such as Do-It-Yourself (DIY) and hobby gardening, e.g., to buy integrated pests, near-natural fertilizers, recyclable materials, and innovative protection stuff [11,49,64]. At the same time, a fast-growing "smart gardening" segment is emerging, combining consumer interest in gardening with their desire to experiment with the high functionality of new smart devices and home automation technologies (e.g., robotic lawn mowers, digitally controlled irrigation systems, drones, etc.) [11,49,55,65].

IV. Consumers valuate ornamental products origin and show a preference for locally-grown and seasonal flowers Consumers appreciate the origin of ornamental products as a distinctive quality attribute, thus valuing their territorial linkage as a determinant of choice. In this sense, they consider not only the geographical provenance of the product but also the typicality of the used species and varieties and the adoption of traditional production and processing techniques [32]. In light of that, a large part of consumers favors the purchase of both locally-and-nationally-grown flowers and plants. In addition, the market shows a new consumer interest

in buying native species and varieties, even valorizing specialty crops and landraces that are typical of other countries [11]. In light of the above, consumers are willing to pay a premium for ornamental products qualified by specific signs or storytelling, identifying their local or national provenance.

V. Consumers attribute a growing added value to customized services In line with the abovementioned trends, flower and plant consumers are changing their perception and remuneration of services (e.g., assistance, information, advice, composition, etc.). Accordingly, the flower market shows a shift in the composition of total consumer spending, characterized by a higher share for the remuneration of services, which become the main determinant of consumer choices and willingness to pay, while flowers and plants are considered components or "ingredients" [9,26,30,54,55,57,96]. In light of that, new high-value niches are emerging in the specific market of ornamental services. Among them, we consider the growth potential of floral and garden design segments [32], together with landscaping, that registers a positive trend in both sales volume and turnover [6].

VI. Consumers use alternative shopping channels and favor multi-channel experiences Specialized trade still maintains the largest share of the market. Nonetheless, consumers are increasingly hybrid in alternatively using specialized and non-specialized shopping channels [4,5,11]. As a matter of fact, consumers increase channel switching frequency, on the basis of the purchase occasion and the wanted product category [49,54,63,66]. Accordingly, consumers are more likely to combine the use of specialized shops to purchase premium price products (e.g., rare essences, personalized compositions, or arrangements), with the use of non-specialized channels to buy standardized products (e.g., mono or mixed bouquets, ordinary houseplants, seeds, and gardening material) [9,54]. Specifically, on the one hand, florists, kiosks, and street stalls still keep the highest share of the market, especially due to the expansion of luxury gifts and event segments. On the other hand, super-/hypermarkets and garden centers, followed by discounts and DIY, are rising their share, because of the higher sales of bouquets, houseplants (outdoor), and gardening products [4,5,49,50]. To illustrate, in the representative German market, in 2021, specialized trade accounted for a 60% share of private customers' total expenditure for flowers and plants, covering 30% of the total purchased quantity, while large-scale retailers reached a share of 40% of total expenditure, and covered 70% of the total purchased quantity [11]. Besides that, consumers are increasing their use and appreciation of online shopping channels. Remarkably, in consumer perception, online trade is complementing and integrating the role of stationary trade, but not replacing it. Indeed, while the market shows a swipe up of consumer spending on the online channel, the turnover of offline trade remains largely stable [9,65]. In line with this, consumers–and particularly "Baby Boomers"-, show a preference for multi-channel shopping experiences [9,15,26,54,57,96]. In that regard, on the one hand, they choose and value the higher convenience, entertainment, and personalization of online searching and purchasing processes [9,11,65]. On the other hand, they still prefer to visit offline shops to experience and valuate products, picking up orders, enjoy moments of leisure, and relate with local growers and retailers [54,63]. The positive trend in online sales started in the UK and Dutch markets, which represent the initiators of the trend in the European context, with a good performance in both the handicrafts and gardening segments [25,49]. Nowadays, online sales are experiencing a steady growth in major European markets (The Netherlands, France, Germany, and the UK), with the best performances of indoor and outdoor potted plants [4,11]. The good mood of online purchases in the gardening and DIY segments is flanked by the increase in online sales in the markets for flower and plant gifts and floral design arrangements [63]. On these bases, during the next decade, online trade is expected to cover a share of about 30% of the entire European ornamental market [9]. Significantly, we retain this estimate should

even be revised upwards, to include the effect of acceleration generated by the COVID-19 pandemic [4,11].

