

Електронний журнал «Ефективна економіка» включено до переліку наукових фахових видань України з питань економіки (Категорія «Б», Наказ Міністерства освіти і науки України № 975 від 11.07.2019). Спеціальності – 051, 071, 072, 073, 075, 076, 292.
Ефективна економіка. 2024. № 1.

DOI: <http://doi.org/10.32702/2307-2105.2024.1.64>

УДК 334.72:339

D. Maksymenko,

PhD in Economics, Associate Professor, Head of the Department of Accounting and Taxation and Marketing, Mukachevo State University

ORCID ID: <https://orcid.org/0000-0003-2053-8070>

S. Khoma,

Student of higher education, specialty «Entrepreneurship and trade»,

Mukachevo State University

ORCID ID: <https://orcid.org/0009-0005-6598-1844>

H. Mykhalchynets,

PhD in Economics, Senior Lecturer of the Department of Economics and Finance, Mukachevo State University

ORCID ID: <https://orcid.org/0000-0003-1109-5896>

DIGITAL TOOLS FOR THE MANAGEMENT AND ADMINISTRATION OF RETAIL NETWORKS WITH A FOCUS ON TRADE ADAPTABILITY

Д. В. Максименко,

к. е. н., доцент, завідувач кафедри обліку і оподаткування та маркетингу,

Мукачівський державний університет

С. В. Хома,

аспірант, спеціальність «Підприємництво та торгівля»,

Мукачівський державний університет

Г. Т. Михальчинець,

к. е. н., ст. викладач кафедри економіки та фінансів,

Мукачівський державний університет

ЦИФРОВІ ІНСТРУМЕНТИ УПРАВЛІННЯ ТА АДМІНІСТРУВАННЯ ТОРГОВЕЛЬНИМИ МЕРЕЖАМИ З ФУНКЦІЄЮ ЗМІННОСТІ ТОРГІВЛІ

The research focused on specifying digital tools for the management and administration of retail networks with a focus on adaptability. The study results demonstrate that the implementation of digital tools significantly alters the management and administration systems of retail networks with a focus on the adaptability of trade. In conclusion, it has been determined that the processes of implementing digital tools into the management systems of retail networks are specific. Given the complexity of the operation and the need for maximum flexibility in the mentioned components, it is evident that not only the digital tools themselves but also their format plays a crucial role in the management system of retail network transformation. This is because the level of changes and their outcomes are determined by the overall functionality of the integrated software and hardware complex. The transformation of the retail network management system with a focus on variability can be achieved by incorporating digital tools such as smart data analytics systems, inventory management systems, Internet of Things (IoT), blockchain for the supply chain, mobile applications, and e-commerce, real-time analytics, facial recognition technologies and personalized recommendations, and electronic point of sale. The processes of implementing digital tools into the administration systems of retail networks are less specific. Conventionally, this system exists as a set of tools and technologies aimed at ensuring coordination and control over the overall aspects of the retail network's operations. As a rule, such a system always includes operational control of the activities of retail network entities; personnel management of retail network entities; financial management of the activities of the retail network; and management of the technical infrastructure operation. Considering the diverse directions of the mentioned components, digital tools alter elements of such an administration system. However, unlike the management system, these changes are determined depending on the business entity's objectives. The transformation of this system is only possible through the addition of unified digital tools for the entire network, such as electronic accounting systems, sales monitoring, and analysis systems, Internet of Things technologies, workforce scheduling and task management systems, electronic learning and training systems, and equipment monitoring and maintenance systems.

