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ASSESSMENT OF THE IMPACT OF EXTERNAL FACTORS ON THE DEMAND AND SUPPLY OF FINANCIAL SERVICES IN THE EU COUNTRIES

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ABSTRACT

The purpose of the study is to scientifically substantiate the methodological approach of structural modeling of the impact of external factors of demand and supply, and transform the results into a plan of management actions. The main objectives of the study are to identify and select external factors of demand and supply in the countries of the European Union, construct binary and weight matrices of their relationships, calculate indicators of total impact and total dependence and MICMAC classification, establish correspondences between factors and marketing objectives and form on this basis a prioritized plan of management actions for financial institutions and a vector of marketing vectors for the financial services market of the countries of the European Union. The methodology involves the use of the Delphi expert analysis method for selecting factors and fixing direct cause-and-effect relationships. Binary and weighted dependency matrices were constructed, "edges with predicates" were formed by the types of impacts, serial indicators of total impact and total dependence were calculated taking into account indirect paths, factors were classified in the Matrices d'Impacts Croisés Multiplication Appliquée à un Classement plane (MICMAC), and "factor → marketing objective" correspondence matrices were constructed with estimates. The results showed that on the demand side, the leading driver is the macro conditions of households, while demographic shifts and financial inclusion form sustainable vectors of strengthening trust and expanding digital channels. As a result, a priority ranking of factors and an agreed action plan in short-term, medium-term, and long-term priorities were formed.

Keywords: financial services, vector of marketing, external factors inflow, demand, proposition, sales matrices of deposits, MICMAC classification, digital transformation, insight and customer trust, EU

JEL Classification: G21, G28, M31, C44

INTRODUCTION

Today the financial services market in the European Union countries can be described as a meeting point between the needs of customers and the capabilities of service providers, where households and businesses form demand when they want safe storage of funds, convenient payments, affordable credit, protection against unforeseen events and the ability to accumulate savings in the long term, i.e. they actually buy not only a product, but above all security, speed, stability and clear rules, while banks, insurance companies, investment intermediaries and technology platforms form the supply, transforming the resources raised into loans and investments, maintaining liquidity and controlling risks, and thereby determining the price and availability of financial services. In today's conditions, a kind of temporary equilibrium arises when, on the one hand, the customer considers his funds to be protected, accessible, and fairly valued, and on the other hand, the institution sees sufficient profitability to cover the costs and the risk taken. Against this background, the EU is chosen as a model object because it combines the scale and heterogeneity of a multi-country system with the institutional features of a single market. Freedom of movement of capital and services, the passporting regime for many financial institutions, a common competition policy, and a largely harmonised

prudential and consumer protection rulebook make the European Union closer to a single integrated marketplace than to a loose group of countries. At the same time, it still contains countries with different income levels, financial structures, and levels of digital adoption, which allows researchers to observe how identical or similar rules work in diverse economic and social settings. Compared with the United States, where financial services are shaped by a federal system with big state-level differences, and with Asia, where regulatory regimes and levels of financial development are much more fragmented, the EU offers a unique environment in which the impact of external shocks on demand and supply can be analysed without the confounding effect of radically different legal architectures. This makes the EU a natural laboratory for structural modelling of external factors and for designing marketing vectors that can later be adapted to other regions.

It's common practice to emphasize how changes in the external environment affect our operations, especially when it comes to providing certain services. Indeed, external factors are constantly reshaping demand for financial services in the European Union, with the effects felt by both households and businesses. Interest rate fluctuations, inflation waves, changes in energy prices, geopolitical risks, pandemic events, migration flows, regulatory changes, the digitalization of retail, and changes in consumer expectations all alter the structure of demand. During periods of heightened uncertainty, households tend to reduce their appetite for credit and increase their demand for guaranteed savings products, insurance solutions, secure payment services, and remote service channels. In response, businesses are increasingly seeking working capital, risk hedging instruments, factoring and leasing, as well as cybersecurity and business continuity solutions. The supply of financial services is also sensitive to the external environment, as it is influenced by the cost and availability of market funding, capital and liquidity requirements, stress test results, competition from tech companies, and the integration of the single market. Changing monetary conditions quickly redefine lending profitability and deposit pricing, and stimulate a shift to new risk management formats. As a result, the financial services market in the European Union remains a system of constant adjustment, where anything can alter both demand and supply, and the ability of institutions to quickly adapt products and channels is key to resilience.

We believe that the relevance of the problem is enhanced by the increasing instability of the external environment, increased competition from technological platforms, deepening financial integration, and the spread of technologies based on artificial intelligence, which requires financial institutions to provide coordinated marketing solutions that simultaneously increase transparency, customer trust, digital accessibility, inclusiveness, and innovation. At the same time, the issue of structural modeling of the impact of external demand and supply factors, taking into account both direct and indirect causal relationships between them, remains insufficiently developed. It is also necessary to move from descriptive lists of factors to a formalized system of their ranking by indicators of overall impact, overall dependence, and coordination with specific goals of financial services marketing in the countries of the European Union.

LITERATURE REVIEW

Considering the work of scientists, it can be argued that external factors significantly rethink the demand for financial services in the countries of the European Union. Thus, significant movements in interest rates, inflation waves, technological innovations, regulatory updates, and elements of trust change the willingness of households and businesses to use credit, savings, and insurance products, payment services, and investment services. For example, X. Xu (2020) shows that interpersonal trust increases the use of financial services, so external events that undermine trust shift the demand curve downward, and events that strengthen it increase demand. A. Demirgüç-Kunt and L. Klapper (2013) prove that the level of financial inclusion is sensitive to barriers of regulatory and infrastructural origin, so changes in market rules and digital infrastructure directly change the demand for services.

At the same time, C. Ennew, N. Kharouf, and N. Sekhon (2011) found that, in the long term, service fairness and interaction quality are key to trust; therefore, communication and reputational shocks redistribute demand between providers. In his study, Hansen (2012) shows that financial awareness and subjective financial stability influence trust and risk perception. This suggests that educational and socioeconomic external factors shape demand patterns.

Thus, S. Moin, J. Devlin, and S. McKechnie (2015) distinguish between dispositional and institutional trust, which explains the different reactions of segments to the same external events. In turn, V. Skvarciany and D. Jureviciene (2017), using the example of the Baltic countries as EU members, confirm the role of pricing transparency and service quality. Therefore, regulatory requirements for information disclosure and quality standards change demand.

M. Sholevar and R. Bachmann (2025) find gender differences in trust patterns, so that demographic and cultural shocks change demand differently across groups. O. Alikariev and S. Poliakh (2018) emphasize that the consumer protection index reflects the strength of regulatory safeguards, so that strengthening or weakening consumer protection immediately

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changes the demand for complex products. M. Suhrab, C. Pinglu, and N. Qian (2024) emphasize that technological innovations expand access through cheaper digital channels, while digital inequality creates new barriers to demand.

