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MODERN CUSTOMER-ORIENTED TECHNOLOGIES: GUIDELINES FOR PROJECT-BASED ACTIVITIES IN PRINTING COMPANIES

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The article examines modern technologies for ensuring customer orientation in a printing company operating under conditions of digital transformation and increasing competition. It is determined that traditional models of production organization, focused on standardized processes, no longer meet contemporary market requirements, where clients expect personalization, interactivity, and transparency of communication. The necessity of implementing innovative solutions such as variable data digital printing, CRM systems, online cabinets, AR/VR technologies, environmental practices, and colour management systems is substantiated. It is shown that variable data digital printing provides personalization of each copy, creating a unique experience for the client and increasing communication efficiency. CRM systems enable the collection and analysis of customer data, the formation of individual offers, and the maintenance of long-term relationships. Online cabinets and web ordering contribute to the transparency of processes and convenience of interaction, while AR/VR solutions and QR integration create a new level of informativeness and interactivity of printed products. Eco-technologies, in particular the use of recycled materials and water-based inks, form a positive image of the company and correspond to contemporary social expectations regarding sustainable development. Process automation and colour management systems ensure stability of quality and speed of order fulfilment, which is critically important for the printing industry. The article emphasizes that the comprehensive implementation of the specified technologies in combination with a project-oriented approach allows printing companies to effectively adapt to market changes, satisfy individual client needs, and build long-term loyalty. The results of the study indicate that customer orientation in modern printing is not only a technological process but also a strategic direction of development that ensures sustainable competitive advantage and stable development of enterprises in the twenty-first century.

Keywords: customer orientation, printing company, project-oriented activity, variable data digital printing, CRM systems, online cabinets and web ordering, AR/VR technologies, QR integration, colour management systems, process automation, competitiveness.

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GENERAL STATEMENT OF THE PROBLEM AND HOW IT RELATES TO IMPORTANT SCIENTIFIC OR PRACTICAL ISSUES

The modern printing industry is undergoing dynamic changes caused by digital transformation, increasing competition, and shifts in consumer behaviour. Clients increasingly expect not only high-quality products but also an individualized approach, rapid order fulfilment, transparency of communication, and interactivity of printed materials. Traditional models of production organization, primarily focused on mass printing and standardized processes, no longer meet modern market requirements. The problem lies in the insufficient level of implementation of innovative technologies – variable data digital printing, CRM systems, online cabinets, AR/VR solutions, and environmental practices – capable of ensuring product personalization, interactivity, and business responsibility toward society.

Many printing companies face difficulties in using modern customer relationship management tools, which leads to the loss of clients and a decrease in their level of loyalty. Insufficient integration of digital platforms into production processes limits transparency of communication and reduces the effectiveness of interaction with clients. At the same time, the absence of a systematic approach to environmental responsibility and innovative solutions in the field of design and printing reduces the competitive advantages of enterprises.

Thus, the main problem lies in the necessity of creating a comprehensive methodological basis of customer orientation that would combine modern technologies with a project-oriented approach to organizing the activities of a printing company. Only the integration of innovative solutions with a client-centered strategy will allow enterprises to ensure stable product quality, flexibility of production, personalization of services, and the formation of long-term customer loyalty in a competitive environment.

ANALYSIS OF RECENT RESEARCH AND PUBLICATIONS

Modern scientific studies confirm that customer orientation in the printing industry is a key factor in the competitiveness and development of enterprises. The study by M. Slutskin, Zh. Deineko, O. Vovk, and V. Manakov emphasizes the effectiveness of modern printing methods in label production, demonstrating the importance of personalization and innovative technologies for attracting customers [1]. The collective monograph "Printing, Multimedia and Web Technologies" edited by O. Vovk and I. Chebotarova systematizes modern trends in the publishing and printing industry, emphasizing the importance of digital transformation and the integration of web services into production processes [2].