Дослідження спрямоване на конкретизацію цифрових інструментів управління та адміністрування торговельними мережами з врахуванням функції змінності. За результатами дослідження було доведено, що впровадження цифрових інструментів значно змінює системи управління та адміністрування торговельними мережами з врахуванням функції змінності в торгівлі. При цьому було зроблено висновок, що процеси впровадження цифрових інструментів у системи управління торговельними мережами є найбільш специфічними. З врахуванням комплексності дій та потреби у максимальному підвищенні гнучкості наведених компонентів стає очевидним, що, ключову роль в трансформації системи управління торговельними мережами відіграють не лише самі цифрові інструменти, але й їх формат, адже рівень змін та їх результат визначається за загальною функціональністю комплексу скомпонованих програмних та апаратних засобів. Трансформація системи управління торговельними мережами з функцією змінності можлива шляхом додавання таких цифрових інструментів, як системи розумного аналізу даних, системи управління залишками, Інтернет речей, блокчейн для ланцюга постачання, мобільні додатки та електронна комерція, аналітика в реальному часі, технології розпізнавання обличчя та персоналізовані рекомендації, електронні точки продажу. Доведено, що процеси впровадження цифрових інструментів у системи адміністрування торговельних мереж вважаються менш специфічними. З класичної точки зору, ця система існує як набір інструментів та технологій, спрямованих на координацію та контроль загальних аспектів діяльності торговельної мережі. Закономірно, така система завжди включає в себе наступні аспекти: оперативний контроль за діяльністю об'єктів торговельної мережі; управління персоналом об'єктів торговельної мережі; фінансове управління діяльністю торговельної мережі; та управління роботою технічної інфраструктури. Враховуючи різноспрямованість наведених складових, цифрові інструменти змінюють елементи системи адміністрування, але, на відміну від системи управління, ці зміни визначається системою цілей суб'єкта господарювання. Трансформація цієї системи можлива лише за умови введення

уніфікованих цифрових інструментів для всієї мережі, таких як електронна облікова система, системи моніторингу та аналізу продажів, технології Internet of Things, системи управління робочими графіками та задачами, системи електронного навчання та тренінгів, а також системи моніторингу та обслуговування обладнання.

Keywords: *economic operations; business models; flexible trade; retail networks; assortment adjustments.*

Ключові слова: *господарські операції; моделі підприємництва; гнучка торгівля; торговельні мережі; коригування товарного асортименту.*

Target setting. Management and administration of retail networks are two crucial aspects in the retail industry, which are not only complementary systems designed to ensure the efficiency and success of the business but are also tightly integrated with digital tools (interpreted by us as technological solutions and programs that contribute to optimizing business processes in retail). In accordance with the above, the study of such management and administration tools is extremely relevant, considering the rapid changes and specificity of the domestic market environment. Specifically, retail networks must adopt digital solutions for effective management of product assortment, supply chain components, marketing, and sales, as well as for rapid strategic planning.

Moreover, such solutions enable quick monitoring and organization of daily oversight of the activities of store networks (regardless of the applied business model), scheduling, training, and motivation of personnel, ensuring effective communication, and financial management, among other aspects.

Analysis of research and publications. Among the contemporary studies highlighting the processes of digitization in trade, we have identified works by Holoshubov N.O., Kavun O.O., Toropkov V.M., Shcherbak V.G., Kholodny G.O., Ptashchenko O.V., Mazaraki A.A., and others.

Most scholars emphasize that the management and administration of retail networks are two crucial aspects in the field of retail trade, which not only actively interact but also continually improve through the implementation of digital tools.

Additionally, Holoshubov N.O., Kavun O.O., Toropkov V.M. emphasize that this is because digital tools allow for the automation and simplification of many routine and complex tasks, integrating various mechanisms into subsystems that ensure a quick response to changes in market conditions.

Despite the demonstrated significance, there is insufficient attention specifically directed towards how the implementation of digital tools alters the management and administration systems of retail networks with a focus on trade variability.

The wording of the purposes of article (problem). In accordance with the above, the purpose of the research is to specify digital tools for the management and administration of retail networks with a focus on adaptability.

The paper main body with full reasoning of academic results. The authors note that the implementation of digital tools significantly transforms the management and administration systems of retail networks with a focus on the adaptability of trade. The processes of implementing digital tools into the management systems of retail networks are highly specific.

Conventionally, such management systems exist as a comprehensive set of tools and technologies aimed at optimizing and efficiently managing trade processes, considering changes in market conditions and consumer demand. Components of such a system include (Figure 1):

- strategic planning.
- marketing and sales.
- management of product assortment.
- supply chain management.