Another example, Kovalchuk (2023) offers a clear distinction between these concepts, analyzes the specifics of financial marketing, the role of market segmentation, positioning, and marketing innovations, and also shows how digitalization, fintech solutions, and neo-banking are changing the structure of demand for financial services in Ukraine. But Ostrovska et. al. (2022) analyze the development of the financial services market in conditions of economic turbulence, identify stabilizing and destabilizing factors, and draw attention to problems of trust, regulatory restrictions, and consumer protection.

The supply of financial services in the European Union is also responsive to external factors. Thus, A. Tobisova et al. (2022) emphasize that a systematic assessment of financial risks and investment development is the basis of a sustainable supply, as macroeconomic shocks and climate policies alter the structure of products and the parameters of the decision-making system. For example, Xiaoyan (2020) indicates that where trust is lower, providers are forced to increase compliance and fraud control costs, thereby temporarily narrowing the supply. In a study by C. Ennew, N. Kharouf, and N. Sekhon (2011) and T. Hansen (2012), they jointly show that service quality and satisfaction are the basis of trust, so reputational events force the review of channels and standards, shifting the supply curve. S. Moin, J. Devlin, and S. McKechnie (2015) and V. Skvarciany and D. Jureviciene (2017) demonstrate that institutional trust and transparency determine the willingness of customers to interact with traditional and new intermediaries, so that increased disclosure requirements and the emergence of open digital platforms expand or narrow the supply depending on the costs of adaptation. Also, O. Alikariev and S. Poliakh (2018) emphasize the importance of consumer protection indices for regulatory market assessment, so that changes in supervision affect the cost and range of products. Ultimately, M. Suhrab, C. Pinlu, and N. Qian (2024) show that digital innovations reduce the marginal costs of providing financial services, so that external technological shifts can push supply up even in unfavorable macroeconomic conditions.

AIMS AND OBJECTIVES

The purpose of the study is to scientifically substantiate the methodological approach of structural modeling of the influence of external factors of demand and supply, and transform the results into a plan of management actions. The main objectives of the study are to identify and select external factors of demand and supply in the European Union countries, construct binary and weight matrices of their relationships, calculate indicators of total influence and total dependence, and MICMAC classification, establish correspondences between factors and marketing objectives, and form, on this basis, a prioritized plan of management actions for financial institutions.

METHODS

METHODS

In our study, we used a method for forming a set of factors, predicates, and weighting structures (Si, 2018; Schuerkamp, 2023) adapted to assessing the impact of external factors on the demand and supply of financial services in the European Union. In order to identify and evaluate the external factors, we applied a Delphi expert analysis with three iterative rounds. The expert panel consisted of 24 specialists from leading banks, payment institutions, financial technology companies, insurance companies, consumer associations, consulting firms, and higher education institutions in the countries of the EU. Consequently, the method itself involves identifying factors at two levels of analysis: the level of demand (D1-D7) and the level of supply (S1-S7). Thus, for each level, we selected seven external factors and represented them as nodes of the specified directed graph. Next, the cause-and-effect relationships of influence between the nodes are expertly recorded. If a change in factor "I" systemically generates marketing-significant consequences for factor "j", an arc "i→j" is established. Each edge is assigned a predicate reflecting the nature of the impact, namely, macroeconomic, demographic, behavioral-channel, value, and regulatory. The strength of the impact is encoded on a three-level scale {0; 2; 3} (0 - no direct impact, 2 - medium, 3 - strong), which ensures intersubjective comparability and subsequent quantitative processing. The binary fact of the presence of a relationship is displayed separately. On this basis, we construct binary dependency matrices $A=[a_{ij}]$, where $a_{ij}\in\{0,1\}$, and weight matrices $W=[w_{ij}]$, where $w_{ij}\in\{0,2,3\}$, capturing both the presence and intensity of interaction. MICMAC (Nazlabadi, 2023) clustering is performed in the (I_{total}, D_{total}) plane, where I_{total} and D_{total} are the indicators of overall influence and overall dependence, obtained taking into account indirect paths (the decaying sum of products of matrices W of length 1, d2, and 3). The thresholds are set using the medians of the distribu-

tions for each level separately, which allows us to classify factors into four classes: driver factors (high impact, low dependence), connected factors (high impact, high dependence), dependent factors (low impact, high dependence), and autonomous factors (low impact, low dependence). To connect structural strength with tangible results for the marketing vector, we introduce a "factor → goals" mapping matrix with scores of 0–3 for four goals: transparency and customer trust, digital reach and convenience, inclusion and accessibility, and innovation and growth. We normalize the goal index to [0;1] by dividing by a maximum of 12, after which we form an integral priority score as a weighted combination of the normalized overall influence, the goal index, and the inverse of the overall dependence index. This design replicates the logic of the model and provides a practical management matrix for synchronizing marketing activities in the financial services market in the European Union.

The structural modeling method proposed by us in the work is supplemented by a complex of general scientific and empirical methods that ensure the completeness of the study. A critical analysis and systematization of scientific sources was carried out, induction and deduction methods were applied to form the logic of hypotheses regarding the behavior of demand and supply, and a comparative analysis of statistical data from the Eurostat database was used to illustrate the features of the financial services market in the countries of the European Union.

RESULTS

The essence of demand for financial services in the European Union lies in the willingness of households to use accounts, payments, loans, savings, investments, and insurance products at certain prices and access conditions. At the same time, the supply is determined by the capabilities of banks, insurance companies, and fintechs to design, price, and deliver secure and convenient services, taking into account costs, regulations, technological infrastructure, cyber resilience, competition from non-bank players, and the cross-border integration of the single market. Marketing in this system is not about communication alone, but about managing the intersection of supply and demand. Marketing translates the structure of external influences into segment selection, transparent pricing, customer experience design, and channel priorities.

Currently, basic payment and settlement services account for the largest share of demand among individuals, as they are a prerequisite for access to other products. Financial services, such as consumer and mortgage lending, along with deposits and savings, reflect households' sensitivity to income and interest rate dynamics. Among businesses, we see a large number of services specifically related to payment and settlement services, supplemented by credit instruments for working capital and trade finance to address the needs of supply chains and cross-border transactions (Figure 1).

To select external factors, we engaged 24 experts from leading banks, payment and fintech companies, insurers, consumer associations, consulting firms, and educational institutions, as well as representatives from European countries. We used the Delphi method in three rounds with anonymous feedback. In the first round, the experts proposed a long list of factors. In the second, they revised their own assessments based on an aggregated summary. In the third, they finalized a consensus short list. The agreement threshold was determined using the median and coefficient of variation. We will highlight the most significant external factors influencing demand for financial services in EU countries:

- D1. Inflation, real incomes, interest rates, energy and housing costs, and consumer expectations.
- D2. Population aging, migration flows, urbanization, and household diversity.
- D3. Trust in financial institutions and perceptions of financial security.
- D4. Penetration of smartphones, online banking, and contactless payments, and expectations of seamless service.
- D5. Demand for green investments, ethical products, and climate risk insurance.
- D6. Educational level, availability of comparative information, and product simplicity.
- D7. Activity of global technology platforms in payments and «buy now-pay later» lending.