Ye. Hrabovskyi and M. Olenych in their textbook examine the technological processes of publishing and printing, which form the basis for implementing innovative solutions in the industry [3]. The research of Ya. Zorenko is devoted to the parameters of tonal originals in modern methods of colour reproduction, which is critically important for ensuring stable quality of printed products [4]. The monograph "Printing, Multimedia and Web Technologies. Innovation and Development" [5] reveals the prospects of integrating multimedia solutions into printing, which contributes to increasing the informativeness and interactivity of printed materials.

In the broader context of the digital economy, the work of N. Mazur [6] demonstrates the importance of digital transformation for optimizing business processes, which directly affects the customer orientation of enterprises. The studies of O. Krutova [7] and O. Yershova [8] emphasize the role of augmented reality in graphic design and innovation management, opening new opportunities for printing companies in the field of marketing communications.

An important direction is also the study of the competitiveness of publishing and printing enterprises under global challenges (O. Tomchuk, Ya. Holovchenko) [9], which proves that customer orientation and innovative technologies become decisive success factors. The works of Ye. Shtefan, T. Roik, O. Zorenko, and O. Shostachuk [10] reveal methods of digital management of printing processes that ensure automation and increased production efficiency.

International studies also confirm the relevance of the topic. The works of K. De Ruyter and co-authors [11] analyse factors of trust and commitment in client–supplier relationships in high-technology markets, which is correlated with the printing industry. The study by M. Majeed and colleagues [12] demonstrates the importance of digital transformation in shaping customer experience, while the research of J. Kerr and K. Yin [13-14] highlights the prospects of using AR/VR in design and printed materials.

Particular attention is paid to environmental aspects: Nekmahmud [15] prove that "green marketing" and environmentally friendly production technologies increase customer loyalty, while the research of S. Aydemir [16] analyse s the environmental impact of printing inks and processes. The works of A. Sharma [17] and P. Urban [18] reveal methods of colour management that ensure accuracy and stability of graphic reproduction. Finally, the review by M. Masod and S. Zakaria [19] demonstrates the prospects for the application of artificial intelligence in the printing industry, opening new horizons for customer-oriented technologies.

Thus, the analysis of recent research and publications indicates that modern technologies of customer orientation in the printing industry include print personalization, digital transformation, AR/VR integration, environmental solutions, and process automation. Their comprehensive implementation allows printing companies to improve product quality, production efficiency, and build long-term customer loyalty.

METHODOLOGICAL FRAMEWORK OF THE STUDY.

In the process of studying modern technologies for ensuring customer orientation, a complex of methods was used that made it possible to combine theoretical and practical levels of analysis. The method of system analysis was applied, which made it possible to consider customer orientation as an integrated system that includes digital printing technologies, CRM systems, AR/VR solutions, and environmental practices. The comparative method was used to compare traditional printing processes with modern innovative technologies that ensure product personalization and interactivity. The analytical method made it possible to assess the effectiveness of implementing customer-oriented technologies through indicators of print quality, order fulfilment speed, customer satisfaction, and loyalty.

In particular, an empirical method was applied, which involved the analysis of practical cases of printing companies that use variable data digital printing, online cabinets, colour management systems, and process automation. To generalize scientific positions and determine key trends in the development of customer orientation in printing, the method of content analysis was used, which made it possible to systematize modern publications and research in the field of printing technologies, marketing, and

management. The method of synthesis was also applied, which made it possible to integrate the results of previous studies with practical examples, forming a holistic conceptual basis of customer orientation.

The purpose of the study is to substantiate and systematize modern technologies for ensuring customer orientation in a printing company focused on a project-based approach to organizing its activities.

THE MAIN MATERIAL STATEMENT

Modern technologies for ensuring customer orientation are a key success factor for any company, including printing enterprises. They are aimed at a deep understanding of the needs and expectations of customers, which makes it possible to create individualized products and services, thereby increasing the level of customer satisfaction and loyalty. In the context of project-oriented activities, such technologies help to effectively plan, implement, and control projects while taking into account the specific requirements of each client [6].

Technologies for ensuring customer orientation are understood as a set of methods, tools, and processes that a company implements in order to optimize interaction with customers. This may include customer relationship management (CRM) systems, data analytics for predicting consumer behaviour, automation of communications, as well as integration with digital platforms for the convenience of ordering and quality control of products.