4.2.3. A Focus on the Institutional Demand Segment

The institutional segment consists of both the demand of the private sector and public administration [100]. In accordance with the new determinants of consumption trends (Section 4.1), this segment is characterized by the growth of consumption and the change of institutional consumers' preferences and attitudes.

Concerning the private sector, flowers and ornamental plants are ever more integrated as a resource in the planning of business models [6,7]. Indeed, businesses and organizations demonstrate to recognize and research the high functionality of flowers and plants for the caring of the health and happiness of workers, the enhancement of their creativity and productivity, and the qualification of work and commercial spaces [11,21].

Likewise, the public administration is increasing the demand for ornamentals for their role in mitigating the adverse effects of climate change, urbanization, and modernization. Currently, new programmes, regulations, and initiatives have been realized, at both EU and national level, fostering the realization of incentive measures and territorial plans including support to the flowering and greening of urban areas, the (re-)foresting of woodlands, and the diffusion of agroforestry [49,64,81,103].

The strong increase in public spending plays as an unprecedented accelerator for the expansion of demand. In accordance with that, a good performance is registered in both sales and prices by woody plants, with specific reference to native species and landraces, temperature mitigator and air purifier trees and shrubs, and low maintenance species. Similarly, even seeds and propagation materials expand their share of the institutional market, thus considering, in particular, the case of wildflowers and bee-friendly species [15,49,64,65].

Forward looking, the ongoing political transformations, particularly the evolution of the discussion concerning the implementation of the EU Green Deal strategy, seem to open new opportunities for further growth in institutional demand [12,75,90].

Significantly, the new policy orientation is also encouraged by the effects of the current COVID-19 pandemic [104]. Actually, the latter boosted the recognition of flowers' and plants' unique social and ecological functions, thus stimulating the expansion and qualification of both market and social demand, and attracting and directing the attention and commitment of the EU and national institutions [11,15].

4.3. Consumer Spending and Consumption Value

The revised literature evidences a lack in the availability of quantitative data, referring to the value of flower and plants consumption and consumer spending. Despite that, some valuable estimations are made in relation to the trends registered in consumers' per-capita income and purchasing power, e.g., per-capita gross domestic product (GDP) or gross national income (GNI) ratios.

We consider the valuable contribution of AIPH (2020a) [50] in aggregating the most recent available data referring to both per-capita and total consumer spending on flowers and plants (and related goods), in main world consumption markets excluding China.

On the one hand, for each of the considered countries, the value of per-capita spending related to the level of GNI per capita is reported, with the highest registered performances by Switzerland (EUR 127), Denmark (EUR 114), Germany (EUR 108), and the UK (EUR 104) (Figure 3). According to the latest contribution of Rabobank (2022b) [5], Norway is also included in this group of high-value spending countries.

Messe Essen (2022) [11] highlights a perspective increase in per-capita spending, with reference to the major German market. This is attributed to the significant increase in the number of first-time consumers together with consumers' willingness to accept higher prices for plants (e.g., the average purchase amount per receipt increased by at least 10% from 2020 to 2021), and their higher propensity to pay for high-quality flowers as unique gifts.

