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Supply chain management strategies taking into account marketing trends and IT technologies

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Abstract: Global supply chains are currently undergoing significant transformation under the influence of marketing trends and rapid digitalization. The growing complexity of customer needs, combined with the expansion of e-commerce and the integration of Industry 4.0 technologies, requires new approaches to the design and coordination of supply chain strategies. This article explores the interrelation between supply chain management (SCM), contemporary marketing tendencies, and the implementation of advanced IT solutions. The main objective is to analyze how customer-oriented strategies and digital innovations - such as big data analytics, artificial intelligence, blockchain, and cloud platforms - contribute to the resilience, flexibility, and efficiency of supply chains. The methodological framework includes a literature review, comparative analysis of global companies, and case-based evaluation of IT adoption in logistics operations. Results demonstrate that marketing-driven SCM strategies, supported by digital technologies, improve demand forecasting accuracy, shorten delivery lead times, and enhance customer experience. Moreover, companies that align marketing insights with supply chain planning achieve superior competitive advantages by creating adaptive networks and developing sustainable partnerships. The article contributes to both theory and practice by emphasizing the necessity of integrating market dynamics with technological capabilities in modern SCM. Practical recommendations are provided for managers and policymakers to strengthen competitiveness in volatile markets through the synergy of marketing strategies and IT-enabled logistics.

1 Introduction

Supply chain management (SCM) remains a core element of corporate strategy, ensuring operational efficiency, cost reduction, and competitiveness. However, under the pressure of digital transformation and rapidly changing market conditions, traditional SCM approaches are losing relevance. Modern supply chains must integrate marketing and technological factors, becoming part of a company's overall customer interaction strategy. Digital tools now determine not only production efficiency but also demand, service quality, and customer loyalty. Globalization and the growth of e-commerce have reshaped competition: while cost efficiency once dominated, today market responsiveness and customer relationship management define success [1]. The digital economy further transforms logistics and SCM through the adoption of big data, artificial intelligence, blockchain, and cloud platforms. These technologies enable process monitoring, demand prediction, and route optimization, yet they require a revision of classical SCM concepts. Meanwhile, rising consumer expectations for transparency, sustainability, and service quality force companies to adapt their supply chains to new social and environmental standards [2]. Despite the extensive literature on SCM, several research gaps remain. First, the integration of marketing data into supply chain planning is insufficiently explored - most studies treat logistics and marketing as separate domains. Second, there is no unified methodological framework for evaluating the effectiveness of digital technologies within SCM. Third, digitalization in practice is often fragmented: companies implement IT solutions for individual functions but fail to integrate them strategically. Finally, criteria for holistic SCM

performance assessment that combine economic, technological, and marketing indicators remain undeveloped [3]. Therefore, this study aims to address these gaps by developing a comprehensive SCM model that unites marketing trends and IT technologies. The research emphasizes the strategic role of SCM in the digital economy - not merely as an operational tool, but as a driver of innovation, adaptability, and customer value creation. The findings are expected to support the design of sustainable and technology-oriented SCM strategies and contribute to building competitive advantages at both corporate and national levels.

1.1 Theory of supply chain management strategy development

Supply Chain Management (SCM) has undergone a complex path of development, starting from simple logistics operations to a strategic concept integrating marketing, information technology and innovative forms of interaction between participants. The theoretical foundations of SCM were formed gradually, reflecting changes in the global economy, the development of information systems and the evolution of management paradigms. The structuring of the conceptual stages of development of supply chain management is presented in Table 1.

Table 1 Structuring of the conceptual stages of development of supply chain management

STAGES	APPROACH	FEATURES OF DEVELOPMENT
1950-1970s	Logistics approach	Initially, supply chain management was considered in the context of logistics, the main task of which was to ensure the movement of material flows from the manufacturer to the consumer at minimal costs. During this period, key attention was paid to transportation and warehousing.
1980s	Integration of logistics functions	With the strengthening of globalization and the increasing complexity of distribution systems, there was a need to combine various functions within logistics: supply, warehousing, distribution. Scientific research during this period focused on the need to integrate material, information and financial flows.
1990s	Supply chain concept	The concept of "supply chain" is becoming widespread. Scientists and practitioners are beginning to consider not only the company's internal processes, but also interactions with suppliers, distributors, and customers. The concept of supply chain management emerges, in which management is based on the principles of cooperation and synchronization of all participants in the chain. An important theoretical contribution is the development of partnership models and strategic alliances.
2000s	Value chains	At the beginning of the 21st century, end-consumer value creation becomes considered when studying SCM. The major goal is no longer a reason of pure cost, and the attention is more and more paid on the service quality, the flexibility of the supply and the personalization of the offer 64. The theory postulates the notion of value-based supply chain, that integrates SCM and marketing orientations in respect of customers.
2010s - present	Digitalization and "smart" supply chains	The current class is the era of application of digital technology, characterized by big data, AI, Blockchain, IOT, cloud computing and other technologies. Increasingly, there is a notion of a digital supply chain, where it is operated based on real-time analytics, automated activity and predictive modeling.

Current research shows that the marketing dynamic is shaping supply chain management strategies. Demand uncertainty is rising and SCM is moving toward demand driven models. Marketing analytics provides the information about what are the customer behaviors, preferences and abstractions are which can enable the firms to design the more flexible and only one phased supply chains [4,5]. Thus, SCM is evolving from an operational to be a strategic tool that can create competitive advantage through customer value creation. In principle, this seems to be what the shift from cost-based to value-based drivers will be will be for supply chains. IT has been recognized as a major catalyst in the advancement of SCM methodologies over the past few years. Contemporary theories process the importance of integration in a digital form that allows perfectly synchronizing the activities of all actors in the network on-line. IoT guarantees the transparency of goods' transportation, blockchain enhances the security and credibility of transactions and big data and artificial intelligence improve forecast accuracy of demand [6]. Accordingly, the progression of SCM model from functional coordination to network & digital and from marketing to technology is the SCM theory evolution process. SCM Today, SCM is confronted with various challenges that still need more theoretical explanations:

- Sustainability and environmental friendliness - the need to develop "green" supply chain strategies that take into account environmental factors [7].
- Risks and uncertainty - global crises and supply disruptions require new models of sustainability and adaptability [8].