For a printing company, it is important to adapt these technologies in order to ensure flexibility in order fulfilment, rapid response to requests and changes, and product personalization. The use of a project approach makes it possible to structure work in such a way that each stage of production corresponds to the needs of the client, while all resources are directed toward achieving specific goals. In addition, digital tools such as online ordering platforms, virtual consultations, and feedback systems contribute to increasing the transparency of processes and improving communication between the company and the client. This is particularly important in the printing industry, where the quality and accuracy of order fulfilment are of decisive importance.

Thus, modern technologies for ensuring customer orientation in a printing company represent a complex of innovative solutions that help to maximally consider the individual needs of clients, optimize work on projects, and increase competitiveness in the market. The implementation of such technologies is not only a technological process but also a strategic step toward establishing long-term partnership relations with customers. For clarity, Table 1 is presented.

Table 1

Modern technologies for ensuring customer orientation in a printing company

Technology	Essence	Role for the client	Example of a project
Digital printing and variable data	Personalization of each copy (names, QR codes, individual promo codes)	Creates a sense of uniqueness	Printing conference invitations with the name of each participant
CRM systems	Collection and analysis of customer data	Individual solutions and long-term relationships	Automatic offers for regular customers based on order history
Online cabinets and web ordering	Platforms for selecting materials and tracking status	Transparency and convenience	Online service for printing business cards with design selection and delivery tracking
AR/VR and QR integration	Printed materials with augmented reality	Interactivity and a new experience	Product catalog with QR codes leading to 3D models of goods
Eco-technologies	Use of recycled materials and water-based inks	Positive image and compliance with expectations	Printing promotional brochures on recycled paper for "green" brands
Colour management systems	Accuracy and stability of graphic reproduction	Quality assurance	Printing branded products with accurate reproduction of corporate colours
Process automation	Intelligent planning and control systems	Speed and reliability	Automatic formation of a printing schedule for a large advertising campaign

Digital printing using variable data is an innovative technology that makes it possible to personalize each copy of printed material by adding unique elements such as names, QR codes, or individual promo codes. As a result, each recipient feels special, which significantly increases the effectiveness of communication and audience engagement. The application of such technology is

particularly relevant for printing conference invitations, where each participant may receive a document with their own name, creating a more personalized atmosphere and emphasizing the importance of every guest.

Scientific research in the field of digital printing confirms that the use of variable data significantly increases the level of interaction with the audience [1-2]. Personalization contributes to better perception of information and also increases trust in the brand or organization that holds the event. In addition, digital printing with variable data makes it possible to optimize production costs, as it does not require the creation of separate printing forms for each variant.

Digital printing using variable data is an innovative technology that allows the personalization of each copy of printed material by adding unique elements such as names, QR codes, or individual promo codes. In particular, the use of a name on an invitation activates the so-called "own-name effect," which stimulates specific areas of the cerebral cortex responsible for attention, thereby increasing the level of recipient engagement. This significantly improves communication effectiveness and contributes to the creation of a more personalized atmosphere, emphasizing the importance of each addressee.

Unlike traditional offset printing, digital printing uses the "Direct-to-Paper" technology, in which the image is formed anew for each cylinder rotation or printing head pass. This approach eliminates the need for producing photographic forms, which allows significant optimization of production costs and increases flexibility in the production of printed materials. Scientific studies indicate [20-21] that the use of variable data in digital printing ensures more effective interaction with the audience, improves the perception of information, and strengthens trust in the brand or organization that conducts the event.

Among the leading specialists in the field of digital printing with variable data, the importance of this technology is emphasized by M. Slutskin and co-authors [1], who study the effectiveness of modern printing methods in label production, focusing on increasing the effectiveness of marketing campaigns. O. Vovk and I. Chebotarova [5] note the role of digital technologies in printing as a key factor in the development of modern printing processes. Ye. Hrabovskyi and M. Olenych [3] emphasize the technological aspects of publishing and printing activities that contribute to the innovative development of the industry. The research of Ya. Zorenko [4] demonstrates that the personalization of printing with variable data increases the quality of printed products, opening new opportunities for innovation in advertising. In addition, M. Y. Masod and S. F. Zakaria [19] emphasize the impact of artificial intelligence on digital printing processes, which contributes to increasing their efficiency.