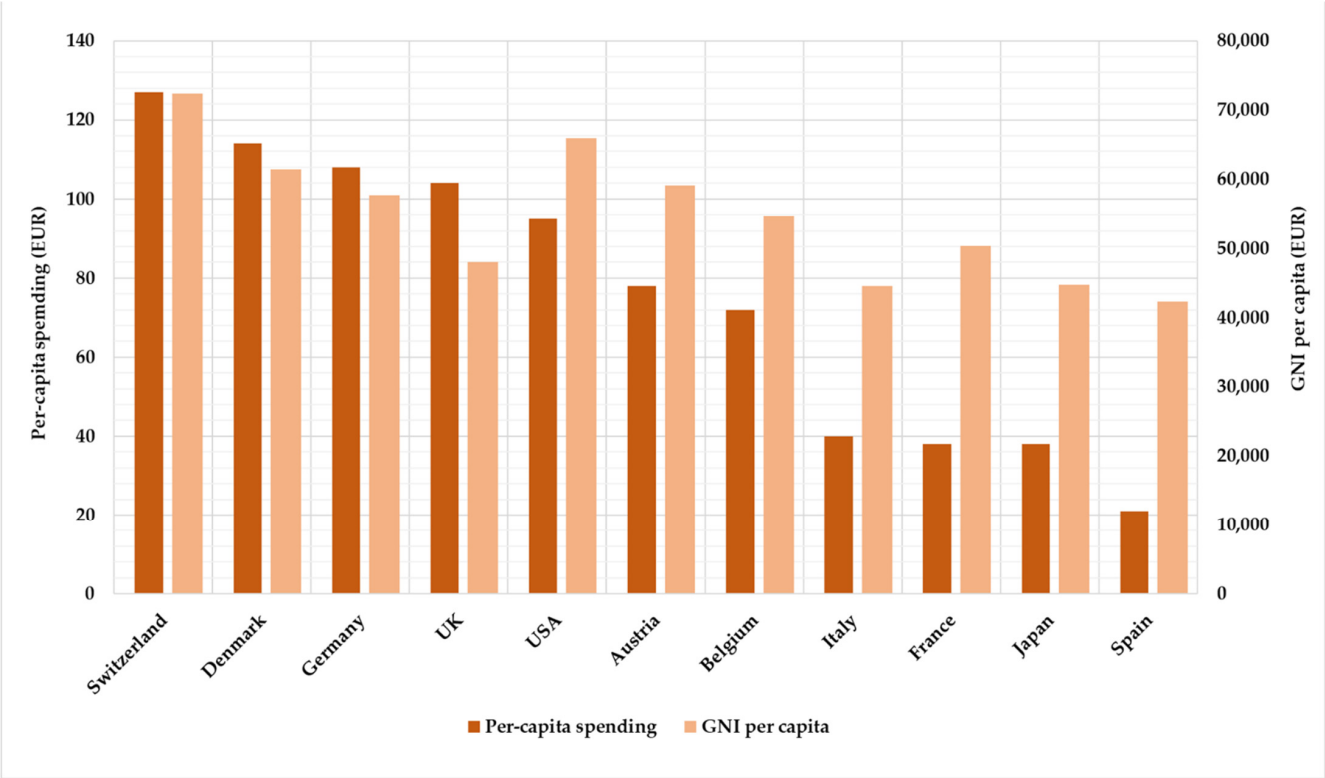

Figure 3. Consumption of flowers and plants (and related goods): per-capita spending and GNI in major world country markets (excl. China) (EUR). Source: our elaboration on [50]. The reported data do not include the share of spending concerning the market for services, e.g., floral and garden design, landscaping, green urban planning, green urban maintenance, etc. The data of per-capita spending refer to the latest available year in the timeframe 2015–2019. GNI = gross national income (at PPP = purchasing power parity) in 2016.

Besides that, regarding the estimations of total consumer spending, the highest values are registered in the US (EUR 31.1 billion), followed by Germany (EUR 8.9 billion), the UK (EUR 6.9 billion), and Japan (EUR 4.8 billion) (Figure 4).

In order to give a long-term perspective of the trend of the world and European consumption value, Rabobank (2017a) [9] provides an estimation of the global major ornamental markets, with reference to the decade 2017–2027. The estimation is referred to the aggregate flowers and pot plants.

In this regard, Rabobank [9] reports that by 2027 the value of flowers and plants consumption will grow of a percentage of about 20% in both Europe and North America, while Asia will be characterized by a percentage of growth standing between 60% and 80%. According to these estimations, the total world consumption value is expected to reach about USD 100 billion in 2027. More specifically, Europe and Asia are expected to count, respectively, for approx. USD 37 billion, while North America is expected to register a value of approx. USD 20 billion.

Lastly, in light of the ongoing COVID-19 pandemic, Rabobank [9] estimations could be partially changed to include the effects of the relevant socio-economic phenomena [11,84]. Nonetheless, according to the most recently available information, since the end of 2020, flower and plant sales, after a relevant but short-time decrease, recovered in both volume and value and soared at a rate equal or even higher than the one of the pre-pandemic period [4,11,22,23,25,73,74].