- Synergy of marketing and digitalization - further development of concepts integrating marketing data and IT solutions into strategic management is required [9].

Thus, SCM theory continues to evolve, moving from traditional logistics functions to integrated and digital models that are customer-focused, innovative and sustainable.

1.2 Key aspects of marketing trends and IT technologies in supply chain management strategies

Modern global supply chains are developing in the context of highly dynamic markets, digitalization and increasing competition. Companies are focusing not only on cost optimization and operational efficiency improvements, but also on the need to take into account changes in consumer preferences, marketing strategies and innovative technologies. Supply chain management is no longer an isolated logistics function and is increasingly integrated with marketing, big data analytics and digital platforms. The key challenge is to develop a strategy that can simultaneously take into account marketing trends - customer focus, customization, reduced delivery times, sustainability and transparency - and the opportunities offered by IT solutions: artificial intelligence, blockchain, cloud technologies and digital twins [10]. In this regard, there is an increasing need to analyze the factors that determine the success of using IT tools and marketing practices in supply chain management strategies. Marketing trends often act as a factor in the transformation of supply chains, namely in the following areas:

- Customer focus and customization. One of the most significant marketing trends of recent years is the transition from standardized mass production to individualized offerings. Consumers expect personalized products and services, which requires companies to be flexible in supply chain management and integrate marketing data into planning processes. For example, studies show that companies focusing on demand-driven supply chains achieve higher customer satisfaction rates [11].
- Growth of e-commerce and omnichannel. The accelerated growth of e-commerce has radically changed distribution channels and logistics models. For the supply chain to function effectively, omnichannel integration is necessary, ensuring a single customer experience regardless of the point of contact. This requires the alignment of marketing and logistics strategies, as well as the use of IT solutions for real-time data management [12].
- Sustainability and social responsibility. Modern marketing trends include an emphasis on sustainable development and "green" supply chain logic. Consumers increasingly choose brands that demonstrate environmental friendliness, ethics, and supply chain transparency [13]. This creates new strategic requirements for companies: the need to implement emission monitoring systems, product lifecycle management, and compliance with ESG (Environmental, Social, Governance) standards.

Information technology today is one of the most significant factors determining the transformation and development of supply chain management (SCM) strategies. Its implementation allows not only to increase operational efficiency, but also to build new business models, where flexibility, transparency and integration become the determining criteria for competitiveness. In the context of globalization and increasing market instability, companies are forced to move from linear, rigidly structured chains to network ecosystems in which digital solutions perform a connecting function, uniting participants into a single information environment. The key importance of information technology in SCM is manifested in ensuring transparency and accessibility of data at all stages of the chain. Modern digital platforms allow tracking the movement of goods and materials in real time, which significantly reduces the risk of failures and contributes to more accurate forecasting. Through Big Data and AI it also gets possible to deeply understand consumer preferences, demand curve, but also market fluctuations, management being closer to the end customer making strategies more adaptive and customer center [14]. IT is also delivering fundamental changes for how the supply chains work together. If previously such interaction was limited to (flows of documents) communication, subsequent updating of information, now the task of building integrated management systems is increasingly feasible - with significantly more synchronization of data that occurs in an online mode, processes that on the appropriate level of coordination take place in one digital space. This would allow to use strategies such as the Just-In-Time or Demand-Driven when planning the production chain, in which the important thing is not the number of resources, but the reaction capacity in the face of changes in the market. There should be a special note for the installation of cloud technologies as the possibility that creates the opportunity for scaling and flexibility of information infrastructure. They offer businesses the opportunity to jettison expensive server solutions in favor of an "on-demand" model in which resources are invoked for business workloads. By making use of this, small and medium-sized companies able to have access to save the supply chain management tools that big companies do, which can reduce the competition [15]. The emergence of advanced blockchain that offers the immutability and public ledger recording functionality is also highly significant. For the supply chain, it could also imply full traceability of the origin of products, something of particular importance for markets with high-quality and safety standards, such as pharmaceuticals or food. Given the increased emphasis on sustainable development, the blockchain is becoming an effective instrument to verify the environmental and social accountability of a company, and to reinforce consumer trust.

Equally of note are the logistics functions embedded with automated and robotic technology. An automated warehouse, robot vehicles and intelligent inventory pool systems lowers operating costs and speeds up transactions. This eventually shifts the SCM's strategic signals that aim for efficiency to those that embrace sustainability, reliability and labor reduction. With respect to digital twins in the supply chain the current IT allows for the development of digital twin strategies. By modeling and simulating actual business processes, with real data, you can forecast the effect of your management decisions and alter strategy on the fly. It is one practice that enjoys stronger support among companies, especially during periods of crises and disruptions, when being fast and flexible can be the difference between an organization's death and survival. So the information tools arena only the help of the supply chain, but are the strategy of SCM itself. The use thereof ensures that cooperation is achieved between the built environment and the customer requirements, and logistics capacities, and the environmental development into environmentally viable development plus innovation. In digital economy age (IT) was the essential factor of supply chain integration and coordination, has helped supply chains to move from a linear architecture to intelligent eco- system ledger through self-learning and self-regulation.

