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PLATFORM SOLUTIONS TO RAISE THE QUALITY OF THE PRODUCTS OF ORGANISATIONS WITH HIGH DIGITAL MATURITY

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Abstract: *This paper studies the problem of raising product quality, which can be achieved due to the use of platform corporate programs that are combined with digital technologies. In the context of the research, we identify rmine the system character of the process of management of product quality and characterise its components. They include the corresponding standards, philosophy of total quality management, tools, and program solutions. The purpose of this research is to reveal the connection between the processes of digitalisation of economic subjects and the level of the use of platform solutions to raise product quality.*

Within this research, we formed an array of data which characterises the level of digital maturity of organisations in different sectors of the economies of the EU countries. Based on this, we identified a high level of differentiation of digital maturity of organisations in different countries and spheres of economy. We also determined the presence of a close direct connection between the level of digital maturity of organisations and the level of the use of platform solutions for product quality management. These solutions include the domination of ERP platforms. We also substantiated the necessity of integrating them with other types of programs and digital technologies.

Keywords: *platform solutions, business programs, corporate programs, product quality, digitalisation, digital maturity*

1. Introduction

The current state of economic development of most economic subjects is closely connected with dynamic changes in the digital sphere. Digitalisation is the key factor in the growth of productiveness, cheaper production, acceleration of turnover, increase in the level of management, etc. However, in this context, the use of digital technologies in corporate management is not considered a stable condition but rather a process that involves

the gradual acquisition of the ability to use the potential of digital technologies to solve the tasks of corporate management. From this position, the states of acquisition of such ability are associated with the biological term of “maturity”, which can be based on a certain gradation from the lowest to the highest level. Digital technologies play one of the key roles in determining and ensuring the development of organisations. They also facilitate the achievement of tasks that belong to different spheres of management activities, including

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production, distribution, finance, and the management of supply, stock, or distribution. However, one of the most relevant and complex tasks that covers a wide range of managerial processes is ensuring product quality as an integral parameter of successfulness and competitiveness of the company. Resolution of the problem of product quality at a company is closely connected with the potential of digital solutions and the possibility of using special business programs, including complex platform solutions.

Being the factors of achievement of competitive advantages, an increase in the quality of goods and services, improvement of market position, etc., digital technologies often define the directions for the development of entire sectors of the economy. The main advantage, which is associated with digital technologies by more than 93% of respondents from among executive directors in the EU, is access to data as the factor of substantiation of managerial solutions (McKinsey, 2020). Thus, the notion of digitalisation acquires the status of a continuous process, due to which not only digital leadership is achieved but companies' advantages are generated in the sphere of competitive advantages, product quality, etc. (Cho et al., 2021).

Based on this, the digital maturity of companies is one of the factors in the management of competitiveness and an effective means of product quality management. At the same time, complications of the processes of management, which are manifested through high expectations of customers, necessity of constant investing in scientific research and innovations, strengthening of the measures of legal regulation of business and issues of product quality, growth of speed of reaction to consumer changes, and an increase in the role of global institutions in product quality management require an increase in the level of awareness and substantiation of managerial solutions, which can be achieved, to a large extent, due combination of the

potentials of platform solutions and tools of the digital economy (Simic, 2019).

Therefore, the study of the problem of using digital solutions to raise product quality is an important problem, which includes the problem aspects of improvement of product quality and elaborates on the possibility of solving these problems due to better use of the digital potential with a special emphasis on companies with high digital maturity.

2. The methodological basis of the research

The methodology of this research includes complex approaches, which belong to different scientific spheres. These are the issues of economic cybernetics, management, digital economy, digital technologies, etc., which focus on the resolution of the problem of improvement of product quality.