Considering the complexity of the operation and the need for maximum flexibility in the mentioned components, it is evident that not only the digital tools themselves but also their format plays a crucial role in transforming the management system of retail networks.

It is because the level of change and the outcome of changes are determined by the overall functionality of the composed set of software and hardware tools (since both the list of digital tools is quite diverse and their characteristics are not uniform, differing in uniformity of application).

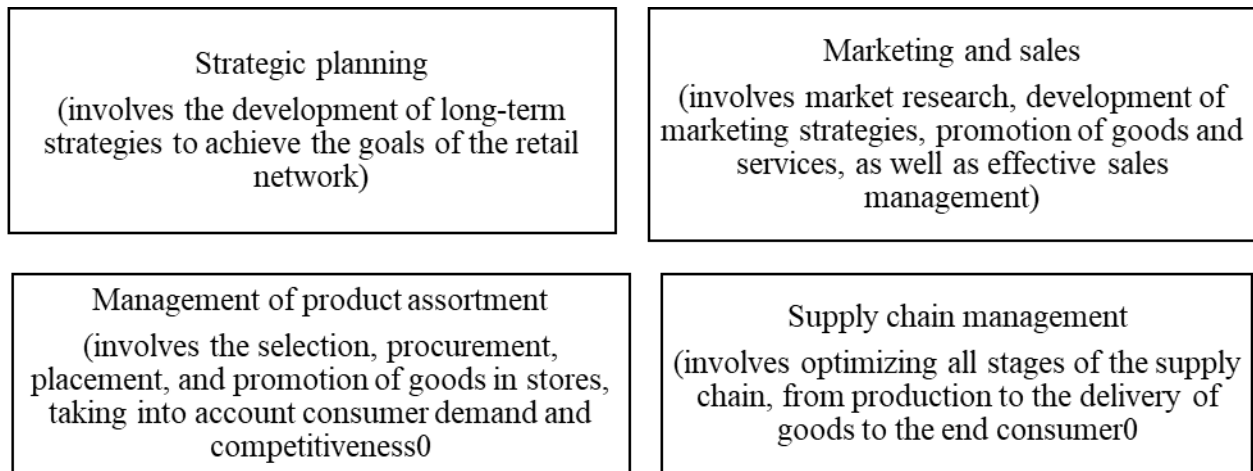


Figure 1. Components of retail network management systems focus on adaptability.

Source: formed based on [4-5]

Specifically, the mentioned transformation of the retail network management system with a focus on trade variability is achievable by incorporating the following digital tools:

- Smart Data Analytics Systems (utilizing artificial intelligence and machine learning technologies for in-depth data analysis and identification of new trends).
- Inventory Management Systems or IMS (using IMS for inventory management automation and ensuring an optimal level of goods).
- Internet of Things or IoT (employing sensors and IoT for tracking product movement, temperature control, and logistics optimization).
- Blockchain for Supply Chain (ensuring security, transparency, and supply chain management automation through blockchain technology).
- Mobile Applications and E-commerce (developing user-friendly mobile applications and online platforms to enhance customer experience and expand sales channels).

- Real-time Analytics (using real-time analytics systems for operational monitoring and making immediate decisions).
- Facial Recognition Technologies and Personalized Recommendations (applying facial recognition technologies to enhance security and personalize service).
- Electronic Point of Sale or EPOS (utilizing EPOS for automating sales tracking and ensuring data accuracy)

These tools, when applied comprehensively, transform each element of the retail network management system with adaptability in the following directions:

- Improving the efficiency of their integrated internal processes.
- Enhancing customer service levels.
- Reducing costs.

These changes are intended to assist retail networks in increasing flexibility and competitiveness in the rapidly changing market, as depicted in Figure 2.