1.3 Theoretical and methodological aspects of supply chain management taking into account marketing trends and IT technologies: approaches and views

Supply chain management (SCM) strategies have attracted the attention of researchers and practitioners over the past two decades due to increasing globalization, increasing complexity of logistics networks, and digitalization of business processes. The SCM literature demonstrates a wide variety of approaches, from classic logistics models to the integration of marketing and information technology. Despite a significant amount of research, there are a number of unresolved issues related to performance measurement, integration of innovative technologies, and adaptation to dynamically changing markets. Early works in the field of SCM focused on optimizing material flows and reducing costs. [14,15] emphasized the role of integrating the functions of procurement, storage, and distribution to improve efficiency. [16] emphasized the need to synchronize all participants in the supply chain and considered logistics as a strategic tool for competitive advantage. However, these approaches remained predominantly operational and did not take into account the impact of marketing factors and digital technologies on chain management. With the development of the supply chain management concept, the emphasis has shifted to cooperation between companies, partnerships, and creating added value for the customer [17]. Theoretical studies point to the effectiveness of strategic alliances, joint planning and integration of information flows. However, practice shows that most companies face difficulties in implementing cross-functional coordination and real-time data management. The lack of a unified methodology for assessing the effectiveness of integrated strategies remains a significant problem. The marketing component of SCM has been actively developed in recent years. [18,19] note that customer focus and product customization require supply chain flexibility and the ability to quickly respond to changes in demand. At the same time, there is an increase in e-commerce, which necessitates omnichannel supply chain management [20]. A literature review shows that many companies are implementing predictive analytics and CRM tools to support marketing strategies, but the integration of these solutions into SCM remains limited, which reduces operational efficiency. Modern research emphasizes the importance of SCM digitalization. Big data, artificial intelligence, blockchain and cloud technologies create opportunities to increase transparency, reduce supply cycle times and reduce operational risks [21]. However, literature analysis reveals several problems: the lack of a unified methodology for assessing the digital maturity of supply chains, difficulties in integrating innovative technologies into traditional business processes and insufficient focus on sustainable development. For example, the implementation of blockchain technologies requires significant investments and a change in organizational culture, which is often an obstacle for small and medium-sized enterprises [22]. Another unresolved aspect is the assessment of the effectiveness of SCM strategies in the context of sustainability and risks. Research [23,24] points to the need to include environmental and social factors in the assessment of supply chains. However, most existing models focus on economic efficiency and do not comprehensively take into account the impact of external factors: climate risks, geopolitical crises or global supply disruptions. In this regard, there is a need to develop comprehensive indices that combine operational, digital and marketing efficiency with sustainability indicators. A critical analysis of existing methods shows that most approaches are limited either by narrow logistics efficiency or partial digital integration. The DEA model, KPI analysis and integration of digital indices proposed in modern studies allow for a comprehensive assessment of efficiency, but require further refinement to account for market dynamics and the multifactorial impact of technologies. In particular, weighting factors in integral indices are often set by an expert method, which introduces subjectivity and reduces the reproducibility of results. The need to improve methodologies is due to rapid changes in consumer preferences, the growing role of digital platforms and the increasing importance of sustainable development. Research [25] emphasizes that companies integrating marketing and IT factors into strategic SCM management demonstrate better financial and operational performance. However, for widespread use, standardization of indices, development of quantitative risk accounting methods and formation of adaptive demand forecasting models are required. The prospects of the study are associated with the creation of a systematic approach to supply chain management that takes into account the relationship between marketing and technology. An important area is the development of SCM digital maturity models that will allow

companies to quantify the level of automation, integration, and adaptability. In addition, it is necessary to take into account the impact of environmental and social factors on strategic decisions, which will ensure the sustainability of supply chains in the long term.

Thus, a critical analysis of the literature shows that existing studies provide valuable theoretical foundations and empirical data, but do not fully address the issues of integrating marketing trends and IT technologies into SCM. The lack of a unified methodology for assessing performance, a limited accounting base of digital indicators, and insufficient focus on sustainability create space for further research. The development of a comprehensive methodology combining DEA analysis, KPIs, and digital indices allows not only to identify best practices, but also to offer strategic recommendations for companies in the context of global competition and digital transformation.

2 Methodology

2.1 Peer review process

The global economic environment is placing greater demands on strategic SCM. The development in the level and scope of interactions between networks, digitalization of business-processes and the importance of marketing of data make introduction of advanced information technologies in a corporate strategy almost inevitable, allowing market trends being followed. To validate the efficiency of the strategy followed, with model the effectiveness of the strategy has to be designed and measured which allows to know if the SCM is effective or ineffective given the following parameters: the operational efficiency of SCM at the firms, the digital level, the adaption of digital marketing and resiliency to the external risks. The research methodology is based on a combined approach, including: 1) DEA analysis (Data Envelopment Analysis) to assess the relative efficiency of companies by key input and output indicators. 2) KPI analysis (Key Performance Indicators) to check the strategic compliance of SCM with marketing and IT trends. 3) Modeling the integrated index of digital maturity of supply chains (Digital SCM Index, DSCMI). 4)Comparative analysis of data from leading global companies in the field of FMCG, pharmaceuticals, retail and logistics (Procter & Gamble, Unilever, Nestlé, Maersk, DHL, Walmart, Amazon) [24-26]. SCM efficiency is assessed through the ratio of resources (inputs) and results (outputs). Input indicators include: the level of digital investments (CapEx in IT), the number of implemented technologies (ERP, WMS, TMS, IoT), the number of participants in the supply chain and operating costs. Output indicators include: reduction of logistics costs, increase in the level of customer service (Customer Service Level, CSL), reduction in the supply cycle time (Lead Time Reduction), and increase in marginality. The efficiency of company in the DEA model is expressed as follows (1):

$$E_i = \frac{\sum_{r=1}^{S} u_r y_{ri}}{\sum_{j=1}^{m} \vartheta_j x_{ji}} \quad (1)$$

Where y_{ri} - output indicators of the company (SCM results), x_{ji} - input indicators (costs and resources), u_r, v_j - weights determined by the model, E_i - integral efficiency index. The company is considered efficient if $E_i = 1$, and inefficient if $E_i < 1$. To take into account marketing factors, an additional coefficient of adaptability to market trends has been introduced (2):

$$\mathrm{M_i} = \frac{\mathrm{CSL_i + D_i}}{2} \quad (2)$$

Where $CSLi$ - customer satisfaction level according to surveys or KPIs, D_i - index of digital integration of marketing tools (availability of DMP, CRM, personalized solutions). The final SCM performance index taking into account marketing and IT trends (SCM-Score) is calculated as (3):

$$SCM_i = \alpha E_i + BM_i + \gamma DSCMI_i \quad (3)$$

Where α, β, γ - weight coefficients (according to the results of expert assessment and factor analysis, adopted as 0.4, 0.3, 0.3), $DSCMI_i$ - SCM digital maturity index, reflecting the level of automation, implementation of IoT, AI, blockchain and cloud technologies.