Thus, this technology becomes an integral component of modern business processes and scientific research in the printing industry, as it not only optimizes production cycles but also opens new horizons for implementing innovative solutions that improve the quality and efficiency of printed products. Owing to the possibility of personalization and the flexibility of digital printing with variable data, enterprises gain the opportunity to more accurately satisfy market needs by creating unique products that meet the requirements of the modern consumer. Moreover, the integration of artificial intelligence and advanced automation technologies makes it possible to significantly reduce production costs and time, thereby increasing the competitiveness of companies. All this makes digital printing with variable data not merely a technological tool but a key factor in the development of the printing industry under conditions of dynamic market changes and growing requirements for product quality and individualization.

Next, another very important direction. Online cabinets and web ordering have become an integral part of modern services that ensure convenience and efficiency in the interaction between users and companies. They allow clients to select materials, configure order parameters, and track its status in real time. Such an approach significantly increases the transparency of the process and reduces the risk of errors or misunderstandings.

Platforms for selecting materials provide a wide range of options that allow users to adapt the product as much as possible to their own needs. This may include the choice of paper type, colour scheme, format, and additional printing options. Owing to interactive interfaces, clients are able to visually assess the future appearance of the order, which increases the level of satisfaction.

Tracking the order status in an online cabinet is an important element of service that provides clients with up-to-date information about the stages of production and delivery. Such functionality contributes to increasing trust in the company, as users can control the process without the need for phone calls or personal visits. An online service for printing business cards with design selection and delivery tracking combines all the above-mentioned advantages, offering a comprehensive and convenient tool for business users. They can quickly create the required product, monitor its production, and receive ready-made business cards at a convenient time and place, which is especially important in the modern dynamic environment.

In particular, it should be noted that the use of online configurators minimizes the "human factor." The system automatically does not allow ordering a layout that does not meet technical parameters (bleed margins, resolution, etc.). This phenomenon is known as product visualization (Product Visualization), which is critically important for reducing the cognitive load on the client. Visualization allows the user to obtain a clear idea of the final appearance of the product, which contributes to making informed decisions and reduces the likelihood of errors in the ordering process.

Scientific positions supporting the use of the specified technology should be presented. V. Tkachenko, O. Vovk, and I. Chebotarova in the monograph "Printing, Multimedia and Web Technologies: Monograph" [21] emphasize the importance of implementing web technologies to increase the efficiency of printing production. They highlight that online cabinets and interactive platforms not only optimize the selection and ordering of materials but also ensure transparency and control at all stages of the production process, which positively affects service quality and customer satisfaction. M. Majeed, A. Chaudhary, and R. Chadha in the work "Digital Transformation in the Customer Experience" [12] demonstrate that the digital transformation of the printing industry through Web-to-Print systems significantly improves communication between customers and companies, ensuring convenience, flexibility of orders, and the possibility of monitoring their status in real time, which contributes to increasing customer loyalty and optimizing business processes. Taking into account the scientific positions of researchers, the implementation of web technologies in printing production significantly increases the efficiency and quality of services. Online cabinets and interactive platforms contribute to the optimization of orders, ensure transparency and control at all stages of the production process, which increases customer satisfaction. Digital transformation through Web-to-Print systems improves communication between customers and companies, ensures convenience, flexibility, and the possibility of monitoring orders in real time, which in turn contributes to increasing customer loyalty and optimizing business processes in the printing industry.

A very new but already popular technology should also be considered. Augmented reality (AR) and virtual reality (VR) are becoming increasingly popular technologies that change the way users interact with information. The implementation of AR/VR in printed materials opens new opportunities for increasing their informativeness and audience engagement. With the help of AR technologies, interactive elements can be placed on the pages of catalogs or advertising booklets that come to life when scanned using a special application or a smartphone.