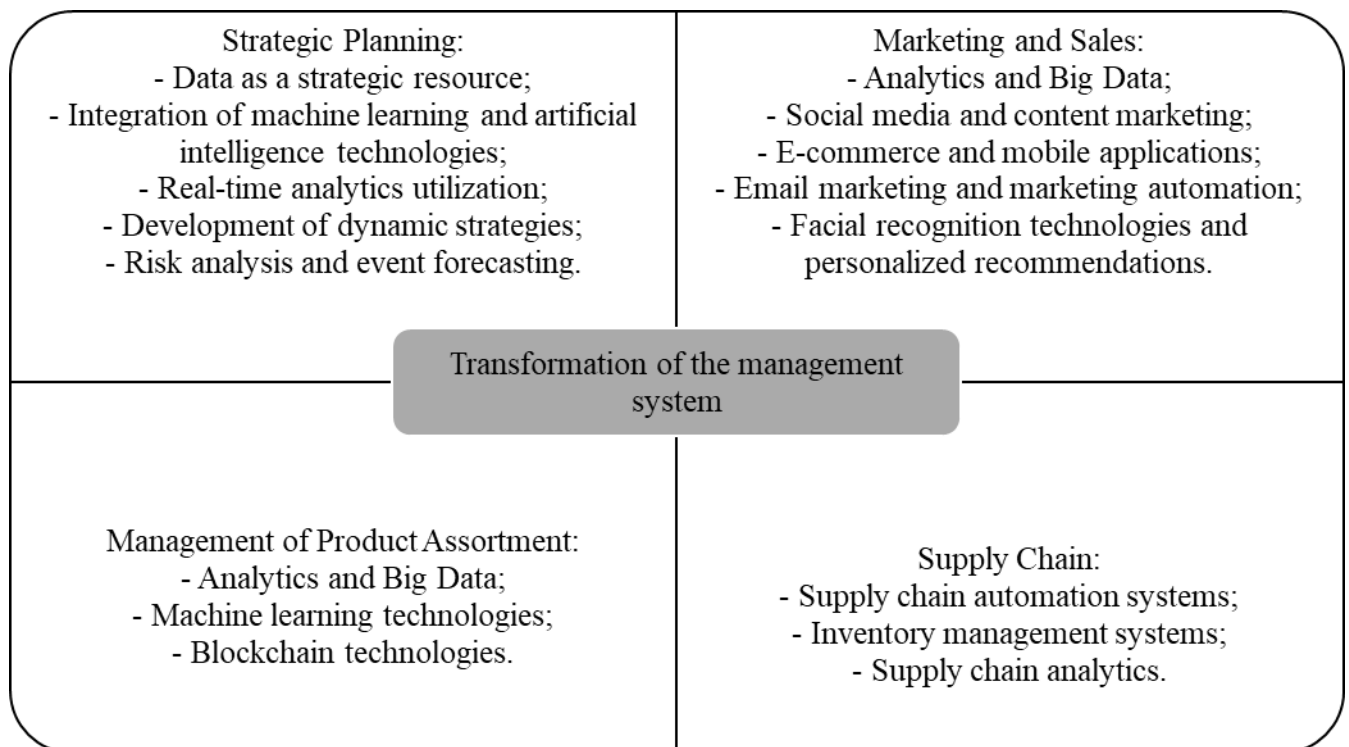


Figure 2. Transformations in the management of retail networks with a focus on trade variability using digital tools.

Source: formed based on [3; 5-6]

So, the implementation of digital tools in strategic management is changing the processes of developing long-term strategies and the process of achieving the goals of the trading network, through [3; 5]:

- Using data as a strategic resource (utilizing analytical tools and machine learning technologies for processing and analyzing large volumes of data, enabling the extraction of valuable insights and forecasting trends).
- Integration of machine learning and artificial intelligence technologies (using machine learning algorithms to forecast and optimize strategic parameters such as pricing, inventory, and marketing strategies).
- Real-time analytics utilization (applying analytical tools that operate in real-time for instant detection and response to changes in market conditions and demand).
- Creating dynamic strategies (transitioning from traditional, static strategies to dynamic models that can adapt to changes in real-time).
- Changes in risk analysis and event forecasting processes (utilizing digital tools for risk analysis, scenario development, and forecasting possible events).