The proposed methodology for a comprehensive assessment of supply chain management strategies, based on a combination of the DEA model, KPI analysis and the Digital SCM Maturity Index (DSCMI), demonstrates high value for practice and science. Firstly, it allows for an objective comparison of the performance of different companies and identification of key drivers of success in integrating marketing trends and IT technologies. Secondly, the methodology provides a quantitative assessment of the digital maturity of SCM, which is important in the context of accelerated digitalization and transformation of business processes. Its significance is also manifested in the ability to identify the strengths and weaknesses of strategies, which allows managers to form adaptive and customer-oriented supply chain

models. The inclusion of the marketing adaptability coefficient ensures that changes in consumer preferences are taken into account and allows predicting the market reaction to the introduction of new technologies.

However, the methodology has certain limitations. Firstly, it relies on available public data from companies, which may not fully reflect internal processes and strategic decisions. Secondly, the weighting factors in the integral SCM-Score index are formed on the basis of expert assessment, which introduces an element of subjectivity. Thirdly, the use of the DEA model does not take into account the dynamics of changes over time and external economic and political factors affecting supply chains.

Prospects for further application of the methodology are associated with the integration of time series and forecast models, expansion of the base of digital indicators, as well as taking into account risks and resilience to crisis situations. The development of the model will improve the accuracy of SCM strategy assessment and create more flexible, adaptive and value-oriented supply chains for the customer.

3 Results and discussion

Modern supply chain management (SCM) strategy is evolving from functional logistics to a platform-based, customer-centric and data-driven ecosystem, where marketing impulses and digital technologies determine the design, responsiveness and resilience of chains. Conceptually, such a strategy is based on six key elements:

- Customer focus (market-back design): demand-driven planning, service personalization, omnichannel experience consistency.
- Data-driven SCM: integration of external/internal data, predictive analytics, scenario analysis.
- Networked orchestration: coordination of multiple actors through digital platforms, standardized interfaces, and shared rules.
- Sustainability & resilience: a combination of "green" practices with readiness for market and geopolitical shocks.
- Platformity and modularity: an architecture of interchangeable modules (processes, IT services, partners), simplifying scaling and restructuring.
- Servitization: shifting the focus from physical flow to service value (speed, transparency, loyalty), where marketing and SCM jointly design the "brand promise" and its operational execution.

In this framework, marketing trends (omnichannel, personalization, ESG customer requests, "transparency as a norm") act as an external driver of requirements, and IT technologies act as an internal execution mechanism (forecasting, visibility, automation, traceability, platform coordination) [27]. Current changes in the global economy demonstrate that strategic supply chain management (SCM) can no longer be limited solely to logistics or material flow coordination.

The trend to improve technological capabilities is a consequence of the development of the digital economy, the acceleration of market processes and the increasing requirements of consumers, a shift attention to the integration of marketing tools and information technologies in the management system. As the efficiency of the SCM in the 21-century can be directly positively influenced not only by costs optimization or the reduction of the costs in time, but on the company's ability to create the customer value and the demand forecasting and reacting on changes in market situation. It is here where marketing is not only a product-promotion function, but a strategic play within supply chain relationships. Mind control, market trends, personalisation, sustainable development – all of this figures into SCM marketing campaigns. IT in turn, lay the foundation for this structuring, ensuring the accuracy of information, the visibility of the process, and the agility in the face of potential changes in the global supply network. But in practice, it means even more advanced tools - enterprise resource planning (ERP) systems, customer relationship management (CRM) applications, big data and artificial intelligence (AI) tools for demand forecasting, blockchain for the partners in a supply chain to trust each other and show that they are being transparent. Meanwhile, the value of digital communication channels, omnichannel strategies, and customer experience insights allowing companies to build long term competitiveness is increasing. Thus, SCM strategy developed to form a conglomerate of instruments, grounded in elements of traditional logics of logistics optimization, orientation of marketing and digitalization. This brings in a new paradigm of SCM in synthesis, where success is not just defined by the speed and cost of delivery; (i) the level of customer satisfaction, (ii) degree of business model innovativeness and, (iii) the company's sustainability development. High-level planning tools (APS/IBP) and AI/ML analytics provide the basis for manageability; cloud and API - speed of partner and data connection; WMS/TMS and robotics - SLA predictability; IoT/blockchain - visibility and trust; CRM/DMP - translation of marketing impulse into planning; CPFR - joint reduction of volatility; sustainability tools - compliance with new markets and regulations [28]. Key IT and marketing tools in SCM strategies of modern companies are presented in Table 2.