The main provisions of the treatment and support for quality are presented most fully in the corresponding international standards, in particular, ISO 9000:2015. According to the standard, product quality is treated as the ability to satisfy the needs of customers and influence certain circles of interested parties. According to this, product quality, apart from the designated parameters, functions, and characteristics, is also expressed through its perception by customers and stakeholders (ISO 9000:2015, 2015). Dependence of quality on the customer's position is often decisive, covering such aspects as the different perception of demands to quality by customers and management of the company, differences between the customer's information about the product and the real level of its quality, and differences between expectations and the received level of quality (Kubińska-Jabcoń et al., 2022).

Ensuring product quality is a complex mechanism that covers a wide circle of processes within organisations and beyond them. The tools of this mechanism contain developed and formed methods in the form of the philosophy of Total Quality Management

(TQM), Lean Manufacturing, Six Sigma, etc., and other approaches and measures, the action of which is aimed at improving product quality, production process, interconnections with consumers, management of cost chain, etc. (Carvalho et al, 2021).

Quality management systems are closely integrated with automatized systems of management and accounting, specialist business programs, and applications. In aggregate, they create a comprehensive set of well-ordered and automatized processes, which ensure constant monitoring of production operations, and interaction with consumers and intermediators, perform continuous analysis of data and raise the level of the organisations' management's awareness of the real state of the management object. In the modern conditions of technological development, companies receive new tools and means to raise the level of product quality, which are based on digital technologies of the Internet of Things (IoT), Big Data analytics, the use of artificial intelligence (AI), cloud technologies, robotization, etc. These tools increase the capabilities of information support for management, reduce the time of execution of traditional operations, and offer new spheres for the automatization of the processes of production, management, control, etc.

A special role in these processes is assigned to the algorithms of artificial intelligence. Since program solutions are the basis of the platform systems of management, the tools of artificial intelligence allow the processing of a larger array of data over a shorter period and finding the necessary interactions in a simpler or non-typical way (Semenova et al., 2023).

The main value of the use of artificial intelligence in work with large arrays of data with the possibility of finishing transactions based on the obtained results of analysis lies in its ability to find non-standard solutions to problems that go beyond the limits of the current methodological provisions and traditional statistical tools. Here it is important to identify the tools of artificial

intelligence and their influence on the quality of management, which can be achieved due to the high level of transparency and openness of such solutions (Semenova et al., 2023).

As a result of the integration of the capabilities of corporate business programs, aimed at increasing product quality, with the potential of digital technologies, there is formed a new concept. In the scientific and expert literature, this concept is called Quality 4.0 (Jokovic et al., 2023; Carvalho et al., 2021). It is a symbiosis of strategic approaches to quality management and complex program solutions on management and accounting, as well as wide use of technologies of Industry 4.0 to raise the level of automatization of the processes of collection of information, its processing and analysis, replacement of routine operations with robotized technologies, etc.

Thus, the tools of quality management in modern organisations are a deeply integrated system, which consists of the following elements:

- The general philosophy of quality management, presented by the corresponding provisions, concepts, and strategies;
- Complex models of management, based on the provisions of ISO 9001 and Total Quality Management (TQM);
- Techniques of product quality engineering, presented by Lean Manufacturing, Six Sigma, etc.;
- Platform program solutions, into which all the above elements and tools are integrated (Jokovic et al., 2023).

Platform solutions for product quality management are a component of the market of corporate program support. Most such solutions are separate blocks of larger complex programs, in which quality management is only one functional component. Along with this, separate programs are specialised only in ensuring product quality. Depending on specialisation,

all solutions of such type can be assigned to one of the following groups of programs:

- Enterprise resource planning (ERP);
- Customer relationship management (CRM);
- Business intellect (BI);
- Supply chain management (SCM);
- Others.

At present, the market of corporate programs on management is growing dynamically. In 2022, the volume of the global market

equalled USD 201.1 billion. Triple growth is expected by 2032, up to the level of USD 610.1 billion, with an average annual growth rate of 11.7 % (Precedence Research, 2023). The main players in the market are such companies as Microsoft, EMC, Dassault, Oracle, Adobe, IBM, FIS/SunGuard, Amazon, SYSPRO, SAP, and others (360 Research Report, 2023). General characteristics of popular platform solutions for product quality management are given in Table 1.