These transformations enable the trading network to create a more adaptive, efficient, and competitive strategy that aligns with changes in both the internal and external business environment.

The implementation of digital tools in marketing and sales is transforming the processes of market research, development of marketing strategies, product, and service promotion, and ensuring more effective sales management, through [5-6]:

1. Utilizing analytics and Big Data (focus on collecting and analyzing large volumes of data, allowing for a detailed understanding of consumer demand, demand for specific products, and customer behaviors).
2. Using social media and content marketing (leveraging social networks for advertising, audience engagement, and fostering interaction with customers).
3. Embracing e-commerce and mobile applications (utilizing electronic point of sale (EPOS) systems to automate accounting and optimize sales processes).

4. Changes in marketing processes (using automation for planning and implementing marketing campaigns and sending personalized offers and advertising messages via email).
5. Integration with facial recognition technologies and personalized recommendations (applying facial recognition technologies to identify customers and provide personalized offers).

These aspects indicate that digital tools make marketing and sales processes more efficient, convenient, and adaptive to changes in the modern business environment.

The implementation of digital tools in merchandise management is transforming the processes of selection, procurement, placement, and promotion of products in stores, considering consumer demand and competitiveness, through [5]:

- Utilizing analytics and Big Data (using analytical tools to analyze sales data, demand, and trends to form an optimal product assortment).
- Machine learning technologies (utilizing machine learning algorithms for recommendations and personalization of the assortment according to individual customer needs).
- Blockchain technologies (applying blockchain technologies to track the path of goods from the manufacturer to the network store, improving transparency and reliability in the supply chain).

These tools make product assortment management more precise, efficient, and adaptive to changes in market conditions and customer behavior.

The implementation of digital tools in supply chain management is transforming the processes of delivering goods from the manufacturer to the network store, through [3; 5-6]:

- Integration with supply chain automation systems (these systems utilize automated processes and algorithms to optimize each stage of the supply chain, from ordering to delivery).
- Implementation of inventory management systems (utilizing digital tools for the automation and optimization of inventory management, enabling accurate determination of the quantity and location of goods).

- Using supply chain analytics (employing analytical tools to process and analyze supply chain data to identify optimization opportunities).

These digital tools contribute to the creation of an efficient, flexible, and transparent supply chain that can quickly respond to changes in production and market conditions.

In combination, these digital tools form a flexible retail network management system with adaptability to trade, capable of providing variability and coordination of trading processes in real-time mode.

The processes of implementing digital tools into retail network administration systems are less specific. Typically, this system exists as a set of tools and technologies aimed at ensuring coordination and control of the overall aspects of the retail network's activities. Predictably, such a system, regardless of the existing business model, always includes (Figure 3):

- Operational control of the activities of retail network objects.
- Personnel management of retail network objects.
- Financial management of retail network activities/
- Management of the technical infrastructure's operation.