Table 2 Key IT and marketing tools in SCM strategies of modern companies

TOOL / PRACTICE	STRATEGIC ROLE IN SCM	MARKETING EFFECT
APS/S&OP/IBP (ADVANCED PLANNING, INTEGRATED BUSINESS PLANNING)	Demand-Supply Synchronization, Capacity	Balance Promotion and Supply Alignment
DMP/CRM/CDP (CUSTOMER DATA PLATFORMS)	Integrating Voice of the Customer into Planning	Personalization, LTV Growth
WMS/TMS/YMS	Operational Efficiency, Last Mile	SLA Stability
IOT/TELEMATICS	Real-Time Visibility and Control	Transparency for the Client
AI/ML (FORECASTS, OPTIMIZATION)	Forecast Accuracy, Dynamic	Pricing/Inventory
DIGITAL TWIN/SIMULATION	Scenario Testing, Resilience	Service Reliability
BLOCKCHAIN/TRACEABILITY	Immutable traceability	Trust, anti-counterfeiting
RPA/ROBOTICS/ASRS	Automation of operations, speed	Service stability
CPFR/EDI/API	Joint planning/replenishment	Out-of-stock reduction
CLOUD/SAAS IPAAS	Fast integration, scalability	Quick channel launch
LAST-MILE TECH (LOCKERS, CROWDSOURCED)	Delivery time reduction	Customer satisfaction
SCF/FINTECH (FACTOR, DYNAMIC DISCOUNTING)	Chain liquidity, supplier stability	Assortment continuity
SUSTAINABILITY SUITES/LCA	Carbon accounting, eco-design of routes	ESG image

Strategic directions of development of IT and marketing tools in SCM strategies of modern companies are presented in Figure 1.

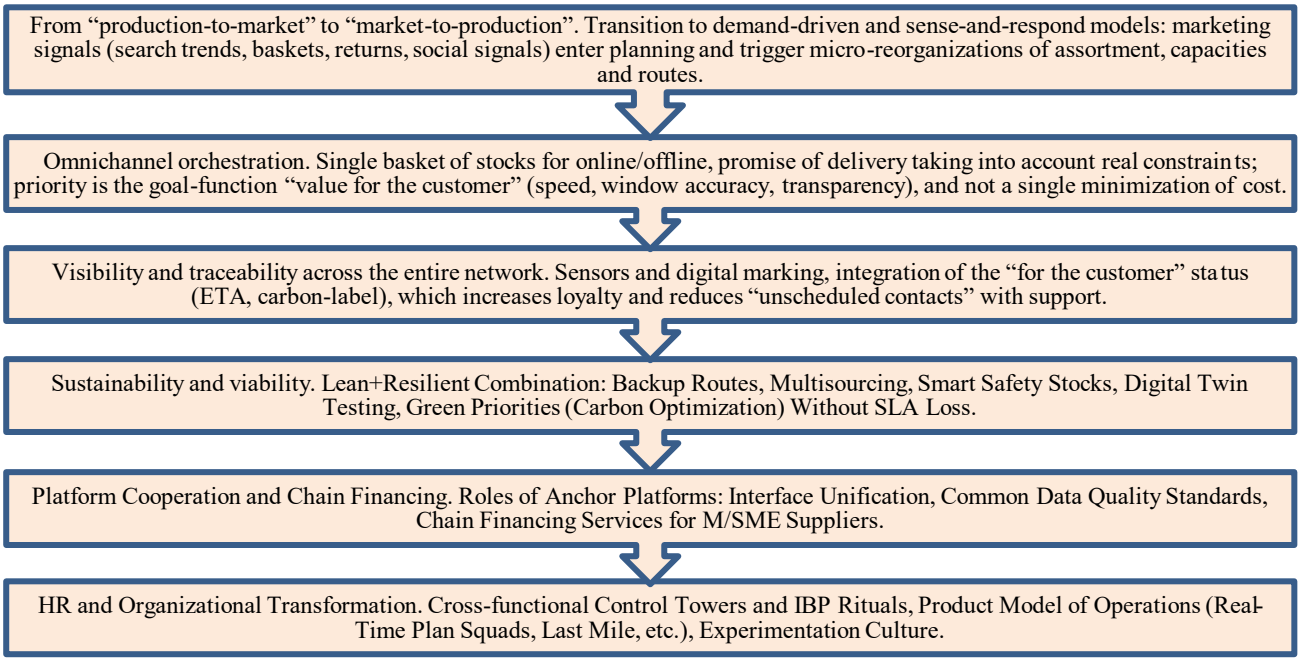

Figure 1 Strategic directions of development of IT and marketing tools in SCM strategies of modern companies

The modern supply chain management (SCM) system has ceased to be just a tool for organizing logistics flows. According to the strategic lines analyzed, it is possible pointing out some of the key results that show how SCM turns itself into a multi-component model, characterized by vectors of managerial, marketing and technological development that are crossing with each other [29]. Future strategic SCMs development the future impact of SCM should be to verify that SCM is becoming more 'front-office' than 'been-office', moving SCM as a driver of digital and marketing business transformation. Study of these strategies impel us to scrutinize the world trends that keep framing the next generation of the SCM. These trends are formed under the digitalization of the economy, the geopolitical situation, changes in consumer behavior and the transition to a sustainable development model. Table 3: The overview of the world supply chain management strategy trend - marketing trend and IT technology perception Table 3 shows the world supply chain strategy trend; marketing trend and IT technology perception.

Table 3 Global trends in supply chain management strategies taking into account marketing trends and IT technologies

GLOBAL TREND	ESSENCE	ROLE OF MARKETING	ROLE OF IT	COMPANY
DIGITALIZATION AND AI	Automation of forecasting, analytics, management	Personalization of offers, omnichannel communications	Big Data, AI, IoT	Amazon, Alibaba
SUSTAINABLE DEVELOPMENT	Reducing emissions, environmental friendliness, circular chains	"Green marketing", brand of trust	Smart Logistics, blockchain	Unilever, Tesla
REGIONALIZATION OF SCM	Reducing dependence on global risks	Local promotion strategies	ERP systems for hybrid chains	Siemens, Nestlé
TRANSPARENCY OF CHAINS	Control of the origin of goods, fight against counterfeiting	Strengthening customer trust	Blockchain, Track&Trace	Walmart, Maersk
OMNICHANNEL	Integration of offline and online channels	Cross-channel customer experience	CRM, SRM, digital platforms	Nike, Zara
PERSONALIZATION	Demand for individual preferences	Customer marketing, big data analysis	AI, behavior analytics	Netflix, Apple