Let's highlight the most significant external factors influencing the supply of financial services in EU countries:

- S1. Dynamics of base rates, yield curves, and interbank market liquidity.
- S2. Customer identification and anti-money laundering regulations, open banking, and data protection requirements.
- S3. The state of payment and clearing systems for instant payments, data quality, exchange capabilities, and the use of artificial intelligence-based systems.
- S4. Requirements for redundancy, penetration testing, incident reporting, and security costs.
- S5. Competition from non-bank players.

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- S6. Labor market and access to skilled labor.
- S7. Differences in national implementation of regulations, tax regimes, language, and cultural barriers.

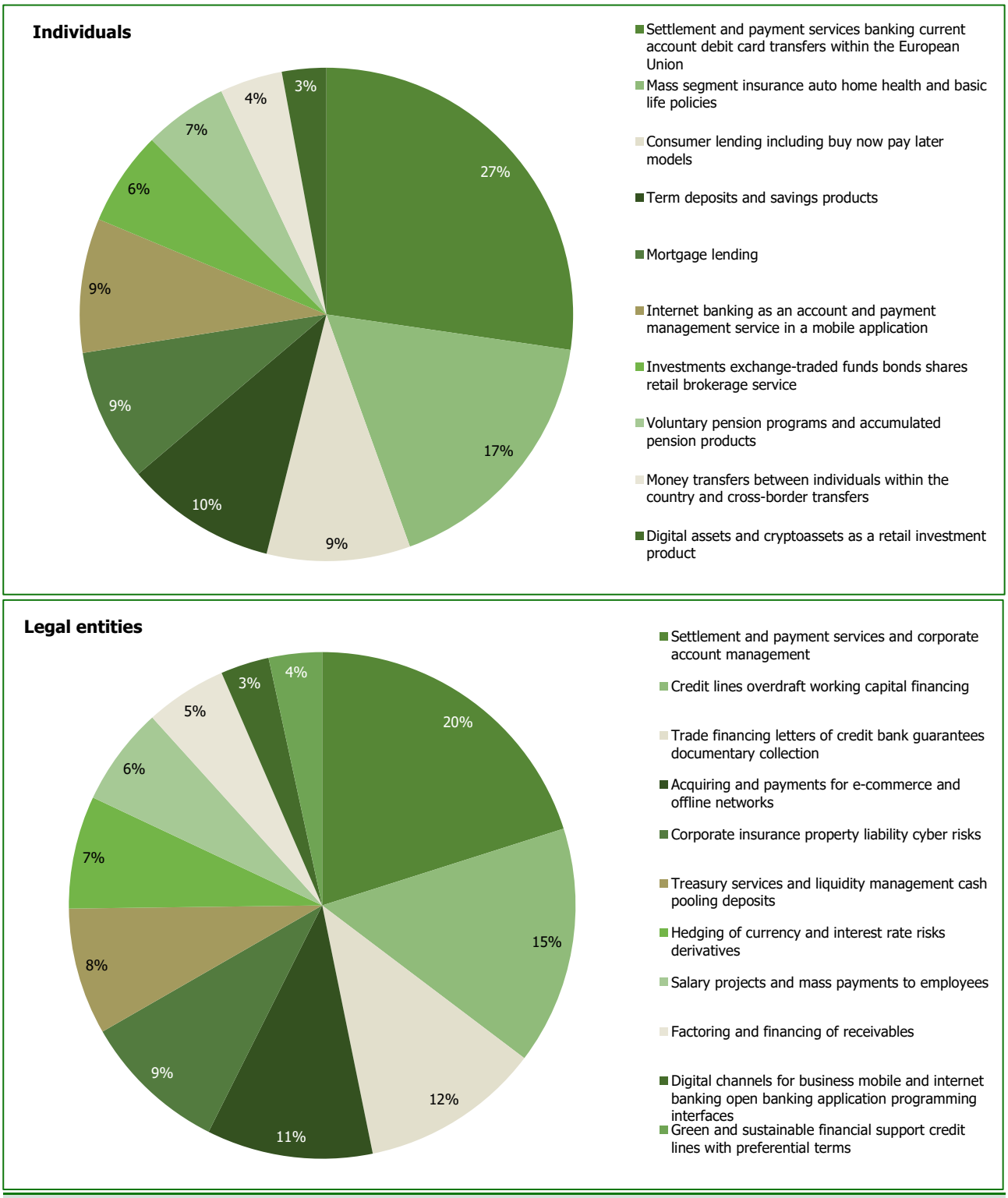

Figure 1. The most extensive financial services among legal and physical entities in the countries of the European Union. *(Source: Eurostat database)*

From an economic point of view, the binary dependency matrices in Table 1 formalise which external factors act as active drivers and which act as reactive channels on the demand and supply sides of the financial services market in the European Union. So, next, we present binary dependency matrices for two levels (demand and supply). Thus, [1] records the presence of a direct causal effect of the factor in the row on the factor in the column, [0] means the absence of such a direct

effect (diagonal zeros). We see the fixation of the direct systemic (arcs i→j), agreed by experts, without mixing them with indirect effects (which will be taken into account later when calculating the «total effect»). Thus, for demand, D1 directly affects D3, D4, D5, D6, D7. For example, D3 pushes the use of remote channels (D4) and the acceptability of new platforms (D7). D6 reinforces D3/D4/D5, etc. As for the supply, for example, S1 determines investment opportunities in technology (S3), cybersecurity (S4), and access to personnel (S6).

Table 1. Matrices of factors influencing the demand and supply of financial services.

D. Demand							
D	D1	D2	D3	D4	D5	D6	D7
D1	0	0	1	1	1	1	1
D2	0	0	1	1	1	1	0
D3	0	0	0	1	0	0	1
D4	0	0	0	0	0	0	1
D5	0	0	1	0	0	0	1
D6	0	0	1	1	1	0	0
D7	0	0	1	1	0	0	0
S. Supply							
S	S1	S2	S3	S4	S5	S6	S7
S1	0	0	1	1	0	1	0
S2	0	0	1	1	1	0	1
S3	0	0	0	1	1	1	0
S4	0	0	0	0	1	1	0
S5	0	1	1	0	0	0	1
S6	0	0	1	1	0	0	0
S7	1	1	0	0	1	0	0

Based on the results of hierarchical ordering of relationships between key factors, we construct modified relationship diagrams that more accurately determine the nature of direct influences and the level of dependence (Figure 2).

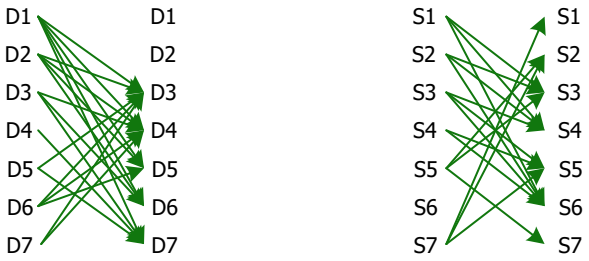

Figure 2. Diagram of the relationships between external factors influencing the demand and supply of financial services in the EU.

