

# Integration of Digital Technologies in the Sales Processes of Floral Products

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**Abstract:** *The article examines the challenges and specifics of integrating digital technologies into the sales processes of floral products, which represents a relevant research area. The significance of this topic is driven by the growth of e-commerce, shifts in consumer preferences, and the rapid development of innovative marketing strategies. Despite the active adoption of digital tools in the floral business, there are considerable contradictions in assessing their effectiveness, their impact on the economic stability of enterprises, and their role in shaping customer demand. The aim of the study is to analyze the specifics of digitalizing floral product sales, identify key trends and barriers, and explore future prospects for this segment. The study reviews the latest approaches to logistics, order personalization, and sustainable development. It concludes that digitalization in this sector presents both new opportunities and significant challenges. Promising directions include personalized composition selection algorithms, the use of artificial intelligence for demand forecasting, and the automation of logistics processes. However, challenges remain, including cost management, product quality assurance, and the insufficient digital literacy of industry representatives. The findings presented in this article will be useful for entrepreneurs engaged in online floral sales, marketers, and researchers in e-commerce.*

**Keywords:** personalization algorithms, artificial intelligence, social media marketing, demand forecasting, floral product sales, floral business, e-commerce, digitalization.

## 1. Introduction

Digital transformation, which affects nearly all areas of modern business, is driving fundamental changes in the methods of selling goods and services.

The floral market in the United States is growing at an average annual rate of 6.5% from 2020 to 2025 [3]. Its gift segment was valued at \$12.18 billion in 2024 and is expected to reach \$16.81 billion by 2030 [9]. In the context of floral products, digitalization requires not only standard technical solutions but also an in-depth understanding of floristry, where every detail of a composition matters, and successful sales depend on the interplay of aesthetics, timing, and technological precision.

A pressing issue is the need to adapt traditional sales models of these products to the rapidly evolving information technology landscape, which requires both technical upgrades and organizational restructuring.

In the current environment—marked by intense competition and constantly shifting consumer preferences—traditional methods of selling floral products are becoming less effective. Given this, the integration of digital tools is becoming a critically important strategy for enhancing competitiveness and ensuring the sustainability of existing entrepreneurial structures.

## 2. Materials and Methods

Research on the discussed topic covers several key areas, including the use of social media and digital content in marketing, the impact of technological innovations on the floral business economy, the environmental aspects of digitalization, and the analysis of consumer demand and its transformation.

The study by Li. Ch. Chen and Li. Ch. Huang [1] examines the motivation, strategies, and barriers to implementing social media marketing in floral retail, identifying factors that facilitate and hinder the digital transformation of the segment. A. N. Putri and N. M. Aesthetika [6] analyze Instagram account content as a promotional tool for floral sales, demonstrating the significance of visual presentation and stylistic features in attracting audiences. Meanwhile, Na. Y. Kim and H. R. Kim [4] assess the accessibility of digital content in the floral industry, emphasizing the need for specialized platforms for audience engagement.

The IBISWorld report [3] analyzes key market trends, including the impact of digitalization on the dynamics of floral product sales in the United States. The publication by R. De. A. Martarello and D. Ferro [5] explores process innovation in a company specializing in floral arrangements, demonstrating how technological solutions enhance business efficiency.

The issue of sustainable development and environmental responsibility in the context of digitalization is examined in the study by C. L. Etheredge, T. M. Waliczek, and Ja. DelPrince [2], which investigates consumer perceptions of eco-friendly practices in floral retail models and their willingness to pay for such solutions.

The article by X. Ja. Wu, M. J. Knuth, Ch. R. Hall, and M. A. Palma [10] discusses the potential for increasing profitability by substituting plant varieties in floral compositions, which is particularly relevant for digital platforms offering personalized bouquets. The market forecast by Arizton [9] and the analytical material from The Enterprise World [8] highlight significant changes in the gift floristry industry amid digitalization, including the rise of online orders and shifts in consumer preferences.