These conclusions help not only to systematize the accumulated experience, but also to highlight areas of transition to global trends that create the future of SCM strategies. First, you have an amalgam of logistics and marketing. Additional classical SCM model concentrated on cost cut down, time delivery decreases and control of the flow material. But today's circumstances require the wholesalers' priorities to be supplemented with a commitment to the customer. Demand is being influenced by fresh marketing behaviors - digital marketing, personalized offers, services solutions. Therefore, there is an increasing trend to make SCM a system oriented to the optimization of the operative processes and to the creation of customer value. Secondly, IT is the source of strategic evolution of SCM. The application of ERP, CRM, SRM systems as well as big data technologies and blockchain applications, in addition to solving logistics tasks, it is possible not only to form an entire strategy in accordance with forecasts, analytics and digital control at each link in the chain. Thus, SCM is now not only a reactive instrument but rather more and more a proactive system, which can predict market trends. Thirdly sustainability It's still everything. The world market demand companies to be responsible to the environment, transparent suppliers operation, carbon foot print and social responsibility. Also, the aspects of sustainable business models are a part of the global supply chain management, which are today not anymore only a social requirement, but also a competitive factor. Fourth, the connection of CRM, SRM is a new type of tactics and the core competence is the flexibility. On the global market, the ability to respond rapidly to changes in demand, reordering of supply chains, or technological progress is a huge advantage. Enterprising corporations are proving that it's not the cheapest cost that prevails, it's the company that can bake in marketing agility with digital transparency, into their supply chain [30]. The reason behind choosing DEA (Data Envelopment Analysis) model and IntSCM index to measure the degree of effectiveness of supply chain management strategies, are several. Firstly, working conditions in the modern global corporations have various dimensions and processing the complexity where not only financial measures are to be considered, but non-financial ones: how fast products are produced and delivered (speed of shipment), level of clients' satisfaction, digitalization of production process, sustainable development. The ability of due to traditional methods for comparative analysis to determine the cumulative effect of these components is insufficient, and the present approach allows for the simultaneous consideration of many inputs and outputs providing a transparency efficiency picture [31]. Second, the overall SCM score can be considered as an essential factor for an integrated assessment of outcomes. It aggregates KPI into one number that allows to compare different firms and to recognize strategic differentiations. The integral index application is particularly useful for inter-industry comparisons, e.g., between FMCG sector and logistics [32]. Finally, the DEA model and the integral index can give a comprehensive quantitative and qualitative evaluation of the SCM motive power strategies, and then find out the merits and shortcomings of companies, and guide the companies to the future directions for development. Therefore, this approach was the most appropriate for evaluating the effectiveness of SCM within the intersection of digitalization and global marketing changes. To conduct analysis of strategies, management in the field of supply chain by considering the marketing trends and IT technologies required to determine the initial data, reflecting th e actual state (condition) of the global companies in m management field of supply chain; The analysis of effectiveness of the surpluses at management in a context of integration of the marketing trends and IT the technologies requires the system of the beginning of the quantitative signs, reflecting both internal arbitration fiscal processes and interaction with a market.

In the current stage, it is not easy to restrict to a financial dimension only because of the fact that the digital transformation application in SCM impacts on the inventory circulation speed, the degree of automation used in business activity, the extent of digital sales, and the number of customers, who come back [33].

Therefore, when forming the base of initial data, companies from different segments of the global economy were selected: online retail (Amazon), traditional retail (Walmart), FMCG sector (Unilever, Nestlé, Procter & Gamble), as well as global logistics operators (Maersk, DHL). The initial data for conducting an analysis of supply chain management strategies taking into account marketing trends and IT technologies of modern companies are presented in Table 4.

Table 4 Initial data for conducting an analysis of supply chain management strategies taking into account marketing trends and IT technologies of modern companies

INPUTS				
COMPANY	IT INVESTMENTS ($ BILLION)	NUMBER OF IMPLEMENTED DIGITAL TECHNOLOGIES	OPERATING EXPENSES ($ BILLION)	NUMBER OF PARTICIPANTS IN THE CHAIN
AMAZON	73.00	9	450.00	>1 million suppliers
WALMART	19.00	7	393.00	~100K
UNILEVER	6.50	6	62.00	~50K
NESTLÉ	7.20	7	70.00	~60K
P&G	8.10	8	76.00	~55K
MAERSK	5.00	6	48.00	~30K
DHL	4.80	6	52.00	~25K
OUTPUTS				
COMPANY	COST REDUCTION (%)	SERVICE LEVEL (CSL, %)	LEAD TIME REDUCTION (%)	MARGIN GROWTH (%)
AMAZON	15.00	94.00	18.00	7.50
WALMART	11.00	91.00	12.00	6.00
UNILEVER	9.00	89.00	10.00	5.00
NESTLÉ	10.00	90.00	11.00	4.80
P&G	12.00	92.00	13.00	5.50
MAERSK	8.00	87.00	9.00	4.20
DHL	7.00	88.00	8.00	4.00

For an inclusive evaluation of the strategic effectiveness of the SCM concept implementation with the marketing trends and IT technologies convergence, the methodology was selected that enables one to reflect the multi-faceted indicators both input and output character. The quantitative analysis was based on the DEA model which helps to identify the relative efficiency of companies (E) in relation to the relation of resources applied in SCM and the results achieved. The DEA efficiency score (E) measure the company's capability in the efficient utilization of logistics costs, automation level and use of digital tools to generate a high level of customer satisfaction, customer retention, and inventory turnover. In order to meet DEA, M, which shows how effectively a company can adjust to demand change and transfer marketing strategies and personalized offers to the SCM process [34], was being considered. This coefficient is indicative of the capacity that a business can develop to keep a competitive position by interacting with the demand of the product and the client. For an overall explanation of efficiency the Digital Supply Chain Maturity Index (DSCMI) was computed - a digitalisation readiness indicator for the supply chain, covering automation status, use of cloud, predictive and prescriptive analytics and innovative IT components. DSCMI gives you a chance to measure how much a company is prepared for a digital revolution and to adopt new technologies in SCM. The findings validate that effective SCMSs hinge on the integration of marketing and IT along with the positioning of the digital transformation concept within the scope of an integrated model. Last but not least, the reached results help for the purpose of supporting strategic business planning and deliver evidence for ensuring organizational competitiveness and survival of organizations in the conditions of the global markets and digital economy. The DEA model and the integrated index of company' s supply chain management strategy Facilitator are shown in Figure 2.