So, in Figure 2, the left-hand side of the diagram shows the network of external factors that influence demand D1 to D7, and the right-hand side shows the corresponding network for supply factors S1 to S7, while the arrows indicate the direction of the direct causal effects established by experts, and their density visually distinguishes driver, connected, dependent, and autonomous factors.

Next, we construct the weight matrices W that extend the binary dependency matrices by assigning a numerical weight w_{ij} to each direct causal link from factor *i* to factor *j*. In these matrices, any positive entry w_{ij} in the set 2, 3 means that experts recognise a direct causal influence of factor i on factor j and at the same time encode whether this influence is of medium intensity with value 2 or strong intensity with value 3. On the demand side, the basis is formed by D1→D3/D4/D6/D7 and D3→D4, D7→D4. As for the factors that affect the supply, the vector is given by S2→S3/S4, S3→S4/S6, and S7→S1/S2/S5. S1→S3 fixes that lower rates allow faster investment in technology, and S5→S2/S3 shows how competition from non-bank participants in the financial services market motivates updates and reorganizations. It should be noted that we deliberately use the scale {0, 2, 3} (without "1") to avoid blurred "weak" relationships and force experts to more clearly distinguish between moderate and strong interactions (Table 2).

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Table 2. Weighted matrices of dependencies between external factors affecting the demand and supply of financial services in the EU.

D. Demand							
D	D1	D2	D3	D4	D5	D6	D7
D1	0	0	3	2	2	3	2
D2	0	0	2	2	2	2	0
D3	0	0	0	3	0	0	2
D4	0	0	0	0	0	0	3
D5	0	0	2	0	0	0	2
D6	0	0	2	3	2	0	0
D7	0	0	2	3	0	0	0
S. Supply							
S	S1	S2	S3	S4	S5	S6	S7
S1	0	0	3	2	0	2	0
S2	0	0	3	3	2	0	2
S3	0	0	0	3	2	3	0
S4	0	0	0	0	2	2	0
S5	0	2	2	0	0	0	2
S6	0	0	2	2	0	0	0
S7	2	2	0	0	3	0	0

In the next step, we not only capture the formal relationships between factors, but also describe them as edges with predicates that reflect the economic content of the channels of influence transmission. In the demand matrix, this allows us to show how macroeconomic conditions of households, demographic shifts, the level of trust, and digital engagement are sequentially transformed into changes in demand for specific financial products and service channels. For example, the edge D1→D3 with a macroeconomic predicate means that inflation, real incomes, and interest rates directly change the perception of the safety of savings, and therefore the willingness of households to interact with banks. The edges D3→D4 and D3→D7 show how trust is transformed into the use of remote channels and platform services. In the supply matrix, the edges S2→S3 and S2→S4 reflect how regulatory requirements for customer identification and anti-money laundering direct financial institutions' investments in payment infrastructure, cybersecurity, and operational resilience, while S5→S2/S3 demonstrates how competition from non-bank players forces compliance standards and technological solutions to be updated (Table 3).

Table 3. Edges with predicates on external factors affecting the demand and supply of financial services in the EU.

From	To	Type of connection	Strength	Weight
D1	D3	Macroeconomic → trust/security	Strong	3
D1	D4	Macroeconomic → technological-channel	Medium	2
D1	D5	Macroeconomic → value (environmental, social, and management priorities)	Medium	2
D1	D6	Macroeconomic → educational-information	Strong	3
D1	D7	Macroeconomic → platform/market	Medium	2
D2	D3	Demographic → trust/security	Medium	2
D2	D4	Demographic → technological-channel	Medium	2
D2	D5	Demographic → value (environmental, social, and management priorities)	Medium	2
D2	D6	Demographic → educational-information	Medium	2
D3	D4	Trust/security → technological-channel	Medium	3
D3	D7	Trust/security → platform/market	Strong	2
D4	D7	Technological-channel → platform/market	Medium	3
D5	D3	Value (environmental, social, and management priorities) → trust/security	Medium	2
D5	D7	Value (environmental, social, and management priorities) → platform/market	Medium	2
D6	D3	Educational-information → trust/security	Medium	2
D6	D4	Educational-information → technological-channel	Strong	3
D6	D5	Educational-informational → value-based (environmental, social, and management priorities)	Medium	2

(continued on next page)

Table 3. Continued.

From	To	Type of connection	Strength	Weight
D7	D3	Platform/market → trust/security	Medium	2
D7	D4	Platform/market → technological-channel	Medium	3
S1	S3	Monetary/Financial → Technological	Strong	3
S1	S4	Monetary/Financial → Cyber/Operational	Medium	2
S1	S6	Monetary/Financial → HR/Labor Market	Medium	2
S2	S3	Regulatory/Compliance → Technological	Strong	3
S2	S4	Regulatory/Compliance → Cyber/Operational	Strong	3
S2	S5	Regulatory/Compliance → Market/Competitive	Medium	2
S2	S7	Regulatory/Compliance → Cross-Border/Integration	Medium	2
S3	S4	Technological → Cyber/Operational	Strong	3
S3	S5	Technological → Market/Competitive	Medium	2
S3	S6	Technological → HR/Labor Market	Medium	3
S4	S5	Cyber/Operational → Market/Competitive	Strong	2
S4	S6	Cyber/Operational → HR/Labor Market	Medium	2
S5	S2	Market/Competitive → Regulatory/Compliance	Medium	2
S5	S3	Market/Competitive → Technological	Medium	2
S5	S7	Market/Competitive → Cross-Border/Integration	Medium	2
S6	S3	HR/Labor Market → Technological	Medium	2
S6	S4	HR/Labor Market → cyber/operational	Medium	2
S7	S1	Cross-border/integration → monetary/financial	Medium	2
S7	S2	Cross-border/integration → regulatory/compliance	Medium	2
S7	S5	Cross-border/integration → market/competitive	Medium	2

As a result, we get:

$(\forall D_{ij})\{ \exists(D1) \leftarrow determines(D1,D3) \wedge determines(D1,D6) \wedge implies(D1,D4) \wedge implies(D1,D5) \wedge implies(D1,D7) \}$

$(\forall D_{ij})\{ \exists(D2) \leftarrow implies(D2,D3) \wedge implies(D2,D4) \wedge implies(D2,D5) \wedge implies(D2,D6) \}$

$(\forall D_{ij})\{ \exists(D3) \leftarrow determines(D3,D4) \wedge implies(D3,D7) \}$

$(\forall D_{ij})\{ \exists(D4) \leftarrow determines(D4,D7) \}$

$(\forall D_{ij})\{ \exists(D5) \leftarrow implies(D5,D3) \wedge implies(D5,D7) \}$

$(\forall D_{ij})\{ \exists(D6) \leftarrow implies(D6,D3) \wedge determines(D6,D4) \wedge implies(D6,D5) \}$

$(\forall D_{ij})\{ \exists(D7) \leftarrow implies(D7,D3) \wedge determines(D7,D4) \}$

And for external factors affecting the proposal:

$(\forall S_{ij})\{ \exists(S1) \leftarrow determines(S1,S3) \wedge implies(S1,S4) \wedge implies(S1,S6) \}$

$(\forall S_{ij})\{ \exists(S2) \leftarrow determines(S2,S3) \wedge determines(S2,S4) \wedge implies(S2,S5) \wedge implies(S2,S7) \}$

$(\forall S_{ij})\{ \exists(S3) \leftarrow determines(S3,S4) \wedge implies(S3,S5) \wedge determines(S3,S6) \}$

$(\forall S_{ij})\{ \exists(S4) \leftarrow implies(S4,S5) \wedge implies(S4,S6) \}$

$(\forall S_{ij})\{ \exists(S5) \leftarrow implies(S5,S2) \wedge implies(S5,S3) \wedge implies(S5,S7) \}$

$(\forall S_{ij})\{ \exists(S6) \leftarrow implies(S6,S3) \wedge implies(S6,S4) \}$

$(\forall S_{ij})\{ \exists(S7) \leftarrow implies(S7,S1) \wedge implies(S7,S2) \wedge determines(S7,S5) \}$

Next, we summarize the information from the weight matrices in the form of indicators of influence and dependence for both components, demand and supply, in the financial services market. From an economic point of view, the sum of the weights in a row characterizes the extent to which a factor transmits external shocks further and shapes the conditions for other variables, that is, the extent to which it sets the rules of the game for the market. Thus, we calculated direct metrics as the sum of output/input weights (row/column), and total metrics as the sum of paths of length 1–2–3 (serial estimate: $1 \cdot W + 0.5 \cdot W^2 + 0.25 \cdot W^3$), and then normalized to [0;1] by dividing by the maximum value within the level. Thus, we can see that demand is most significantly affected by D1, the strongest overall influence at zero dependence. At the same time, D4 has the greatest overall dependence. It is pressured by macro conditions, trust, involvement, and

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platform services, so it is a typical "connected" element. As for the supply, S2 demonstrates the greatest overall influence. In essence, the factor shapes technical and security standards and modulates competition and cross-border (Table 4).

Table 4. Impact and dependency indicators.

Factors	Direct influence	Direct dependence	Total influence (serial evaluation)	Total dependence (serial evaluation)	Total influence (norm.)	Total dependence (norm.)
D1	12	0	42	0	1	0
D2	8	0	27	0	0.64	0
D3	5	11	14.5	53	0.35	0.91
D4	3	13	10.5	58.5	0.25	1
D5	4	6	14	33	0.33	0.56
D6	7	3	20.5	21	0.49	0.36
D7	5	9	14.5	34.5	0.35	0.59
S1	7	2	27	9	0.66	0.19
S2	10	4	41	17	1	0.35
S3	8	10	26	45.5	0.63	0.95
S4	4	10	14	48	0.34	1
S5	6	9	31	41.5	0.76	0.87
S6	4	7	16	30	0.39	0.63
S7	7	4	33	20	0.81	0.42

Now we form MICMAC metrics and classes for supply and demand factors in the EU financial services market. From an economic point of view, this procedure is necessary to transform a large number of external factors into a clear map of roles in the formation of market equilibrium. Drivers describe those variables that are the first to shift the demand and supply curves, change the equilibrium price and volume of transactions, as well as the conditions for access to financial services. Dependent factors accumulate the impact of other variables and act as sensitive indicators of stress, changes in expectations, and behavioral shifts of customers. Related factors combine strong influence with high dependence; it is through them that cascading effects are transmitted, which is important for assessing systemic risks and possible chain reactions. Autonomous factors have a limited systemic impact, but remain relevant for individual niche segments or specific products. MICMAC classes are derived from normalized indicators of overall influence and overall dependence, using median thresholds for each level separately. Thus, for demand, the median influence value will be 0.35, and the median dependence will be 0.56. For the proposal, the median influence will be 0.66, while the median dependence value will be 0.63. We used the following assignment rule: "high" – strictly above the median, "low" – not above the median. For demand, the basis is formed by D1, D2, and D6 - these are driving factors, i.e., strong systemic influence with low dependence. D3, D4, and D7 are dependent elements, sensitive to external changes. For supply, we have S2 and S7 - drivers; S5 - typically connected (both influence and dependence are high). This situation sets the stage for ranking and action planning (Table 5).

Table 5. MICMAC metrics and classes by factors influencing supply and demand in the financial services market.

Factors	Total influence (norm.)	Total dependence (norm.)	MICMAC Cluster
D1	1	0	Factors-Drivers
D2	0.64	0	Factors-Drivers
D3	0.35	0.91	Dependent Factors
D4	0.25	1	Dependent Factors
D5	0.33	0.56	Autonomous Factors
D6	0.49	0.36	Factors-Drivers
D7	0.35	0.59	Dependent Factors
S1	0.66	0.19	Autonomous Factors
S2	1	0.35	Factors-Drivers
S3	0.63	0.95	Dependent Factors
S4	0.34	1	Dependent Factors
S5	0.76	0.87	Relevant factors
S6	0.39	0.63	Autonomous Factors
S7	0.81	0.42	Factors-Drivers

The final step is to construct a ranking matrix for demand (D1–D7) and supply (S1–S7). The priority score is calculated as follows: 0.5 x normalized overall influence + 0.3 x normalized contribution index to marketing objectives + 0.2 x (1 – normalized overall dependence). This format ensures comparability of factors before moving on to the actual action plan (Table 6).

Table 6. Ranking matrix for all identified external factors affecting supply and demand in the EU financial services market.

Rank	D/S	Factors	Impact Index (norm.)	Dependency Index (norm.)	Goal Index (norm.)	Priority Score
1	D1	Inflation, real incomes, interest rates, energy and housing costs, and consumer expectations	1	0	0.85	0.955
2	D2	Population aging, migration flows, urbanization, and household diversity	0.64	0	0.6	0.7
3	D6	Educational level, availability of comparative information, and product simplicity.	0.49	0.36	0.7	0.583
4	D7	Activity of global technology platforms in payments and «buy-now-pay-later» lending	0.35	0.59	0.78	0.491
5	D3	Trust in financial institutions and perceptions of financial security	0.35	0.91	0.75	0.418
6	D5	Demand for green investments, ethical products, and climate risk insurance	0.33	0.56	0.55	0.418
7	D4	Penetration of smartphones, online banking, contactless payments, and expectations of seamless service	0.25	1	0.8	0.365
1	S2	Customer identification and anti-money laundering regulations, open banking, and data protection requirements	1	0.35	0.85	0.885
2	S7	Differences in national implementation of regulations, tax regimes, language, and cultural barriers	0.81	0.42	0.88	0.785
3	S1	Dynamics of base rates, yield curves, and interbank market liquidity	0.66	0.19	0.7	0.702
4	S5	Competition from non-bank players	0.76	0.87	0.8	0.646
5	S3	The state of payment and clearing systems for instant payments, data quality, exchange capabilities, and the use of artificial intelligence-based systems	0.63	0.95	0.9	0.595
6	S6	Labor market and access to skilled labor	0.39	0.63	0.65	0.464
7	S4	Requirements for redundancy, penetration testing, incident reporting, and security costs	0.34	1	0.75	0.395

As we can see from Table 6, demand is most significantly influenced by D1 (Inflation, real incomes, interest rates, energy and housing costs, and consumer expectations). This is followed by D2 (Population aging, migration flows, urbanization, and household diversity) and D6 (Educational level, availability of comparative information, and product simplicity) as "driving factors." Regarding the supply, the most significant are S2 (Customer identification and anti-money laundering regulations, open banking, and data protection requirements) and S7 (Differences in national implementation of regulations, tax regimes, language, and cultural barriers), which lead the rating, therefore directly setting the marketing vector in the European Union.