Table 1. Characteristics of the most popular platform solutions for product quality management

Manufacturer	Program/solution/platform	Characteristics
Broadcom Inc. (CA Technologies, Inc.)	CA PPM (Project & Portfolio Management)	A comprehensive solution for projects and portfolio management, which allows managing projects and the strategy.
Epicor Software Corporation	Epicor iScala	Covers integrated systems of enterprise resource planning (ERP), supply management, manufacturing execution system (MES), management of maintenance, projects, etc.
IBM	IBM Watson IoT Platform	The platform was created for the work with IoT technologies. It allows conducting monitoring and managing the quality of production processes.
Microsoft	Microsoft Dynamics 365	A line of intelligent apps for supporting all business processes of the company: from management of finance, sales, manufacturing, and logistics to the management of interrelations with customers and business analytics.
SAP SE	SAP S/4HANA	Quality management is one of the components of SAP S/4HANA, which facilitates the implementation and management of the processes of quality control. It is aimed at preventing defects, ensuring the constant improvement of processes, and developing constant programs for quality control.
SYSPRO	SYSPRO ERP	An integrated system of ERP, which allows for the effective automatization of business processes, from production and finance, and can be integrated with product quality management.

Source: Formed by the authors based on (Capture, 2024; Epicor, 2024; IBM, 2024; Microsoft, 2024; SAP, 2024; SYSPRO, 2024).

The available programs, solutions, and platforms form a rather diversified set of means, the use of which facilitates an increase in the level of product quality. These programs are usually based on an ERP system (Epicor iScala, SAP S/4HANA, SYSPRO ERP), which combines the tools of planning

needs for resources, organisation of the production process, support for product quality, etc. However, platform solutions acquire larger importance. They combine the tools of planning needs for resources with the tools of Industry 4.0 and active interaction with the market (CA PPM, IBM Watson IoT

Platform), as well as complex solutions that cover most operations on enterprise management (Microsoft Dynamics 365).

Integration of the elements of Industry 4.0 into the system of quality management creates new opportunities to raise the organisation's product quality. However, the comprehensive use of digital technologies sets new demands on the quality of the system of management and resource support for organisations. This is manifested in the necessity of forming new, non-typical for traditional management, competencies in the sphere of digital literacy and a high level of material and technical support, including access to broadband Internet and corporate programs' ability to fully interact with digital technologies.

According to this, the higher level of digitalisation of the company is a factor in additional competitive advantage from the position of the use of the potential of complex platform solutions in product quality management. The mentioned aspects of an organisation's readiness for the use of digital technologies for the development of business are disclosed within the concept of digital maturity.

Digital maturity does not have one definition, so it can be interpreted from the position of different models. Understanding digital maturity as a "state of digital transformation of the company" is rather popular (Chanias & Hess, 2016). It focuses not only on the parameters of integration of digital solutions in business but also on companies' ability for such transformation (Mettler, 2010). From another point of view, digital maturity is a manifestation of the integration of the operations and capital of the company with digital processes, and, vice versa, the integration of digital processes into different spheres of the organisation's activities (Westerman et al., 2014). On the whole, the influence of digital maturity on competitiveness and effectiveness of company management is considered positive (Thordsen & Bick, 2023), so its achievement

can be viewed as a development goal and can be implemented within the strategy of product quality improvement.

The notion of digitalisation is very dynamic. It changes in the course of the development of science and technology. In most cases, assessment of the level of digitalisation, digital maturity, or digital integration is based on formalised evaluations or adaptation of the results of the sociological survey. Thus, most methodological provisions on the reflection of digital maturity or digital integration involve their definition based on the survey among company managers regarding the list of actions and directions that have been digitalised (Westerman et al., 2014). The digitalisation of an industrial company is mostly manifested through the formation of a unified system of collection of information on the state of production sub-systems, equipment, parameters of quality, effectiveness of management, etc. Platform solutions within corporate business programs allow for the effective accumulation and processing of information of such type, which substantially raises the level of the company's manageability and forms preconditions to raise product quality (Zimon et al., 2022).