Using the measurements of thee indicators, an overview expressing strategic maturity and competitiveness of SCM can be summarized through the formation of the SCM-Score index as such DEA efficiency, marketing adaptability and digital maturity if the supply chain are all represented by one number. SCM-Score gives you the ability to benchmark companies against each other, to find out who are leading and lagging - and where to improve the efficiency and integration between marketing and IT tools. Thus, moving from raw data and basic analytics to calculating E, M, DSCMI and SCM-Score provides a logical continuation of the research, allowing us to link quantitative indicators with practical strategic conclusions and direct further analysis to identify global trends and best practices in supply chain management. Thus, the use of DEA and the integral SCM index allows us to identify the strengths and weaknesses of companies, determine optimal development directions and assess the potential for improving efficiency. The analysis of the results of DEA, marketing adaptability (M), DSCMI and the final SCM-Score allows us to make several key conclusions about the strategic efficiency of supply chain management in global companies of various sectors. Firstly, the leadership in the integral indicator SCM-Score is secured by Amazon, which confirms the complex combination of high DEA-efficiency

(E = 0.97), significant marketing adaptability (M = 0.94) and the maximum level of digital maturity of the supply chain (DSCMI = 0.95). High DEA-efficiency indicators demonstrate the optimal use of resources, and M and DSCMI reflect the company's ability to flexibly respond to changes in demand and successfully integrate information technology into SCM processes. This synergistic effect provides Amazon with leadership in online retail and allows it to maintain a competitive advantage in the global market. Secondly, FMCG companies (Unilever, Nestlé, P&G) show an average level of integral efficiency. DEA efficiency varies from 0.82 to 0.87, M is in the range of 0.78 - 0.84, DSCMI fluctuates between 0.70 - 0.75. This indicates that the companies successfully manage customer relationships and marketing adaptation, but the limited level of supply chain digitalization reduces the potential SCM Score. Such results indicate the need to strengthen IT tools and more actively implement digital technologies to improve integrated efficiency. Thirdly, logistics companies Maersk and DHL demonstrate high DEA (0.88 - 0.91) and DSCMI (0.85 - 0.88), indicating significant technological potential and resource optimization. However, their marketing adaptability coefficient (M = 0.75 - 0.78) is inferior to the leaders of retail and online commerce, which reflects the limited use of marketing tools in the logistics sector. Thus, the analysis of the E, M, DSCMI and SCM-Score indicators confirms that a successful supply chain management strategy requires the synergy of three components: resource optimization, marketing flexibility and digital maturity. Companies that integrate these elements gain an advantage in SCM efficiency, increase customer satisfaction and strengthen their position in the global market. The results obtained serve as a reliable basis for developing strategic recommendations for increasing the competitiveness and sustainability of supply chains in various economic sectors [35].

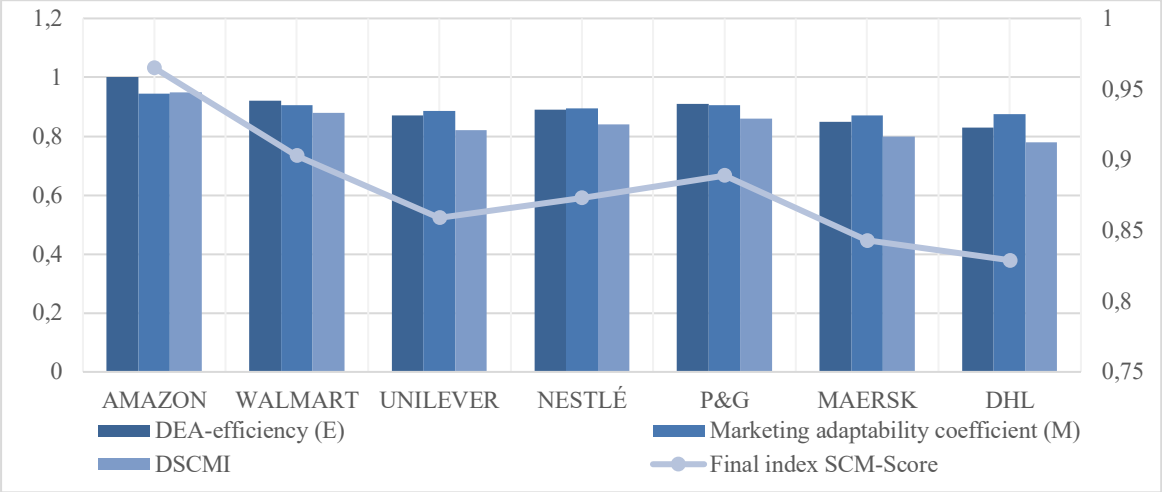

Figure 2 Theoretical analysis of the DEA in companies' supply chain management strategy measurement