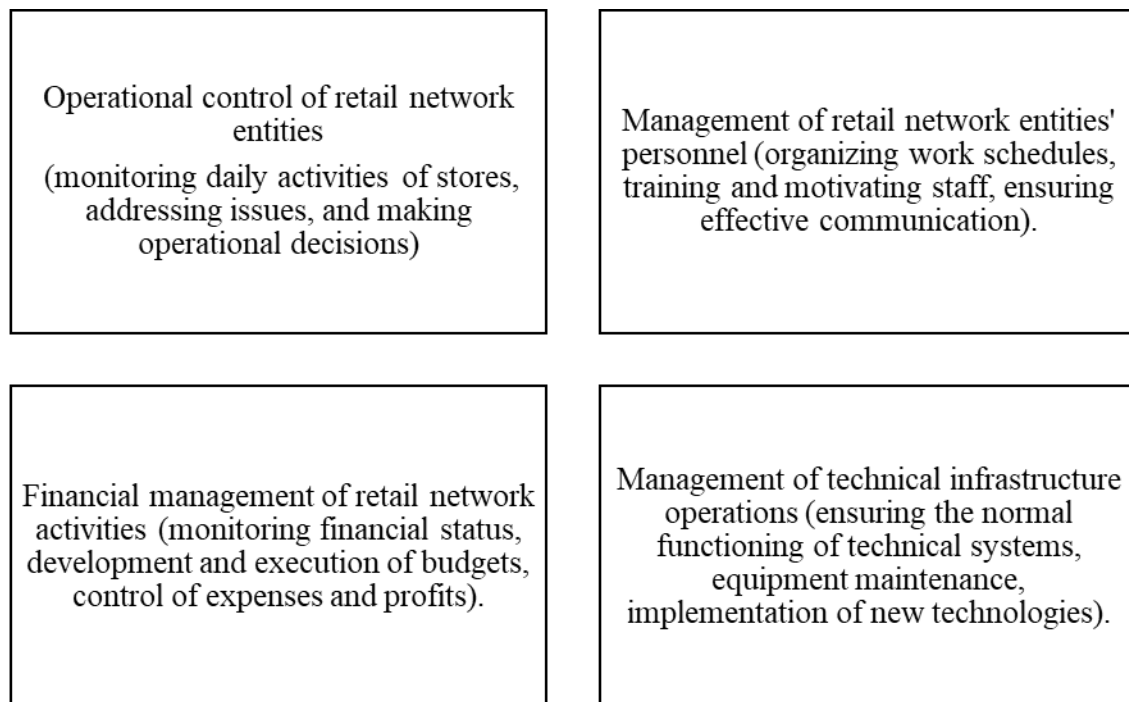


Figure 3. Components of the retail network administration system with variability function.

Source: formed based on [2; 4-5]

Considering the diversity of these components, digital tools alter elements of such an administration system.

However, unlike a management system, these changes are determined based on the business entity's objectives (the list of available digital tools is quite homogeneous and characterized by significant variability in application).

The transformation of the retail network administration system with a variability function is only possible through the addition of unified digital tools for the entire network [1; 3; 5]:

1. Electronic accounting system (integrating functional areas of business such as finance, logistics, inventory management to provide a comprehensive accounting information system).
2. Sales monitoring and analysis systems (using analytical tools to track and analyze sales in real-time).
3. Internet of Things technologies (utilizing sensors and IoT for enhancing the efficiency of managing technical infrastructure, reducing equipment downtime).
4. Work schedule and task management systems (using automation to enhance workforce efficiency and optimize working hours).
5. Electronic learning and training systems (utilizing digital platforms to enhance the professional competence of staff and reduce the time required for skill updates).
6. Equipment monitoring and maintenance systems (employing remote monitoring systems to reduce the risk of technical infrastructure failures, increase its availability, and improve productivity).

These digital tools facilitate flexible management and adaptation of the retail network to changing market conditions and consumer demand, in accordance with the specifics outlined in Figure 4.

So, the implementation of digital tools in the operational control of retail network entities changes the format of monitoring daily store activities, as well as the approach to problem-solving and making operational decisions.