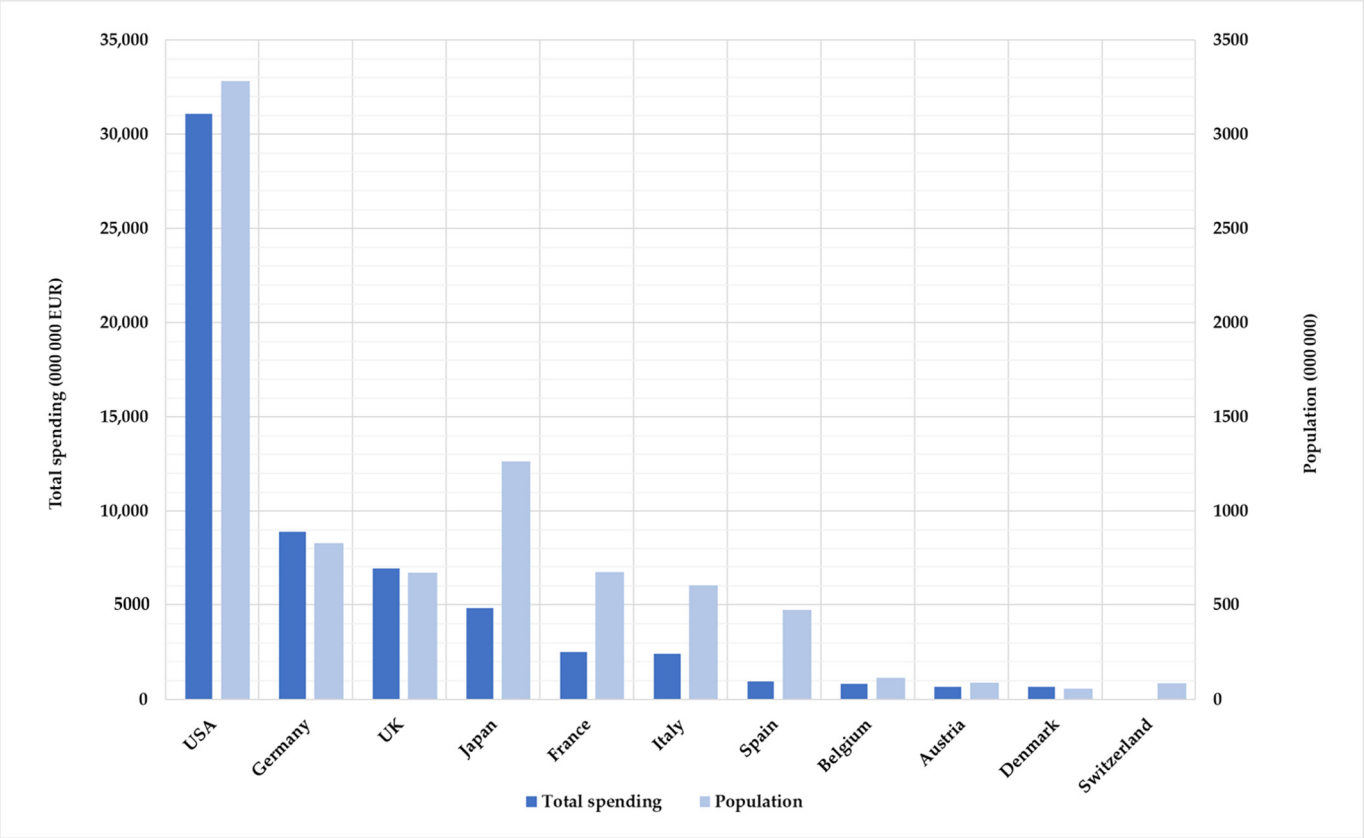

Figure 4. Consumption of flowers and plants (and related goods): total spending (EUR 000 000) over population (000 000) in major world country markets (excl. China). Source: our elaboration on [50]. [1] The data of total spending refer to the latest available year in the timeframe 2015–2019. The reported data do not include the share of spending concerning the market for services, e.g., floral and garden design, landscaping, green urban planning, green urban maintenance, etc.