3. Experimental setting and methods

Based on the above methodological provisions, organisations with a high level of digital maturity have larger potential in the sphere of effective use of capabilities of platform solutions in the improvement of product quality. Such a statement does not have an unambiguous confirmation or objection. In most cases, arguments in favour of the advantages of companies with a high level of digital maturity and their ability for successful management of product quality with the help of the corresponding corporate programs have empirical character. This is connected primarily with the insufficient level of substantiation of methodological tools.

Official statistics have a range of indicators that can be viewed as indicators of the company's digital maturity. They can also assess the state of the application of platform solutions for company management, including the processes of quality support. The main source of information about the mentioned indicators is the DESI information panel. It contains 32 indicators, of which 11 present the KPI of the Digital Decade of the EU (EC, 2023). In the context of this research, it is important to analyse the indicators of digital transformation of business, in particular, the ones that directly characterise the level of the use of the selected technologies by companies.

The main indicator that allows assessing the digital maturity of companies is the Digital Integrated Index (DDI). It is formed based on survey among business owners and characterises the level of their implementing digitalisation tools, which include 12 positions, including availability of Internet connection with the speed of at least 30 Mb/s, the use of web channels for selling their products or billing, the use of social media for communication with target audience, and the use of such elements of the digital economy as cloud technologies and artificial intelligence, the use of software packages, etc. (Eurostat, 2021). The proposed methodology involves the gradation of companies by the number of digitalisation elements they use in their activities. Thus, the use of 7-9 elements is considered a high level of digital transformation, and the use of 10-12 elements is considered a very high level.

The average value of the use of the above digitalisation tools in the industry of EU countries is given in Figure 1.

The most active and successful directions for digitalisation are the use of ICT to solve the problems of sustainability (almost 70% of organisations), achievement of the basic level of digital intensity in the environment of small and medium businesses (55 %), and the use of digital channels for dissemination of information (40 %). The directions of

digitalisation that are implemented in the companies least actively are the use of artificial intelligence and online sales of products abroad (less than 10 % of companies).

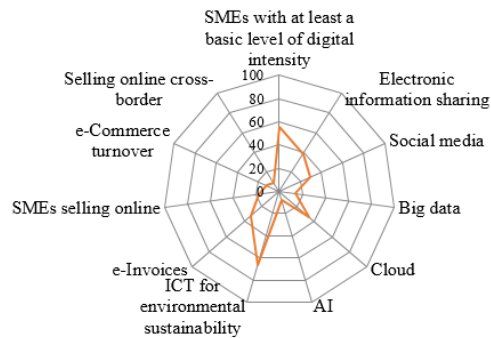


Figure 1. Diagram of digitalisation of industrial companies in the EU by specialisations

Source: Compiled by the authors based on (Eurostat, 2023a).

The information basis of the research is the sample of EU member states. This sample was selected based on the strategic direction of digital development of the EU, which is presented in the strategy “Europe’s Digital Decade” (EC, 2024) and the solid methodological basis given in the structure of the Digital Economy and Society Index (DESI). The methodology is based on arrays of data from the European Commission, which characterise the indicators of digitalisation of EU companies in the context of sectors and member states. According to this, the level of companies’ maturity is determined based on the indicator of Digital Intensity by NACE (Eurostat, 2023a), and the level of their using the programs for management of product quality – based on the indicator of Enterprises using any business software (any of ERP, CRM, BI) (Eurostat, 2023b).

Based on the Eurostat data, we formed a sample that includes two indicators: the level of digital integration of companies (Digital Integrated Index - DDI) and the share of companies that use at least one business

program (Enterprises using any business software (any of ERP, CRM, BI) - EUBS). To assess the level of the use of business software by companies in the EU countries, we included in the sample only countries with high and very high values of the index DII (DII, h-vh). All the above indicators are reflected for ten sectors of the economy according to the Statistical Classification of economic activities in the European Community (NACE Rev. 2).