Let us pay attention to the alignment matrices (Table 7). Therefore, the 0–3 scale (0 – no contribution; 1 – weak, occasional contribution; 2 – moderate, stable contribution (depending on the segment and country context); 3 – strong, dominant contribution, almost certainly driving the goal) reflects the contribution of each factor to achieving four goals: insight and trust – the key to product use and loyalty); digital reach and convenience (convenience and seamless experience determine customer acquisition and frequency of service use); inclusion and accessibility (different demographic groups, vulnerable categories, small businesses, as well as accessibility for people with disabilities); innovation and growth (the competitiveness vector).

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Table 7. The alignment matrices.

D	Insight and trust	Digital reach and convenience	Inclusion and accessibility	Innovation and growth
D1	3	2	2	2
D2	2	2	3	1
D3	3	2	1	1
D4	1	3	2	2
D5	2	1	2	2
D6	2	2	3	1
D7	1	3	2	3
S	**Insight and trust**	**Digital reach and convenience**	**Inclusion and accessibility**	**Innovation and growth**
S1	1	1	2	2
S2	3	2	2	2
S3	2	3	2	3
S4	3	2	1	1
S5	1	3	2	3
S6	1	2	1	2
S7	2	2	3	3

We now present the key marketing vectors based on the ranking of external factors that influence the demand and supply of financial services. Consequently, the marketing action plan is aligned with the prioritization in the previous table. Each activity is directly tied to a marketing vector, namely, increasing trust and transparency, expanding digital reach and convenience, promoting inclusion and accessibility, accelerating innovation, and enhancing security (Figure 3).

Thus, the marketing vector is formed as a direct reflection of the results of structural modeling, namely binary and weighted dependency matrices, serial indicators of total influence and total dependence, MICMAC classification, and correspondence matrices of the type "factor → marketing objectives." From an economic point of view, this means that we translate an abstract map of external influences into specific rules for distributing limited financial and organizational resources between client segments, channels, products, and basic management goals. In other words, the structural strength of factors and their role in the supply and demand system determine where investments in marketing, digital services, transparency, and innovation will have the greatest effect on income, cost of funding, portfolio sustainability, and the risk profile of the institution.

Additionally, the dependencies obtained in the work allow us to move from a purely technical description of structural modeling to an economic explanation of how external shocks are translated into specific changes in demand and supply in the financial services market of the European Union countries. The dominance of factors D1, D2, and D6 in the cluster of demand drivers means that the combination of macroeconomic conditions of households, demographic structure, and financial awareness determines the depth of coverage by accounts, loans, savings, insurance, and investment products, as well as the willingness of customers to switch to digital service channels. For the supply side, the leading role of S2 and S7 shows that regulatory regimes and fragmentation of the single market due to differences in the implementation of norms shape the cost of services, the possibilities of cross-border provision, the structure of competition between banks, insurance companies, financial technology companies, and global platforms.

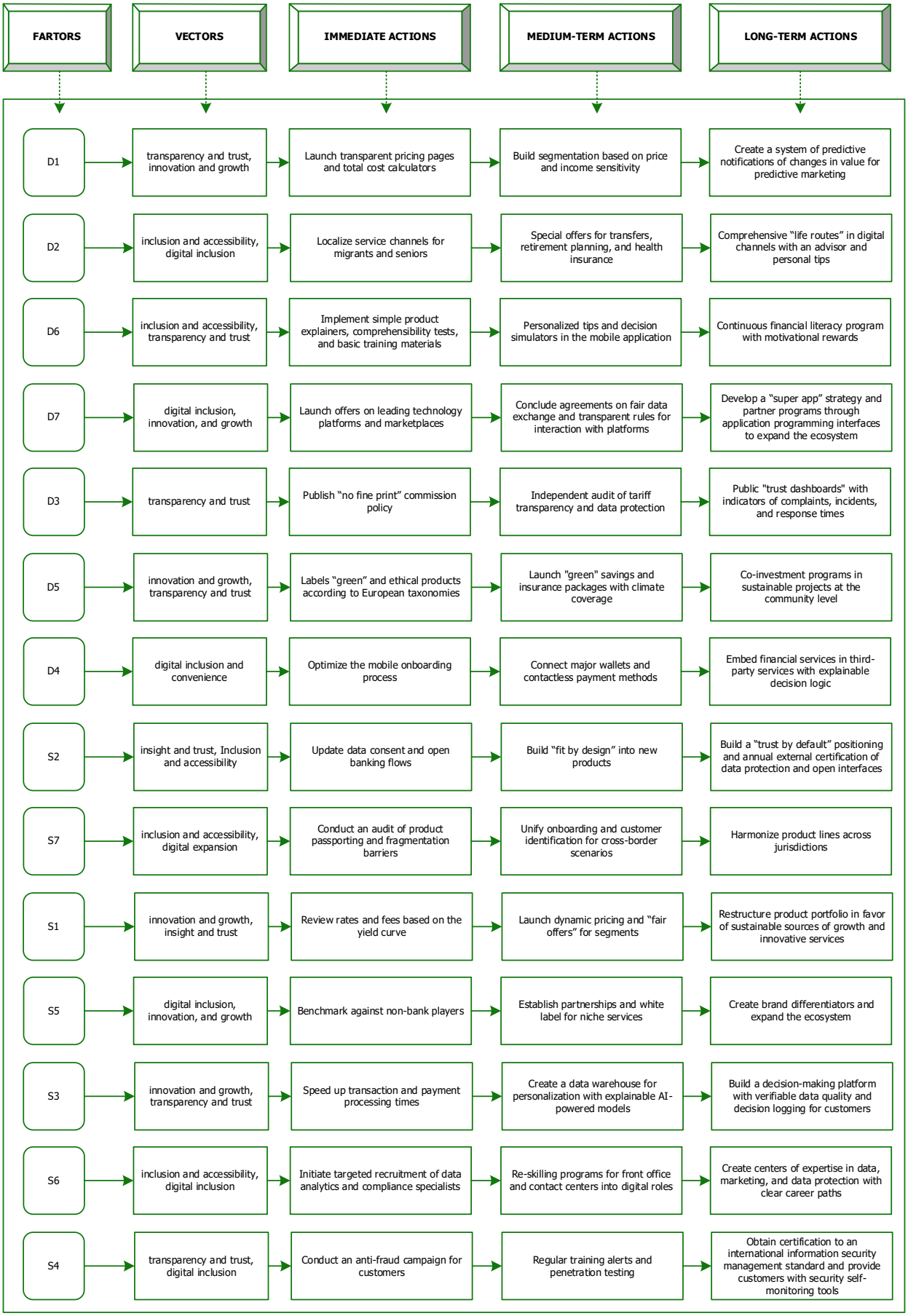

Figure 3. Marketing vectors for the financial services market in the EU.