5. Emerging Competitive Dynamics in the European Ornamental Sector

5.1. The European Competitive Environment and Evolving Marketing Strategies

The presented evolving dynamics determine a situation of hyper-competition in the European ornamental sector, characterized by a mutable competitive environment, dominated by rapid or even unpredictable changes [57]. As a consequence, the whole flower and plant industry is required to increase its efforts for the adaption of its marketing strategies to pursue higher competitiveness and sustainability.

Specifically, involved business operators aim at increasing their sharing of resources, reducing their costs and risks, enhancing their predictive and planning capability, and developing sustainable competitive advantages [12,55,57].

The problem of costs reduction is particularly sensitive, also considering the significant increase in the costs of production and logistics in the European context [11]. As a matter of fact, a low availability of qualified personnel and a steep increase in land prices are contributing to a higher cost of inputs limiting the upscaling potential of localized systems and supply chains. In addition, the ongoing pandemic is furtherly worsening producers' and traders' costs, due to the shortage of labor and higher prices of raw materials (e.g., energy, potting soils and peat, and construction materials). As a consequence, the unprecedented good performance of flowers and plants purchases, in both quantity and price, demonstrates to be not always capable to improve the profit of the European ornamental businesses, thus requiring a change of their marketing strategies and organization.

In order to sustain the competitiveness of high-cost domestic producers and supply systems, businesses and institutions are enhancing their efforts to pursue sustainable differential advantages. In that way, they intend to: on the one hand, address the problem

of small scale and increasing costs; on the other hand, afford the challenge deriving from imported productions, outstanding for quality standardization and convenience.

What comes of it is a shift in the competitive orientation of the European ornamental industry, passing from cost minimization to quality maximization [11,25,33,105].

In other words, the current evolution of competition in the European sector makes the adoption of differentiation strategies an increasingly valuable solution for the effective positioning of domestic productions and supply systems [12]. Hence, European operators are growingly developing differentiation strategies, combining them with the adoption of focalized approaches. Specifically, they often decide for one or a few high-potential markets to serve and specialize their activities to target the satisfaction of specific consumers' needs.

In that regard, the development of effective marketing strategies appears an essential factor to target new high-value consumer profiles and emerging market niches. Specifically, we consider the selection of marketing levers should be intended to: (i) identify and qualify flowers and plants locality and territorial linkage; (ii) enhance and promote their specific functionalities for life quality and well-being, even by the integration of smart technologies and DIY; (iii) strengthen and communicate the commitment of businesses to the protection of the environment (e.g., reduction in CO_2 emissions, circular economy, preservation of biodiversity and ecosystems; renewable energy, etc.) and the pursuit of higher social fairness (e.g., protection of intellectual property rights and varietal innovation; promotion of human and labor rights; fair distribution of value, etc.) [106].

As an essential aspect, product policies should be enhanced by considering the potential advantage of the qualification of flowers and plants as specialty goods and services.

To that end, specific quality attributes can be valorized, as, for example: the selection of native species and traditional varieties (also with reference to the valorization of underutilized or neglected landraces); the adoption of organic production methods and sustainable processing techniques; the valorization of both multifunctional species, e.g., bee-friendly wildflowers, edible flowers, dwarf vegetable, herbs, and principles of flower and plant design and arrangement [11,15,28,55,81,107].

To give evidence of the above, we consider the representative case of Germany, where since 2018, a large part of the ornamental production has been converted from major crops to seasonal and traditional species and varieties [81]. As a matter of fact, the increase in consumer recognition and remuneration of the value of flowers diversity and sustainability is driving a structural change in the orientations of both florists and floral designers, thus making them innovate their assortments and differentiate. Consequently, the latter have increased their need and demand for specialty crops and locally and sustainably produced flowers and plants, thus stimulating the expansion and diversification of the domestic production market [11,49,65].

In light of the foregoing, a growing number of quality standards are also adopted, together with the implementation of higher requirements of safety and sustainability [4,56,108]. In that regard, the creation of private and collective marks (e.g., geographical indications), the participation in voluntary certification schemes (e.g., GLOBALGAP, MPS-ABC, ISO, IFS), and the creation of eco-friendly talking packs can furtherly contribute to the enhancement of flowers and plants market value.