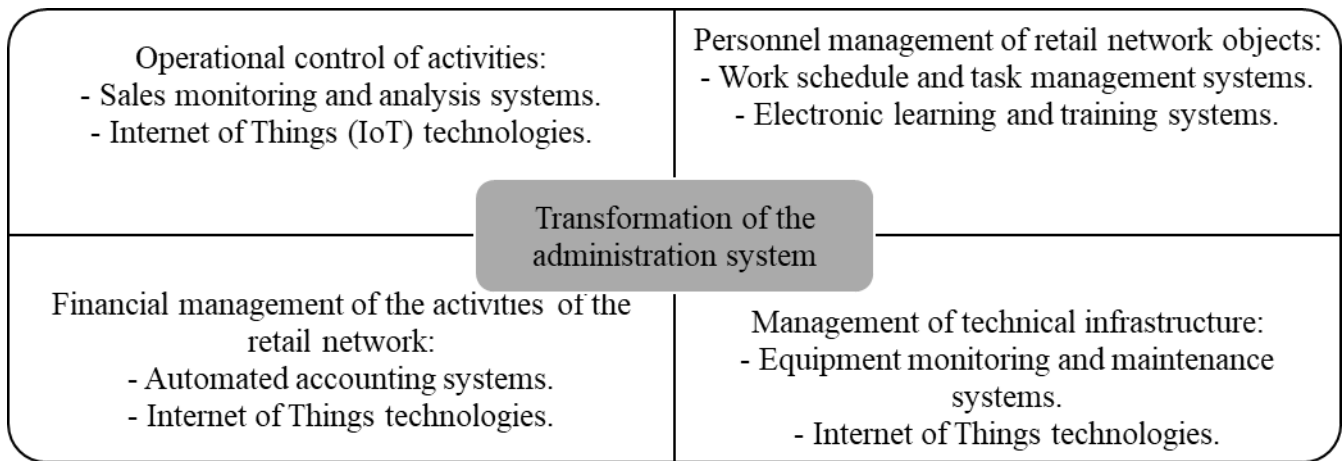


Figure 4. Transformations of the administration of retail networks with adaptability to trade using digital tools.

Source: formed based on [1; 3; 5]

This transformation is possible by adding such digital tools [1; 3; 5]:

- Implementation of a sales monitoring and analysis system (utilizing analytical tools for real-time tracking and analysis of sales, identifying popular products, and evaluating the effectiveness of promotional campaigns).

- Integration with Internet of Things (IoT) technologies (using sensors and IoT for monitoring equipment status, ensuring transparency in store operations, and optimizing the supply chain).

Implementation of digital tools in the personnel management process of a retail network transforms the approach to organizing work schedules, training, and motivation of staff, as well as the process of ensuring effective communication. Specifically, this transformation can be achieved by incorporating such digital tools:

- Implementation of a workforce scheduling and task management system (utilizing digital tools to automate the creation of work schedules, task allocation, and monitoring task execution by employees).

- Implementation of an electronic learning and training system (using digital platforms for conducting training sessions, updating the knowledge of personnel, and enhancing qualifications).

The implementation of digital tools in the financial management of retail network activities transforms the process of monitoring the financial status, development and execution of budgets, and the control of expenses and profits. This transformation is possible by adding such digital tools:

- Implementation of an automated accounting system (using digital tools for automating income and expense tracking, generating financial reports, and tax reporting).
- Integration with Internet of Things technologies (utilizing sensors and IoT for monitoring the financial status of networked entities).

This transformation is achievable by incorporating the following digital tools:

- Implementation of an equipment monitoring and maintenance system (utilizing monitoring systems to prevent potential breakdowns, identify the need for technical maintenance, and optimize equipment performance).
- Integration with Internet of Things (IoT) technologies (employing sensors and IoT for monitoring the operation of technical systems and equipment).

In combination, these digital tools form a flexible administration system for retail networks with a variable function, capable of providing coordination and real-time control of activities across all network entities.

Conclusions from this study and prospects for further exploration in this area.

Based on the research findings, it has been demonstrated that the implementation of digital tools significantly alters the management and administration systems of retail networks with a variable trading function. In conclusion, it has been determined that:

1. The processes of implementing digital tools into retail network management systems are the most specific. Considering the complexity of operation and the need for maximum enhancement of flexibility in the mentioned components, it is evident that not only the digital tools themselves but also their format plays a crucial role in the transformation of the retail network management system. This is because the level of change and their outcome are determined by the overall functionality of the composed set of software and hardware tools. The transformation of the retail network management system with adaptability can be achieved by adding such digital tools as: smart data analytics systems, inventory management systems, Internet of Things (IoT), blockchain for the supply chain, mobile applications and e-commerce, real-time analytics, facial recognition technologies, and personalized recommendations, electronic point of sale.