The results of the DEA, Marketing Agility Index (M), DSCMI and the final SCM-Score analysis show that the strategic effectiveness of supply chain management directly depends on the comprehensive integration of digital technologies and marketing tools. Based on the identified patterns, several key strategic recommendations can be identified that will help improve the competitiveness and sustainability of companies on a global scale. First, companies need to integrate digital technologies at all stages of the supply chain. Analysis leaders such as Amazon demonstrate high efficiency due to large-scale automation of warehouse and transportation operations, the use of cloud platforms, predictive analytics and AI for demand forecasting. The implementation of such tools helps reduce operating costs, increase inventory turnover and improve planning accuracy. For FMCG companies (Unilever, Nestlé, P&G) and the retail segment (Walmart), digitalization of distribution processes and integration of ERP/CRM systems are of particular importance to ensure an omnichannel customer experience. Secondly, strategic marketing adaptability is becoming a key competitiveness factor. The high M coefficient of Amazon and P&G demonstrates that the ability to quickly respond to changes in demand, offer personalized solutions and flexibly restructure communication channels significantly increases the efficiency of SCM. The recommendation for companies of all sectors is to develop marketing strategies closely integrated with logistics processes, which will simultaneously improve customer satisfaction and reduce costs. The third recommendation is related to increasing the digital maturity of supply chains (DSCMI). Companies should introduce innovations not only in operational processes, but also in data management: the use of Big Data, customer behavior analytics and blockchain technologies to ensure transparency and traceability of deliveries. This is especially important for logistics operators (Maersk, DHL), where digital transformation increases the reliability of deliveries, reduces risks and strengthens partner trust. Based on the combination of DEA efficiency, M and DSCMI, the final SCM Score is formed, which can be used for strategic planning. Companies with a low index should focus on three areas: resource optimization, implementation of digital tools, and increasing marketing flexibility. For the FMCG sector and retail, this means expanding digital sales channels and omnichannel services, and for logistics, strengthening integration with client

platforms and demand analytics. Modern supply chain management requires a comprehensive approach that combines financial, technological and marketing efficiency. Implementation of these strategic recommendations will allow companies to adapt to global trends, increase sustainability and create additional competitive advantages, forming SCM as a strategic tool for business development in the digital economy.

The scientific novelty of the research lies in the development of an integrated analytical approach to evaluating supply chain management (SCM) strategies that combines digitalization, marketing adaptability, and information technology maturity within a single efficiency assessment framework. Unlike traditional SCM studies focused mainly on logistics optimization, this research introduces composite indicators such as the Digital Supply Chain Maturity Index (DSCMI), the Marketing Adaptability Coefficient (M), and the SCM-Score, allowing for a multidimensional assessment of efficiency and competitiveness. The pedagogical contribution of the study consists in providing a conceptual and methodological basis that can be integrated into academic programs on logistics, digital business, and marketing management. The presented models and indices may serve as practical teaching tools to explain the interrelation between digital transformation and supply chain performance, fostering a better understanding of cross-functional decision-making in the digital economy. The practical value of the research is manifested in the formulation of concrete recommendations for companies on how to improve SCM efficiency through the synchronization of logistics, marketing, and IT. The proposed approach enables managers to diagnose the level of digital maturity, identify weak links in the supply chain, and design data-driven strategies for sustainable and customer-oriented operations.

4 Conclusions

The study confirmed that the effectiveness of supply chain management (SCM) strategies in the digital economy depends not only on logistics optimization and cost reduction but also on the integration of marketing and information technology elements. Analysis of data from major global corporations - including Amazon, Walmart, Unilever, Nestlé, Procter & Gamble, Maersk, and DHL - demonstrated a strong relationship between process digitalization, marketing adaptability, and customer satisfaction indicators. The Data Envelopment Analysis (DEA) efficiency values (E) revealed differences in the rational use of resources. Companies with advanced digital infrastructures and automated SCM systems achieved the highest levels of efficiency. The Marketing Adaptability Coefficient (M) further confirmed that firms capable of promptly responding to market fluctuations maintained more stable and resilient supply chains. Additionally, the Digital Supply Chain Maturity Index (DSCMI) showed that technological maturity contributes directly to sustainability and competitive advantage by enabling accurate planning, real-time visibility, and uninterrupted supply flows. The development of a composite SCM-Score made it possible to evaluate the cumulative effect of digitalization, marketing adaptability, and IT implementation on overall supply chain performance. The results indicate that companies combining data analytics, predictive logistics, and marketing feedback loops achieve higher efficiency and customer retention. The obtained results are consistent with the findings of recent studies emphasizing digital transformation as a decisive factor in SCM performance [1,3]. Similar to conclusions drawn by [5,8] this research confirms that the integration of marketing tools and IT systems creates synergy, allowing enterprises to move from reactive to predictive supply chain models. However, unlike previous works, this study applies a combined framework of DEA, DSCMI, and M-coefficients, which together provide a multidimensional evaluation of SCM efficiency. A key contribution of this study lies in highlighting the interaction between marketing flexibility and technological maturity - an aspect often overlooked in traditional SCM analyses. The results demonstrate that digital transformation alone does not guarantee efficiency unless it is supported by customer-oriented marketing strategies. The comparison of leading firms shows that technological innovation must be balanced with data-driven market insights to achieve long-term sustainability. These findings also align with the global trend toward green and transparent supply chains, where digital traceability and cloud-based analytics ensure both efficiency and social responsibility. Therefore, the research supports the view that future-oriented SCM strategies should be built on three pillars: resource-based logistics, market-driven strategy, and process-orient the research demonstrates that digitalization, marketing adaptability, and IT maturity jointly determine the success of modern SCM strategies. Companies that integrate these components show higher operational efficiency, customer satisfaction, and strategic resilience. However, several limitations must be acknowledged. The analysis was based on secondary data from large international corporations, which may not fully reflect the context of small and medium-sized enterprises. In addition, the DEA and composite indices used provide a generalized efficiency estimate and may not capture qualitative factors such as cultural or regulatory differences. Future research should extend the analysis to include SMEs and regional supply networks, develop sector-specific digital maturity models, and test the proposed framework using longitudinal datasets. Another promising direction involves assessing the environmental and social dimensions of digital SCM and their integration with ESG (Environmental, Social, Governance) indicators.

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