Despite the breadth of covered aspects, several issues remain insufficiently explored in the literature. For instance, the

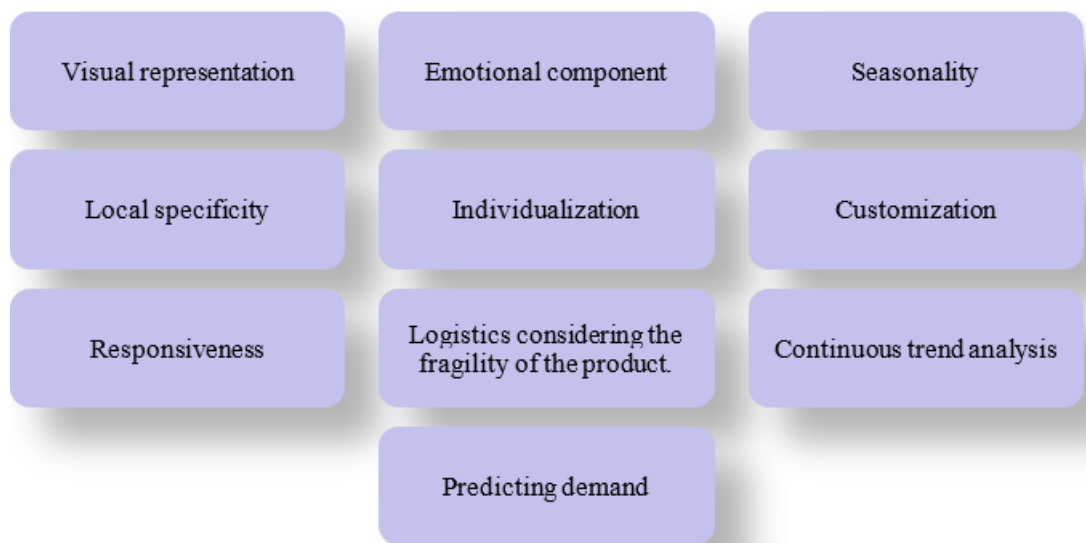
personalization algorithms for digital offerings and their influence on consumer behavior have been analyzed only superficially. Additionally, little attention has been given to logistics and quality control in the online sale of perishable products. Contradictions in the sources stem from differing assessments of the impact of digital tools on business profitability.

The methods used in this study include content analysis of publications, comparative analysis, statistical data processing, and case studies of entrepreneurial innovations.

### 3. Results and Discussion

In the context of this study, the concept of "digital transformation" encompasses a set of changes driven by the implementation of information and communication technologies in business processes. In the floral industry, this transformation involves transitioning from physical product catalogs to the use of virtual platforms, analytical systems, and sales automation tools. The diversity of approaches to defining digitalization necessitates a systematic perspective, integrating traditional processes with innovative developments.

For the sales of floral products, a deep understanding of the unique aesthetic, seasonal, and organizational aspects of this market segment is required (Fig.1).



**Figure 1:** Key aspects taken into account in the framework of digitalization of sales of floral products (compiled by the author on the basis of [1, 4, 6, 10])

Unlike standard goods, floral products rely on visual aesthetics and symbolism. Online platforms must provide detailed, high - quality presentations of bouquets and compositions, conveying not only color schemes but also structure, petal texture, and light interplay. The use of virtual and augmented reality technologies allows customers to "try on" compositions in their interior settings or see how they change under different lighting conditions, which is crucial for conveying mood and emotional appeal.

The product assortment in this sector is shaped by trends, seasonal shifts, climatic conditions, and regional characteristics. Consequently, digital systems must dynamically update information on available varieties, considering blooming periods and local market specifics, while also offering exclusive options adapted to holidays and regional traditions.