The described innovation in product policies is accompanied by the adoption of premium price policies and the adaptation of promotion and distribution strategies.

To illustrate, particular attention is given to the development of multi-channel distribution systems and the realization of seamless shopping experiences. Indeed, ever more traditional retailers use to improve their offer by combining the advantages of stationary trade (e.g., physical experience of goods and services, sociality, proximity, etc.) with the ones obtainable by online channels, such as higher convenience and personalization [54,80,81].

Besides that, producers' and traders' promotion strategies are increasingly valorizing the role and efficacy of new media marketing tools, sustaining direct marketing approaches and storytelling. Indeed, web and social media serve as trendsetters and main sources of consumer information in the European market. At the same time, according to some

relevant studies, referred to the comparable US context, web marketing strategies (i.e., the use of web and social media, forum, blogs, and newsletters) are demonstrating both lower costs and higher returns, in terms of product and brand image and customer loyalty, with respect to more traditional approaches [109–112].

Lastly, public and collective promotion campaigns are demonstrating their potential in enhancing consumers' awareness and feeding their desire. As a matter of fact, during the ongoing pandemic period, a growing number of initiatives have been taken, intended to stimulate flowers and plants consumption as a remedy against isolation and social distancing as well as essential goods for well-being and green living [11].

5.2. The European Competitive Environment: The Role of Governance

The described evolution of marketing strategies in the European ornamental sector goes hand in hand with the development of adequate organizational strategies and governance settings [4,9,56,57,63,65,77,81,112,113].

New threats and opportunities have emerged. European producers and supply chains are requested to improve their flexibility by the means of higher collaboration and investments. In light of that, flowers and plants growers, together with breeders and traders, are either creating or consolidating stable cooperative networks, and integrating supply chains, both at a horizontal and vertical level. To rapidly respond to the acceleration and diversification of demand, they must enhance their logistics efficiency [4,55,64].

In this regard, the case of European floral supply chains is of particular relevance. As a matter of fact, the latter are changing their structure [26,77,114,115], thus with consideration of processes of: (a) shortening, with the emerging role of new facilitators, aggregating different functions, and sustaining the connection of producers with final consumers; (b) decentralization, with reference to the emergence of diffused logistic hubs and virtualized networks at the international level [5]; and (c) specialization, with a view to the targeting of new high-value consumer profiles and emerging market niches.

Concerning these points, Rabobank (2017e) [77] describes the major changes that will affect the organization of the European floral supply chains during the next few years and classifies the chain typologies that are expected to obtain the highest share of the market. According to the study, by 2027, three different supply chains will consolidate in Europe, and cover each a 30% market share:

i. the specialist: targeting consumers who buy flowers and plants as a gift or for special occasions. It is centered on the role of specialist shops (florists, garden centers), auctions, wholesale markets, and growers, that are focused on the enhancement of specialty products and differential quality attributes;
ii. the big-box: specialized in serving large retailer outlets. This chain includes growers, indeed large growing companies and associations, service providers, that play a dominant role in dealing with sourcing, logistics, payments, and quality control, and large-scale retailers, as super/hypermarkets, DIY, and discount stores. The focus is on the realization of sustainable cost and operational advantages, valorizing responsive logistics and economies-of-scale;
iii. the e-commerce: targeting consumers buying flowers and plants online. It is characterized by short flexible connections between growers, digital marketplaces, and online retailers, committed to the pursuit of higher logistics efficiency, for assuring the satisfaction of a great number of small client-specific orders. Particular consideration should be also given to the entering into the market of new online retailers such as Amazon, or retailers with subscription models, such as Bloomon, or new logistical players, such as Post.nl.

Accordingly, with a view to improving their organization, business operators increase their investments and collaboration strategies [9,10,116].

In that way, they can easily specialize their activities, and synergically plan and act for the targeting of selected markets and the realization of high-value positionings, based on higher chains traceability, product quality and sustainability, and efficient distribution [114].

To that end, a central role is even played by digitalization and ICT [4,54,80–82,84,85]. What emerges is the relevant contribution that the use of new software and devices (e.g., systems for track-and-trace, big data management, etc.) can give to the enhancement of supply chain coordination and transparency, as well as the increase in the management of logistics.