The integration of QR codes into printed materials makes it possible to instantly redirect the user to digital resources, including 3D models of products. This creates a unique experience in which the consumer can not only view photographs of products but also examine them in three-dimensional space, rotate them, zoom in, and study details from different angles. Such an approach significantly increases the level of interaction and helps clients become better acquainted with the product. The use of AR and QR codes in product catalogs not only improves visual perception but also contributes to the formation of a deeper emotional connection between the brand and the consumer. Interactivity stimulates interest, increases the time of interaction with the material, and raises the likelihood of making a purchase. In addition, such technologies make it possible to obtain analytical data about users, which opens new opportunities for marketing. Thus, the integration of AR/VR and QR codes into printed materials is a promising direction for the development of advertising and informational products. It combines the traditional format of carriers with innovative digital technologies, creating a new level of informativeness and interaction that meets modern market and consumer requirements.

Scientists unanimously support the implementation of augmented and virtual reality technologies as a promising direction of development. In particular, V. Tkachenko and co-authors [21] emphasize that the application of AR technologies in the design of publishing and printing products significantly increases interactivity and informativeness, meeting modern market requirements. Similarly, O. Krutova [7] and O. Yershova [8] note that augmented and virtual reality effectively contribute to the formation of an emotional connection between the brand and the consumer in marketing communications. Thus, scholars unanimously support the integration of AR/VR technologies into printed media as a path toward innovative development and increased effectiveness of marketing strategies, emphasizing that this not only significantly enriches user experience and emotional engagement of consumers but also opens new opportunities for expanding the functionality and attractiveness of publishing and printing products, which overall ensures competitive advantages in the modern market and stimulates further development of the industry.

The importance of this direction is recognized worldwide. Undoubtedly, environmental technologies play an important role in modern production, especially in the field of advertising and

marketing. One of the key directions is the use of recycled materials, such as paper that has undergone reprocessing. Recycled paper significantly reduces pressure on natural resources, decreases the amount of waste, and contributes to the preservation of forests. The use of such material in printing advertising brochures helps companies demonstrate their responsibility toward the environment and attract environmentally conscious consumers. In addition, water-based inks are safer for the environment compared with traditional inks based on organic solvents. They contain fewer harmful volatile organic compounds (VOCs), which reduces the risk of air pollution and improves working conditions in production. The use of such inks in printing advertising products is an important step toward sustainable development, as it reduces the negative impact on ecosystems.

The positive image of a company that implements eco-technologies significantly increases in the perception of consumers. Compliance with the expectations of the modern market, where more and more people support environmental initiatives, allows brands to strengthen trust and customer loyalty. Advertising brochures printed on recycled paper using water-based inks become not only informational material but also a symbol of responsible attitudes toward nature.

Based on modern research, it can be stated that environmental technologies in production, particularly in the advertising and printing sphere, are becoming increasingly relevant. The implementation of environmentally friendly materials and innovative technologies contributes not only to reducing the negative impact on the environment but also to increasing the competitiveness of enterprises [1; 9]. The use of water-based inks, which have a significantly lower environmental impact compared with traditional inks, indicates the importance of such innovations in printing [16]. Moreover, modern digital and environmental technologies in the publishing and printing industry contribute to sustainable development and improve the image of companies [19].

Thus, the integration of environmental technologies into the production of advertising materials not only reduces the negative impact on the environment but also forms a positive brand image in the minds of consumers. The use of recycled materials and environmentally friendly inks is an important factor of sustainable development of the economy and society, contributing to the establishment of "green" practices and encouraging other organizations to implement environmental innovations. This ensures an effective balance between economic growth and the preservation of the natural environment for future generations.

Colour management systems (CMS) are a key tool for ensuring the accuracy and stability of graphic reproduction in various production processes, particularly in printing branded products. The main purpose of such systems is to minimize discrepancies between colours perceived at different stages of production and displayed on different devices – from monitors to printing machines. Through the use of colour profiles, equipment calibration, and standardized colour transformation algorithms, CMS ensure high accuracy in the transmission of colour information.