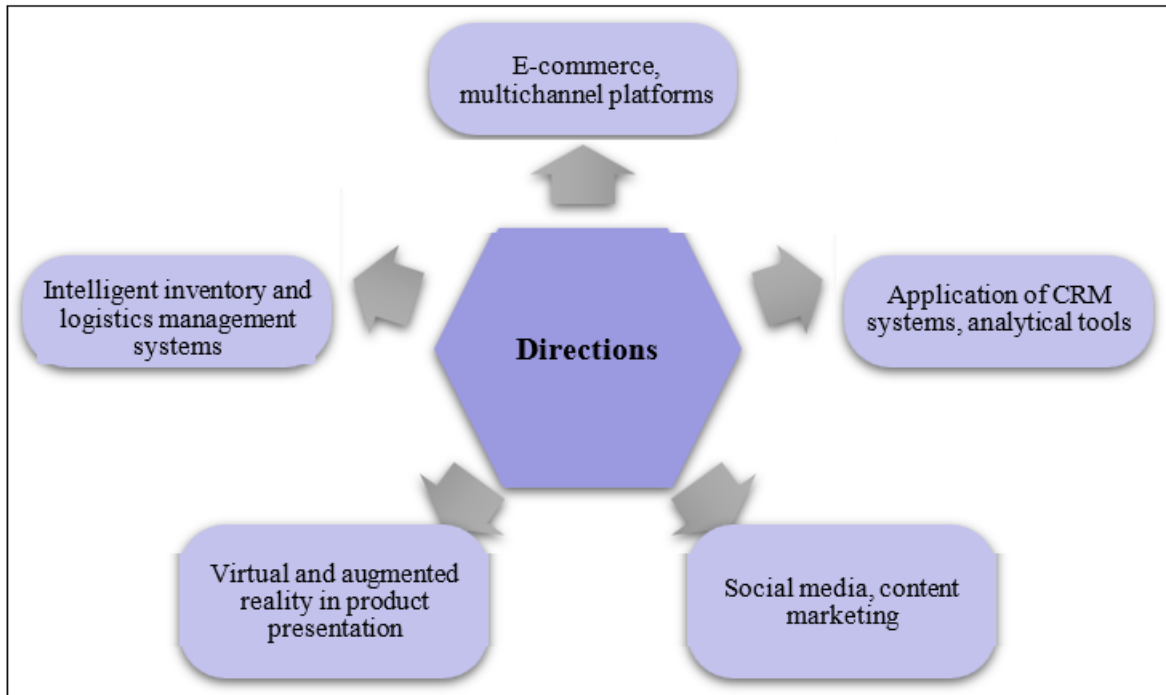
Customers often seek floral solutions that reflect personal preferences or unique events. Within digitalization, flexible tools for custom composition design are highly relevant,

allowing users to combine different types of flowers, foliage, and decorative elements. The implementation of interactive design tools, where users can visualize how modifications affect the final arrangement, is essential.

Floral products are perishable and require careful transportation with strict temperature control. Digital systems integrated with logistics monitoring tools help optimize delivery times, track product conditions in real time, and account for packaging requirements to minimize the risk of damage.

In this sector, demand fluctuates sharply, influenced by holidays, weather conditions, and cultural events. Intelligent data processing algorithms, collecting insights from social media, search queries, and geolocation services, enable the prediction of peak demand periods and the adjustment of offerings, emphasizing rare and exclusive compositions.

The next step is to examine specific directions for the use of digital technologies in floral retail (Fig.2).



**Figure 2:** Systematization of the directions of application of digital technologies in the field of sales of floral products (compiled by the author on the basis of [2, 4, 8])

The development of e-commerce is one of the key drivers of digitalization. The implementation of specialized web platforms, mobile applications, and integration with social media enables the expansion of market geography and significantly increases the speed of order processing. The use of adaptive design, automated payment systems, and optimized logistics solutions contributes to reducing operational costs and accelerating turnover. Digital storefronts provide an interactive product display, allowing consumers to explore product characteristics in detail and access additional services, such as virtual "try-on" features for floral arrangements.

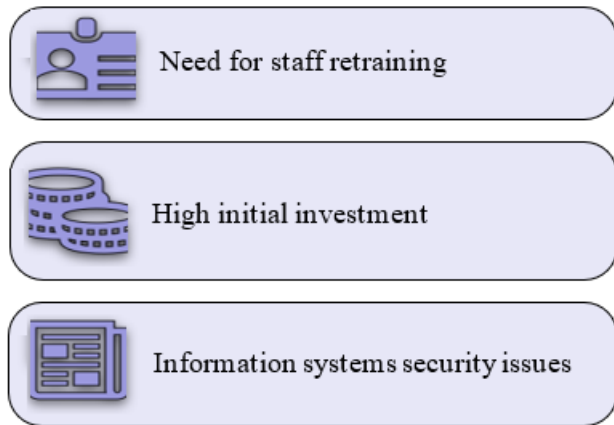
The introduction of modern CRM systems is closely linked to deep personalization of the customer experience. Analyzing purchasing behavior, segmenting audiences, and applying predictive analytics facilitate the development of targeted marketing campaigns. The use of machine learning algorithms for demand forecasting not only optimizes inventory management but also enables timely adaptation of the product assortment to current consumer needs. Automated communication services, particularly chatbots, significantly accelerate query processing and enhance the efficiency of customer interactions.