For the detailed study of the received results from the position of the influence of digital maturity of organisations on the level of the use of platform solutions in the context of product quality management, we used general scientific methods of analysis and synthesis, grouping and generalisation, and statistical and table analysis. To find the level of connection between the studied notions, we used correlation analysis. The results of the conducted calculations and groupings are presented in Table 2.

Table 2. Comparison of the indicators of companies’ digital maturity in countries of the EU with the level of their use of business software in the context of sectors of the economy, as of 2023,%

Sectors of the economy (NACE Rev. 2)	Manufacturing, electricity, gas, steam and air conditioning		Manufacturing		Water supply, sewerage, waste management and remediation activities		Construction		Wholesale and retail trade; repair of motor vehicles and motorcycles		Transportation and storage		Accommodation and food service activities		Information and communication		Professional, scientific and technical activities		Administrative and support service activities	
	DII, h-vh	EUBS	DII, h-vh	EUBS	DII, h-vh	EUBS	DII, h-vh	EUBS	DII, h-vh	EUBS	Indicators/countries	DII, h-vh	EUBS	DII, h-vh	EUBS	DII, h-vh	EUBS	DII, h-vh	EUBS	DII, h-vh
EU 27	21.5	56.6	21.1	56.7	15.7	49.3	10.5	36.1	33.6	57.2	15.6	38.5	21.1	30.5	64.2	76.2	34.8	56.6	21.8	45.9
Rank	5	4	6	3	8	6	10	9	3	2	9	8	6	10	1	1	2	4	4	7
Belgium	36.7	n/a	37.4	79.4	15.8	n/a	24.9	51.4	50.5	73.6	38.4	64.6	n/a	n/a	n/a	93.1	62.7	79.9	35.2	60.7
Bulgaria	4.9	25.6	4.6	25.0	n/a	24.3	n/a	12.3	13.5	31.7	n/a	20.3	9.3	18.4	36.5	54.9	n/a	36.0	n/a	18.2
Czechia	17.3	39.4	17.4	39.3	n/a	24.3	5.5	17.1	35.3	44.1	9.0	18.1	18.5	16.0	57.3	69.1	26.0	40.9	10.4	20.3
Denmark	32.1	81.1	31.7	80.9	29.3	76.4	9.3	58.1	52	78.1	26.4	65.5	38.2	52.8	75.9	94.7	43.5	81.6	29.2	65.6
Germany	24.0	65.2	23.7	65.5	16.8	52.9	9.1	35.1	36.9	57.8	14.2	35.6	24.4	29.6	67.5	80.6	32.0	50.4	23.3	44.4
Estonia	16.6	39.9	16.3	39.9	14.9	34.1	8.7	24.1	33.4	49.6	13.8	26.7	18.4	21.7	58.3	65.7	36.8	48.0	17.2	39.8
Ireland	31.2	55.6	31.4	56.2	25.1	43.0	9.3	26.9	37.2	49.0	15.9	32.2	22.1	30.0	75.5	83.9	40.6	56.7	26.9	46.7