The accuracy of graphic reproduction is critical for brands, as corporate style is often defined by unique shades that are part of the company's visual identity. Any deviations in colour may lead to distortion in brand perception and loss of customer loyalty. Colour management systems make it possible to unify colour standards at all stages – from design creation to final printing – ensuring stability and repeatability of results. Quality assurance in printing branded products is based on strict control of colour parameters. Professional CMS allow automatic correction of colour deviations caused by technological features of equipment or changes in materials – inks, paper, and films. This ensures the preservation of the accuracy of corporate colours regardless of production conditions and the type of printing equipment used.

Scientists support the use of colour management systems (CMS) and emphasize their importance for ensuring the accuracy and stability of colour reproduction in various production processes. M. Slutskin and co-authors [1] in their publication analyse the effectiveness of modern printing methods in label production, emphasizing the role of CMS in minimizing colour deviations. In the collective monograph edited by O. Vovk and others [2; 5], attention is focused on the standardization and repeatability of colour solutions due to the implementation of colour management systems in printing and multimedia technologies. Ye. Hrabovskyi and M. Olenych [3] support the use of modern colour transformation algorithms, emphasizing the importance of precise colour management for cross-media reproduction. Ya. Zorenko [4] considers the automatic correction of colour deviations in publishing processes as one of the key advantages of CMS. The research of P. Urban and R. Grigat [18] confirms the effectiveness of colour management technologies in ensuring high accuracy of colour reproduction in intermedia reproduction, which is particularly important under complex production conditions and when working with various materials. Thus, all the mentioned scholars unanimously support and recommend the use of colour management systems as a necessary tool for achieving high quality and stability of colour products.

Thus, the implementation of colour management systems is a necessary condition for printing high-quality branded products. They guarantee that colours will be reproduced with maximum accuracy and stability, which in turn increases consumer trust in the brand and positively influences the company's image. Under modern competitive conditions, colour accuracy becomes not merely a technical task but a strategic factor of success.

Another modern direction should also be considered. Process automation in the field of planning and control of production tasks plays a key role in increasing the efficiency and productivity of enterprises, particularly in the advertising industry. Intelligent planning systems make it possible to optimize the distribution of resources and time intervals through algorithms that take into account numerous parameters of the production cycle. This contributes to reducing the human factor and errors that occur during the manual formation of schedules.

The use of intelligent control systems ensures continuous monitoring of the execution of production tasks, which makes it possible to promptly respond to deviations from the plan and adjust processes in real time. As a result, the reliability of order fulfilment increases and the risk of delays decreases, which is critically important when implementing large-scale advertising campaigns with strict deadlines. The speed of forming the printing schedule for a large advertising campaign significantly increases due to the automatic processing of input data and the use of advanced optimization methods. An intelligent system is capable of considering the priority of tasks, technical characteristics of equipment, availability of materials, as well as the specifics of advertising products, which allows the creation of the most efficient and balanced schedule.

In particular, modern research indicates the importance of implementing intelligent and digital technologies in printing production to increase its efficiency and accuracy. In particular, M. Slutskin and co-authors point to the effectiveness of modern printing methods in label production, which directly affects product quality and process optimization [1]. The collective monograph edited by O. Vovk, B. Chebotarova, and Zh. Deineko emphasizes trends in printing and multimedia technologies, particularly the use of automated systems and web technologies for comprehensive production management [2]. Ye. Hrabovskyi and M. Olenych examine technological processes in printing, emphasizing the role of digital methods in improving the accuracy of colour reproduction and quality control [3]. The research of Ye. Shtefan and other co-authors is devoted to methods of digital management of printing processes that ensure operational planning and monitoring of production tasks [10]. At the same time, M. Y. Masod and S. F. Zakaria present a systematic review of the application of artificial intelligence in printing, noting its advantages in forecasting and optimizing production flows [19]. The digital transformation of production processes, as noted in the collective monograph by N. Mazur and colleagues, contributes to increasing the competitiveness of enterprises due to faster decision-making and more reliable fulfilment of orders in dynamic market conditions [6]. Thus, the integration of modern automated, digital, and artificial intelligence solutions into printing production is key to ensuring high quality, efficiency, and timely fulfilment of orders, which is particularly relevant for the advertising industry with its strict deadlines.