Social media has become an integral component of modern marketing strategies. The publication of dynamic visual content, the organization of interactive campaigns, and live streaming events contribute to establishing emotional connections with a brand. In the digital era, visual presentation plays a crucial role in attracting consumer attention to floral products. Additionally, the use of specialized platforms for experience sharing allows the formation of communities where consumers exchange reviews, interior design ideas, and insights into emerging floral trends.

Virtual tours and augmented reality offer additional opportunities for showcasing floral arrangements. The application of VR/AR (Virtual Reality and Augmented Reality) technology allows users to immerse themselves in the ambiance of floral compositions, visualize them in real spaces, and assess their compatibility with interiors. Such solutions, when integrated with online platforms, create a presence effect and significantly enhance brand trust. Moving away from static product displays in favor of dynamic, interactive presentations positively influences the creation of a unique brand image.

The digitalization of inventory management and stock control significantly optimizes operational costs. The implementation of systems based on Big Data and Internet of Things (IoT) algorithms enables real-time inventory tracking, precise demand forecasting, and logistics planning with high accuracy. These systems are integrated with e-commerce platforms and CRM solutions, ensuring seamless synchronization of information flows and a swift response to market fluctuations. Data security remains a top priority, becoming an essential aspect in the digital technology era.

Looking ahead, innovative tools have the potential to reshape not only operational processes but also the strategic directions of business development. The use of analytical systems, automation of communication channels, and the integration of advanced visual technologies establish new standards for consumer interaction. However, transitioning to digital platforms presents certain challenges (Fig.3).



**Figure 3:** Key challenges of integrating digital technologies into the sales processes of floral products (compiled by the author based on [2, 8])

When examining specific cases, it is relevant to mention the company Bouqs (Los Angeles), which delivers fresh flowers from environmentally friendly farms worldwide directly to customers' doorsteps across the country. The company directly connects eco - farms with consumers through its proprietary technology, utilizing data analytics to optimize supply chains, reduce waste, and ensure transparency [7].

1 - 800 - Flowers is a well - known brand that employs digital tools such as subscription memberships, DIY floral arrangement kits, and partnerships with designers to continuously update its offerings and remain competitive in the digital era [7].

Future research should focus on developing comprehensive methodologies for assessing the effectiveness of digital transformation, as well as identifying optimal strategies for integrating new technologies into traditional business models.

#### 4. Conclusions

The analysis has established that the digitalization of floral product sales is not merely a technological trend but a key factor in business survival and development in the realities of the modern market. The main achievements of the study include identifying the most significant directions of digital transformation, such as the automation of logistics processes, the personalization of offerings through machine learning algorithms, and the application of augmented and virtual reality technologies to enhance the customer experience.

In addition to these findings, the study has analyzed a range of challenges accompanying digitalization, including:

- financial costs;
- difficulties in ensuring product quality in online sales;
- insufficient digital literacy among entrepreneurs.

The practical significance of this work lies in the potential application of the outlined strategies to optimize floral product sales, improve business process efficiency, and create new competitive advantages for companies in the industry.

The study also confirms that the latest technologies can not only increase business profitability but also contribute to sustainable development by reducing costs and optimizing resource management.

Future research prospects focus on developing methodological approaches to assessing the effectiveness of digital solutions and examining the long - term impact of digital tools on consumer behavior formation. It appears that the implementation of innovative technologies in the floral product sales sector should consider the unique characteristics of this industry, necessitating further scientific exploration and a more thorough development of comprehensive models for integrating digital tools into practice.

In the near future, new horizons of digital transformation are expected to emerge, influencing the development of sustainable business models capable of responding adequately to the challenges of a dynamically changing market.

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