Greece	14.1	61.6	14.4	62.0	8.3	56.5	14.4	51.8	24.8	70.9	13.3	58.9	7.3	25.2	49.2	79.1	26.6	61.2	20.5	52.2
Spain	23.0	64.5	22.8	64.5	n/a	n/a	12.0	43.6	35.9	71.1	19.9	51.3	30.9	44.6	71.1	84.4	38.3	66.8	20.7	46.0
France	n/a	62.4	n/a	62.9	12.2	48.3	n/a	41.6	23.8	60.1	n/a	41.9	n/a	36.2	n/a	74.8	n/a	59.1	n/a	58.2
Croatia	19.8	35.7	20.9	34.9	n/a	38.4	n/a	18.2	42.6	48.9	25.2	27.5	27.6	21.8	62.5	71.0	22.6	26.5	11.9	32.4
Italy	20.2	57.6	20.2	57.8	n/a	n/a	9.5	36.1	30.7	55.7	12.6	39.9	22.8	27.9	53.7	64.8	30.6	53.6	18.1	36.4
Cyprus	20	47.2	20.1	46.4	14.1	54.3	11.2	30.1	37.5	60.2	30.8	55.1	27.7	43.8	72.8	75.9	35.0	58.7	33.8	57.7
Latvia	18.1	38.1	18.3	37.7	18.3	46.8	6.6	18.2	29.0	44.1	14.3	32.2	13.3	19.3	52.2	60.0	34.7	49.7	26.5	37.4
Lithuania	21.5	49.1	21.7	47.9	n/a	n/a	8.6	33.2	31.0	48.5	17.2	42.0	16.9	30.8	68.4	74.0	27.6	57.5	21.5	50.2
Luxembourg	21.0	60.0	21.5	60.5	n/a	n/a	10.7	39.6	31.7	60.5	21.2	54.5	10.2	24.2	63.6	81.3	32.2	65.2	24.8	66.0
Hungary	19.4	44.9	19.3	44.8	20.6	46.0	8.9	23.2	29.7	47.8	13.3	35.1	20.4	26.8	59.3	69.0	26.0	43.1	15.8	29.6
Malta	n/a	n/a	33.9	61.1	n/a	n/a	19.8	42.9	47.8	60.4	49.1	55.7	42.6	45.2	73.2	78.7	54.7	65.7	42.7	53.4
Netherlands	44.7	74.6	44.4	74.7	45.5	69.2	31.7	57.1	58.5	73.0	31.8	48.8	26.4	26.1	76.0	83.7	58.3	75.2	37.8	55.5
Austria	27.9	62.5	28.6	62.2	8.7	n/a	8.9	33.6	32.1	60.4	13.4	31.9	24.1	29.8	65.8	81.1	32.9	56.7	19.1	46.1
Poland	16.5	41.4	16.5	40.7	13.7	47.0	7.0	25.1	31	43.3	12.2	30.5	27.3	23.0	56.3	66.5	32.5	49.6	20.8	42.7
Portugal	15.7	55.1	15.1	54.5	25.7	70.4	6.9	n/a	27.1	61.0	25.3	n/a	22.2	31.9	63.2	80.3	25.1	n/a	32.0	62.2
Romania	5.4	25.5	5.2	25.5	3.2	21.3	2.9	14.7	11.8	27.1	4.0	22.0	7.9	19.1	36.2	44.2	24.1	37.7	8.6	19.7
Slovenia	21.2	50.4	20.8	49.6	17.9	59.4	2.9	12.9	39.9	61.6	13.6	30.2	17.6	17.2	59.0	73.8	40.7	51.5	19.2	42.0
Slovakia	11.5	36.6	11.5	37.0	10.6	29.7	6.7	21.4	24.9	37.3	9.6	20.5	10.9	13.4	42.2	53.0	23.7	35.5	23.7	30.2
Finland	52.3	80.9	51.8	81.2	n/a	n/a	34.5	68.3	55	67.3	30.8	56.1	41.3	48.5	91.8	84.6	70.1	81.5	48.4	64.7
Sweden	38.7	71.6	37.5	71.3	38.2	70.9	22.3	54.7	55.2	72.7	19.2	47.2	35	46.9	76.6	84.8	56.7	76.6	25.3	54.3
Coefficient of correlation	0.833		0.839		0.729		0.838		0.724		0.716		0.821		0.857		0.824		0.768	
Rank	4		2		8		3		9		10		6		1		5		7	

Source: Formed by the authors based on (Eurostat, 2023a; Eurostat, 2023b).