2. The processes of implementing digital tools into the administration systems of retail networks are less specific. Traditionally, this system exists as a set of tools and technologies aimed at ensuring coordination and control of the overall aspects of the retail network's activities. Naturally, such a system always includes operational control of the activities of retail network entities; personnel management of retail network entities; financial management of retail network activities; management of the technical infrastructure's operations. Considering the diverse directions of the mentioned components, digital tools alter elements of such an administration system. However, unlike the management system, these changes are determined depending on the business entity's objectives. The transformation of this system is possible only through the addition of unified digital tools for the entire network, such as: an electronic accounting system, sales monitoring and analysis systems, Internet of Things technologies, workforce scheduling and task management systems, electronic learning and training systems, and equipment monitoring and maintenance systems.

The research results indicate the importance and impact of implementing digital tools on the management and administration systems of retail networks with a variable trading function. Naturally, for further research, it would be promising to consider the influence of such tools on the degree of flexibility in retail networks.

Література

1. Бугріменко Р. М. Тенденції розвитку мережевої роздрібної торгівлі на основі інфраструктурного маркетингу, *Науковий вісник Ужгородського національного університету*. 2020. Вип. 30. С. 19-23.
2. Вишневська О.А., Волошина А.О. Планування та організація закупівель товарів споживчого призначення торговельним підприємством, *Вісник ХДУ Серія Економічні науки*. 2019. Вип. 34. С. 50-53.
3. Голошубова Н.О., Кавун О.О., Торопков В.М. та ін. Підприємницькі мережі в торгівлі : монографія; за заг. ред. Н.О. Голошубової. К. : Київ. нац. торг.-екон. ун-т, 2014. 344 с.

4. Мазаракі А.А. та ін. Внутрішня торгівля України: монографія; за заг. ред. д-ра екон. наук, проф. А.А. Мазаракі. Київ : КНТЕУ. 2016. 864 с.
5. Маслиган О.О., Гоблик В.В. Схемність операційних процесів мережевого ритейлу із функціями змінності, *Ефективна економіка*. 2023. Вип. 12, URL.: <https://www.nayka.com.ua/index.php/ee/article/view/2675> (дата звернення: 01.01.2024).
6. Щербак В. Г., Холодний Г. О., Птащенко О. В. та ін. Управління торговою маркою в механізмі товарної інноваційної політики підприємства: монографія. Х. : Вид. ХНЕУ, 2013. 252 с.

References

1. Bugrimenko, R.M. (2020), "Trends in the development of network retail trade based on infrastructure marketing", *Naukovyy visnyk Uzhhorods'koho natsional'noho universytetu*, vol. 30, pp. 19-23.
2. Vishnevskaya, O.A. and Voloshina, A.O. (2019), "Planning and organization of purchases of consumer goods by a trading company", *Visnyk KHDU Seriya Ekonomichni nauky*, vol. 34, pp. 50-53.
3. Holoshubova, N.O., Kavun, O.O. and Toropkov, V.M. (2014), *Pidpryyemnyts'ki merezhi v torhivli* [Business networks in trade]. Kyiv: Kyiv nats. torh.-ekon. un-t, Kyiv, Ukraine.
4. Mazaraki, A.A. Lagutin, V.D. and Gerasimenko, A.H. (2016), *Vnutrishnya torhivlya Ukrayiny* [Domestic trade of Ukraine], KNTEU, Kyiv, Ukraine.
5. Maslhgan O.O. and Goblyk V.V. (2023), Schematic of network retail operational processes with variability functions, *Efektivna ekonomika*, vol 12, Available at: <https://www.nayka.com.ua/index.php/ee/article/view/2675> (Accessed 1.01. 2024)
6. Shcherbak, V. G., Kholodny, G. O. and Ptashchenko, O. V. (2013), *Upravlinnya torhovoyu markoyu v mekhanizmi tovarnoyi innovatsiynoyi polityky pidpryyemstva* [Trademark management in the mechanism of the company's product innovation policy], KHNEU. Kharkiv, Ukraine.

Стаття надійшла до редакції 03.01.2024 р.