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DISCUSSION

Our modeling shows that household macroeconomic conditions drive demand in the European Union, while demographic changes and affordability strengthen trust and expand digital channels. All identified patterns derive directly from the dependency and weight matrices developed by experts, serial impact and dependency indicators, and the MICMAC classification. These findings underpin a prioritized action plan that prioritizes transparency, digital inclusion, inclusiveness, and innovation. The channel that links financial literacy with digital adoption in our framework mirrors the relationship documented by Andreou and Anyfantaki (2021). Their work ties higher financial literacy to greater use of internet banking. Our contribution adds a structural place for this pathway within a multi-factor system in which macro conditions and platform dynamics can amplify or dampen the literacy effect.

Our findings that non-bank platforms and market activity shape both demand and supply are consistent with the findings presented in the International Monetary Fund's Big Tech Policy Brief (Bains et al., 2022). This paper explains how platform companies are leveraging data, scale, and embedded access to expand their activities from payments to lending, asset management, and insurance, changing the landscape of competition and raising regulatory concerns. In our results, this appears as D7 on the demand side and S5 on the supply side, with strong links to technology standards, security, and consent management. We also show cross-border implementation differences as an independent driver that magnifies platform effects within the single market. This cross-border emphasis differentiates our European Union setting from the global lens of the International Monetary Fund analysis.

The bibliometric mapping by Gulati and Singh (2024) locates digitalisation, data-centric practices, and platformisation as the centre of gravity in contemporary financial services research. Our ranked vectors echo this centre through the salience of instant payments, data quality, explainable decisioning, and ecosystem partnerships. We go beyond a literature map by quantifying how these elements interact with macro cycles, regulation, and demographic structure, then converting the structure into time-phased marketing actions. Customer experience findings in industry commentary emphasize secure and reliable technology, seamless access, and proactive guidance (Hideki, 2023). Our vectors meet these expectations through transparent pricing, trust management dashboards, detailed explanations, simulation tools, and personalized advice. The alignment suggests that the structural priorities we derive will be visible to customers as concrete improvements in journeys, confidence, and advice. For example, Svatošová (2019) proposes and simulates a dynamic financial strategy model at the enterprise level using Vensim, with the aim of testing how financial changes impact overall strategy. Our design differs in scope and unit of analysis. We construct a market-level map that merges demand and supply factors, classifies their influence and dependence, and then links factors to four marketing goals through a transparent scoring rule. These two approaches are complementary. A firm can use our factor-to-goal priorities to select interventions, then simulate internal outcomes with a dynamic model. The combination provides both where to act and how the action ripples through internal finances.

Our framing of technology as an enabler that must remain explainable and auditable also connects with recent syntheses on artificial intelligence in finance. Vuković et.al. (2025) identify credit scoring, fraud detection, digital insurance, and advisory services as pivotal applications, and they foreground data governance and regulatory oversight as persistent challenges. In our map, these appear as S3 for data and artificial intelligence systems, S4 for cyber and operational resilience, and S2 for identification, consent, and open banking. We add an explicit cross-border driver that matters in the European Union, and we integrate artificial intelligence into a marketing objective matrix.

CONCLUSIONS

Based on expert assessments, a system of key external factors of demand and supply in the financial services market of the European Union countries was identified, their direct and indirect causal relationships were formalized, indicators of total impact and total dependence were calculated, and a classification was performed using the MICMAC approach. This made it possible to move from a simple list of factors to a structured map of influences, which clearly identifies drivers, dependent, autonomous, and relevant factors on both the demand and supply sides. The results obtained showed that on the demand side, the leading role is played by macroeconomic conditions of households, demographic shifts, and the level of financial inclusion, which simultaneously strengthen trust, stimulate the use of digital channels, and change the structure of demand for products. On the supply side, regulatory requirements for customer identification and anti-money laundering, the state of payment and technological infrastructure, and the fragmentation of the single market due to differences in national implementation of regulations are decisive.

In summary, the research conducted in this article identified and formalized a system of external factors that directly or indirectly influence the supply and demand of financial services in the European Union. Furthermore, their cause-and-effect relationships were established, and both direct and indirect effects were quantified, enabling the construction of a scientifically grounded influence map for determining the vector of marketing activities in the EU market. It was demonstrated that, on the demand side, household macroeconomic conditions are the leading driver, while demographic shifts and financial inclusion form a stable vector for the expansion of digital distribution channels and the strengthening of trust. On the supply side, the dominant role of regulatory requirements and cross-border integration as specific determinants was substantiated. Consolidation of binary and weight matrices, total influence and total dependence indicators, and the MICMAC classification with factor-to-goal correspondence matrices demonstrated consistency between the structural strength of external factors and their practical relevance for transparency and customer trust, digital reach and convenience, and inclusion. This allowed us to formulate sound priorities and transform them into a coherent action plan, combining short-term steps with a medium-term vision for improving marketing activities.

The results of the study are primarily intended for policymakers and supervisory authorities in the EU who design and implement regulations in the retail financial market. For these actors, the ranking and classification of external factors provide a structured map of the most important drivers and transmission channels of shocks to demand and supply, which can be used when preparing regulatory impact assessments, crisis response measures, and long-term strategies for financial security and consumer protection.

Prospects for further modeling and research include deeper quantitative calibration of weights by combining expert assessments with panel statistical series, dynamic updating of dependency matrices, and repeated rounds of the Delphi method, expanding the impact scale to a quasi-continuous scale, and parameter verification. It would be advisable to test alternative priority scoring formulas, apply multivariate sensitivity (leave-one-factor-out), and conduct scenario stress tests.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

All authors have contributed equally.