In light of the above, the evolution of private actors' organizational strategies should also be supported by the efforts of public administrations and policymakers, at both the EU and national level [6,54,65]. Increasing public actors' attention and commitment should favor the adaption and innovation of mechanisms of support for the overall supply chains and the existing market structures, favoring the growth of private investments and the collaboration in the sector [12,89,90].

To illustrate, specific consideration should be paid to the importance of an effective adaption of the new CAP policy and related national programmes. As a matter of fact, until now, the sector benefited from little or no financial assistance within this framework, being eligible to receive sustain only through a few instruments linked to national rural development programmes (RDPs) [12,90]. AREFLH (2020) [12] affirms the opportunity to include ornamental horticulture among the mandatory sectoral interventions for EU Member States (Art. 40 of the draft regulation 2018/392 [117]), considering at least the countries that possess a sizeable production of flowers and plants.

Besides the abovementioned mechanisms, new EU and national policy measures, plans, and regulations can work, within or outside the new CAP framework, to give further support to flowers and plants producers and traders, with reference to the possible: (a) unification and standardization of certification schemes across Europe; (b) harmonization of labor, transport, environmental and plant products protection legislations among the EU Member States, as well as raising of social and environmental EU market requirements; (c) registration and marketing of flowers and plants origin labels and quality schemes; (d) definition of multi-actor action-research programs on key topics as pest management, climate change, innovative breeding, etc.; (e) promotion of education and professional training.

With a view to favoring these transformations, industry stakeholders should further increase their commitment and collaboration in order to sensitize and direct the ongoing political debate and obtain full recognition of the strategic role of the sector [12,89,90,94].

Significantly, the latter demonstrates a huge potential in contributing to the processes of social and ecological transition involving European countries, also related to the EU Green Deal implementation [86,88]. Accordingly, the emergence of high-impact concerted initiatives (e.g., the EU Action Plan Towards Zero Pollution for Air, Water and Soil, the EU Pollinators Initiatives, etc.) [93], as well as relevant pledges (e.g., 3 billion Trees Pledge) [92], give significant evidence of the growing public attention and social recognition flowers and ornamental plants are acquiring for their role in dealing with major social and environmental challenges (e.g., climate change, resources erosion, urbanization, margination, etc.). Moreover, the consequences of the current COVID-19 pandemic have been shown to further strengthen this trend [104].

Despite that, the political debate is still ongoing and new institutional arrangements have not yet been finalized. Noteworthy, programmes and legislations aiming at meeting the new EU goals of sustainability could determine the necessity of balancing the necessary expansion of ornamentals production, to respond to the growing demand, with the required reduction of environmental negative externalities (e.g., lowering greenhouse emissions) [12,32,37,38,79]. As a result, an effective innovation of governance systems, favoring public and private action coordination, will be fundamental for the qualification and sustainability transformation of European ornamental supply chains.

6. A New Action-Research Agenda for the European Ornamental Horticulture Industry Development and Sustainability

The planning and implementation of new effective marketing strategies and governance settings are based on the improvement of knowledge and capabilities within the industry and also at the institutional level.

In view of the above, we consider the advancement of scientific research as a critical condition. Accordingly, we identify a new action-research agenda. We designed the latter on the basis of the review analysis results, in order to improve the current debate and support the real needs of the industry. The agenda includes the following action-research directions.