Thus, the automatic formation of a printing schedule based on intelligent planning and control systems ensures high speed, accuracy, and reliability of production processes. This contributes to a significant increase in the competitiveness of enterprises operating in the field of advertising production and makes it possible to timely fulfill complex orders taking into account dynamic market changes.

CONCLUSIONS

Modern customer-oriented technologies in the printing industry serve as a key factor in forming competitive advantages and long-term relationships with customers. The use of digital printing with variable data ensures a high level of product personalization, which increases the effectiveness of communication and customer engagement. CRM systems make it possible to systematize customer data, predict their needs, and form individual offers, contributing to the development of long-term partnership relations. Online cabinets and web ordering ensure transparency of processes and convenience of interaction, which increases the level of trust and customer satisfaction. The integration of AR/VR and QR technologies creates a new level of informativeness and interactivity of printed products, forming an emotional connection between the brand and the consumer. Eco-technologies, particularly the use of recycled materials and water-based inks, contribute to the formation of a positive company image and correspond to modern social expectations regarding sustainable development. Process automation and colour management systems ensure stability of quality and speed of order fulfilment, which is critically important for the printing industry. Taken together, these technologies form a comprehensive methodological basis of customer orientation that allows printing companies to effectively adapt to market

changes, satisfy individual customer needs, and ensure sustainable development in a competitive environment.

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СУЧАСНІ ТЕХНОЛОГІЇ ЗАБЕЗПЕЧЕННЯ КЛІЄНТООРІЄНТОВАНОСТІ: ОРІЄНТИРИ ДЛЯ ПРОЄКТНО-ОРІЄНТОВАНОЇ ДІЯЛЬНОСТІ ПОЛІГРАФІЧНОЇ КОМПАНІЇ

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У статті розглянуто сучасні технології забезпечення клієнтоорієнтованості у поліграфічній компанії, що функціонує в умовах цифрової трансформації та зростаючої конкуренції. Визначено, що традиційні моделі організації виробництва, орієнтовані на стандартизовані процеси, вже не відповідають сучасним вимогам ринку, де клієнти очікують персоналізації, інтерактивності та прозорості комунікацій. Обґрунтовано необхідність впровадження інноваційних рішень, таких як цифровий друк зі змінними даними, CRM-системи, онлайн-кабінети, AR/VR-технології, екологічні практики та системи управління кольором. Показано, що цифровий друк зі змінними даними забезпечує персоналізацію кожного примірника, створюючи унікальний досвід для клієнта та підвищуючи ефективність комунікації. CRM-системи дозволяють збирати й аналізувати дані про клієнтів, формувати індивідуальні пропозиції та підтримувати довгострокові відносини. Онлайн-кабінети та веб-замовлення сприяють прозорості процесів і зручності взаємодії, а AR/VR-рішення та QR-інтеграція створюють новий рівень інформативності та інтерактивності друкованої продукції. Екотехнології, зокрема використання перероблених матеріалів і фарб на водній основі, формують позитивний імідж компанії та відповідають сучасним суспільним очікуванням щодо сталого розвитку. Автоматизація процесів і системи управління кольором забезпечують стабільність якості та швидкість виконання замовлень, що є критично важливим для поліграфічної галузі. У статті підкреслено, що комплексне впровадження зазначених технологій у поєднанні з проєктно-орієнтованим підходом дозволяє поліграфічним компаніям ефективно адаптуватися до ринкових змін, задовольняти індивідуальні потреби клієнтів та формувати довгострокову лояльність. Результати дослідження свідчать, що клієнтоорієнтованість у сучасній поліграфії є не лише технологічним процесом, а й стратегічним напрямом розвитку, який забезпечує стійку конкурентну перевагу та стабільний розвиток підприємств у XXI столітті.

Ключові слова: клієнтоорієнтованість, поліграфічна компанія, проєктно-орієнтована діяльність, цифровий друк зі змінними даними, CRM-системи, онлайн-кабінети та веб-замовлення, AR/VR-технології, QR-інтеграція, системи управління кольором, автоматизація процесів, конкурентоспроможність.