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CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

REFERENCES

1. Alikariev, O. F. U., & Poliakh, S. (2018). Index of protection of the interests of consumers of the financial services market. *Business Ethics and Leadership*, *2*(1), 78—95. https://doi.org/10.21272/bel.2(1).78-95.2018
2. Andreou, P. C., & Anyfantaki, S. (2021). Financial literacy and its influence on internet banking behavior. *European Management Journal*, *39*(5), 658–674. https://doi.org/10.1016/j.emj.2020.12.001
3. Bains, P., Sugimoto, N., & Wilson, C. (2022). BigTech in Financial Services: Regulatory Approaches and Architecture. International Monetary Fund, Washington. *Fintech Notes,* 2022/002. https://doi.org/10.5089/9781557756756.063
4. Demirgüç-Kunt, A., & Klapper, L. (2013). Measuring Financial Inclusion: Explaining Variation in Use of Financial Services across and within Countries. *Brookings Papers on Economic Activity, 1,* 279—340. URL: https://www.brookings.edu/wp-content/uploads/2016/07/2013a_klapper.pdf
5. Ennew, C., Kharouf, H., & Sekhon, H. (2011). Trust in UK financial services: A longitudinal analysis. *Journal of Financial Services Marketing, 16*, 65—75. https://doi.org/10.1057/fsm.2011.8
6. Eurostate. Database. (n.d.). URL: https://ec.europa.eu/eurostat/data/database
7. Gulati, A., & Singh, S. (2024). The Changing Landscape of Financial Services in the Age of Digitalization: A Bibliometric Analysis. *NMIMS Management Review*, *32*(1), 42-57. https://doi.org/10.1177/09711023241261139
8. Hansen, T. (2012). Understanding Trust in Financial Services: The Influence of Financial Healthiness, Knowledge, and Satisfaction. *Journal of Service Research* (JSR), *15*(3), 280—295. https://doi.org/10.1177/1094670512439105
9. Hideki, E. (2023). What does the modern customer expect from financial service firms? URL:

DOI: 10.55643/fcaptp.6.65.2025.5052

https://www.redk.net/what-does-the-modern-customer-expect-from-financial-service-firms/

10. Kovalchuk, S. (2023). Finansovyi marketynh ta perspektyvy yoho rozvytku v Ukraini. *Visnyk Khmelnytskoho Natsionalnoho Universytetu. Ekonomichni Nauky*, *320*(4), 165–169. https://doi.org/10.31891/2307-5740-2023-320-4-24

11. Moin, S., Devlin, J., & McKechnie, S. (2015). Trust in financial services: Impact of institutional trust and dispositional trust on trusting belief. *Journal of Financial Services Marketing*, *20*, 91—106. https://doi.org/10.1057/fsm.2015.6

12. Nazlabadi, E., Maknoon, R., Alavi Moghaddam, M. R., & Daigger, G. T. (2023). A novel MICMAC approach for cross impact analysis with application to urban water/wastewater management. *Expert Systems with Applications, 230*, 120667. https://doi.org/10.1016/j.eswa.2023.120667

13. Ostrovska, N., Popova, L., Pylevych, D., Panchenko, O., Kozlianchenko, O., & Bazilinska, O. (2022). Development of the financial services market in the conditions of economic turbulence. *International Journal of Computer Science and Network Security*, 22(1), 509–515. https://doi.org/10.22937/IJCSNS.2022.22.1.66

14. Schuerkamp, R., & Giabbanelli, P. J. (2023). Extensions of fuzzy cognitive maps: A systematic review. *ACM Computing Surveys, 56*(2), 1–36. https://doi.org/10.1145/3610771

15. Sholevar, M., & Bachmann, R. (2025). Patterns of trust in financial services: critical factors and gender differences. *J Financ Serv Mark*, *30*. https://doi.org/10.1057/s41264-025-00303-0

16. Si, S.-L., You, X.-Y., Liu, H.-C., & Zhang, P. (2018). DEMATEL technique: A systematic review of the state-of-the-art literature on methodologies and applications. *Mathematical Problems in Engineering,* 1–33. https://doi.org/10.1155/2018/3696457

17. Skvarciany, V., & Jureviciene, D. (2017). Factors affecting personal customers' trust in traditional banking: Case of the Baltics. *Journal of Business Economics and Management*, *18*(4), 636-649. https://doi.org/10.3846/16111699.2017.1345784

18. Suhrab, M., Pinglu, C., & Qian, N. (2024). Equality in the digital age: leveraging technological innovation for fostering access to financial services. *SN Bus Econ*, *4*, 168. https://doi.org/10.1007/s43546-024-00763-x

19. Svatošová, V. (2019). Proposal and Simulation of Dynamic Financial Strategy Model. *Future Studies Research Journal: Trends and Strategies*, *11*(1), 84–101. https://doi.org/10.24023/FutureJournal/2175-5825/2019.v11i1.346

20. Tobisova, A., Senova, A., Izarikova, G., & Krutakova, I. (2022). Proposal of a Methodology for Assessing Financial Risks and Investment Development for Sustainability of Enterprises in Slovakia. *Sustainability*, *14*(9), 5068. https://doi.org/10.3390/su14095068

21. Vuković, D.B., Dekpo-Adza, S., & Matović, S. (2025). AI integration in financial services: a systematic review of trends and regulatory challenges. *Humanit Soc Sci Commun, 12*, 562. https://doi.org/10.1057/s41599-025-04850-8

22. Xiaoyan, Xu. (2020). Trust and financial inclusion: A cross-country study. *Finance Research Letters*, *35*. https://doi.org/10.1016/j.frl.2019.101310

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ОЦІНЮВАННЯ ВПЛИВУ ЗОВНІШНІХ ФАКТОРІВ НА ПОПИТ І ПРОПОЗИЦІЮ ФІНАНСОВИХ ПОСЛУГ У КРАЇНАХ ЄС

Мета дослідження полягає в науковому обґрунтуванні методичного підходу структурного моделювання впливу зовнішніх факторів попиту й пропозиції та трансформації результатів у план управлінських дій. Основними завданнями дослідження є ідентифікація та відбір зовнішніх факторів попиту й пропозиції в країнах Європейського Союзу, побудова бінарних і вагових матриць їхніх взаємозв'язків, розрахунок показників загального впливу й загальної залежності та MICMAC-класифікації, установлення відповідностей між факторами й маркетинговими цілями та формування на цій основі пріоритизованого плану управлінських дій для фінансових установ і вектора маркетингу для ринку фінансових послуг країн Європейського Союзу. Це досягається через структурне моделювання впливу зовнішніх факторів попиту й пропозиції та перетворення отриманих результатів на пріоритизований план управлінських дій. Актуальність зумовлена потребою пов'язати зовнішні фактори впливу на попит і пропозиції з реальними маркетинговими результатами. Методологія передбачає застосування експертного аналізу за методом Дельфі для відбору факторів і фіксації прямих причиново-наслідкових зв'язків. Побудовано бінарні й вагові матриці залежностей, сформовано «ребра з предикатами» за типами впливів, обчислено серійні показники загального впливу й загальної залежності з урахуванням непрямих шляхів, виконано класифікацію чинників у площині Matrices d'Impacts Croisés Multiplication Appliquée à un Classement та побудовано матриці відповідності «чинник → цілі маркетингу» з оцінками. Отримані результати показали, що на боці попиту провідним драйвером виступають макроумови домогосподарств, водночас демографічні зрушення й фінансова залученість формують стійкі вектори зміцнення довіри й розширення цифрових каналів. У результаті сформовано пріоритетне ранжування факторів і узгоджений план дій у короткостроковій, середньостроковій та довгостроковій пріоритетності.

Ключові слова: фінансові послуги, вектор маркетингу, зовнішні фактори впливу, попит, пропозиція, вагові матриці залежностей, класифікація MICMAC, цифрова трансформація, прозорість і довіра клієнтів, ЄС

JEL Класифікація: G21, G28, M31, C44

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