- Product innovation and multifunctionality Action research should favor the specification and implementation of new high-value quality and related product attributes capable of obtaining a price premium for the remuneration of producers and supply chains. In particular, the creation of innovative products with specific reference to the local provenance of flower and plant material, underutilized and neglected landraces, traditional crops, the sustainability of production methods, the socio-ecological functionality of varieties, and arrangement techniques should be further investigated.
- Consumer analysis Advances in consumer analysis should sustain the action of high-cost producers and localized supply systems in identifying consumers' attitudes and evaluating their willingness to pay in both private and institutional segments. In this regard, specific attention should be paid to the description analysis of new consumer profiles.
- Quality-oriented marketing strategies Action research should sustain new valuable approaches to market segmentation and sustainable differentiation, favoring the identification and targeting of emerging niche markets, recognizing and remunerating specific quality attributes. Accordingly, future goals should evaluate the potential of creating product brands, adopting origin signs and certification schemes, enhancing products transparency, and consumer engagement. The institutional market segment should be also considered for the valorization of high-value products and services, with specific attention to floral design, landscaping, and urban greening. The pursuit of higher competitiveness of high-cost domestic producers and localized supply systems asks for in-depth research on the potential of direct or short distribution channels, also paying attention to the role of online trade and digitalization.
- Collaborative Governance settings Research advances are needed to favor the innovation and reinforcement of governance settings, both public and private. On the public side, research should support the improvement and harmonization of policies, standards, and legislations, at both the EU and national level. To that end, particular consideration should be given to foster the recognition and remuneration of the strategic role of the ornamental sector in sustaining the realization of the EU Green Deal strategy goals and of the related EU and national agricultural, social and environmental policies, programmes, and regulations. On the private side, new forms of coordination, cooperation, and collaboration, at both the horizontal and vertical level, should be studied, discussed, and validated, for the enhancement of supply chains competitiveness, guaranteeing not only a generation but also a fair distribution of benefits, towards higher social, economic, and environmental sustainability.
- Dedicated research observatories The construction of dedicated research observatories at the national or European level, committed to improving the availability of harmonized, updated, and reliable quantitative and qualitative data, is fundamental to support the new positioning of the ornamental sector and the implementation of effective marketing strategies and multi-actor governance models and the realization of participatory action-research. This could support the development of academic and institutional research, according to the hypotheses identified by this work, and, on the other hand, promote a more widespread ability to forecast and strategic planning among the various actors for the realization of new competitive objectives.

7. Conclusions

Our paper seeks to innovatively contribute to the advancement of market research in ornamental horticulture and to the improvement of public and private action and coordination for the enhancement of the industry-specific potential in economic, social, and environmental terms. As a matter of fact, whereas the relevant economic debate is limited and discontinued, we retain the development of scientific research as an essential lever, providing a reconnection of the academy and research institutes with the real necessities of the sector.

Therefore, our study contributes to filling the gap in the availability of structured and theoretically sound studies and integrated data sources on ornamentals' new consumption trends, marketing strategies, and governance settings. To that end, this paper proposes an innovative data framework, presenting major changes occurring in the world and European market, and emerging big threats and opportunities, affecting the transformation of European competitive dynamics.

As a result, this framework can be fundamental support for policymakers, business operators, and industry organizations for the planning and combination of effective informed public policies and private strategies.

Furthermore, new supporting action-research directions are identified, capable of stimulating the interest of businesses, researchers, and institutions. Noteworthy, our study outlines the necessity of advancing research to sustain an increase in the efforts and collaboration of public and private stakeholders, towards a synergic combination of new differentiation advantages and wider social and environmental goals. To this respect, a prompt adaption and effective innovation of production and marketing strategies as well as governance settings are seen as unavoidable.

Specifically, on the public side, EU and national institutions should increase their attention and commitment towards the investigation and realization of collaborative governance systems, and the identification of a common strategic orientation. In that way, an effective adaption, integration, and harmonization of EU and national policies, programmes, and legislations should be favored, and new supporting measures and regulations should be provided to the sector (e.g., financial and technical assistance, quality and safety requirements, certification and quality schemes, etc.).

In that regard, we believe particular attention should be given to the ongoing political debate, concerning the implementation of the EU Green Deal strategy, and related Biodiversity 2030 directions, fostering a new strategic role for the ornamental industry. Accordingly, favorable adaptions of EU and national agricultural, environmental, and social policies, can boost ornamentals demand and support an adequate reorganization of production and trade. To that end, policymakers, together with citizens, and consumers, should be properly informed and sensitized, to recognize ornamental industry concrete multiple values and sustainability potential.

In line with that, on the private side, businesses and supply chains need to improve their planning capacity and investment policies. They should develop more collaborative strategic and governance approaches for the realization of win–win production and marketing strategies and effective communication initiatives.

As a result, we expect the European ornamental industry can increase its competitiveness and resilience, as well as affirm its unique role in the greening of the life of present and future generations.

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