4. Results

The data in Table 2 offer a basis for the detailed study of the connection between the level of digital maturity of organisations in different sectors of the economy and countries of the EU and their using platform solutions for the management of product quality. Within the presented sample, it was revealed that the highest level of digital maturity, presented in the form of DDI, h-vh, and the highest level of the use of platform solutions, presented by the indicator EUBS, are observed with companies in the sector of information and communication (64.2 and 76.2 %, accordingly). The lowest level of digital maturity is peculiar to the sphere of construction (10.5 %), and the lowest level of the companies' use of software for business is peculiar to the sphere of accommodation and food services (30.5 %). On the whole, the level of digital maturity of EU companies is much lower than the share of companies using business software (26.0 % vs. 50.4 % on average for the sample). It should be noted that there are certain differences (on average for the EU) within the ranks of the studied indicators in sectors of the economy. Thus, the lowest level of implementing business software in the sphere of accommodation and food services is combined with the 6th position from the position of digital maturity of the business.

The same differences are peculiar for the sphere of production, as well as the sphere of administrative and support service activities. In the EU, the state of digital maturity of organisations and their use of business software is not equal. Thus, the average indicator of the index of digital integration of the EU countries in the context of the sectors of the economy varies from 10.9 % in Romania to 52.9 % in Finland. The share of companies using business software ranges from 25.7 % in Romania to 73.5 % in Denmark. Thus, the highest values for both given indicators are observed in Belgium, Denmark, the Netherlands, and Sweden. The lowest values are observed in Romania,

Bulgaria, Slovakia, the Czech Republic, and Latvia.

Results of the correlation analysis of the indicators of using business software and the level of integration of digital technologies into the activities of companies of different economic sectors in the EU countries demonstrated a high level of connection between the mentioned indicators in all sectors of the economy. The value of correlation coefficients, determined for each sector of the economy, varies within the range of 0.716-0.857. The highest level is observed in the sector of information technologies and communication (0.857), manufacturing (0.839), and construction (0.838); the lowest – the spheres of transportation and storage (0.716), wholesale and retail trade and repair of motor vehicles and motorcycles (0.724), and water supply and sewerage (0.729). The average value of the correlation coefficient for all spheres of the economy of the countries of the sample is 0.795. Thus, the most technologically complex processes and the ones connected with information processes require priority stimulation of digital development.

On the whole, the results obtained show the expedience of stimulation of the digital transformation of companies for the more complete use of the capabilities of platform solutions in the sphere of product quality management. The mechanism of such connection contains a high level of empirical substantiation, which is manifested through the better ability of companies that are "mature" from the position of digital development to use the potential of corporate management programs and the corresponding platform solutions. Moreover, the digital maturity of organisations in this context allows integrating the tools of Industry 4.0 into the available corporate programs of business management. This allows for the substantial expansion of platform solutions and the creation of conditions for their effective interaction with the elements of digitalisation.

It should be noted that ERP programs are the most widespread in the list of platform solutions for product quality management. According to the 2023 data, the share of organisations in countries of the EU (on average for sectors) that used platform solutions in management based on ERP was 43.3 %. The share of companies that used solutions based on CRM was 26.8 %, and the share of companies that worked with BI tools was 16.0 %. The highest level of the use of all types of platform solutions was in the sphere of information and communication (60.5 %, 60.6 %, and 3.7 %, respectively).

ERP-based platforms are the most complex at present. They cover a larger range of managerial processes compared to other programs. At the same time, a combination of ERP platforms with CRM and BI tools allows for better coordination of internal and external managerial processes and offers more opportunities for their integration with the elements of Industry 4.0. That is why complex solutions based on the stimulation of digital maturity and integration of program solutions on quality management based on the corresponding platform automatized systems of management are a top-priority task within the implementation of the strategy of digitalisation of the EU economy.

5. Discussion

The obtained results offer substantiation of the presence of a connection between the high level of digital maturity of companies and the level of their using platform solutions to raise product quality. The presence of such a connection is an important argument in favour of further stimulation of the digital transition of companies from different sectors of the economy, which must be combined with the integration of digital technologies into automatized systems of corporate management. However, such arguments and the level of their substantiation may differ for different platform solutions in the sphere of product quality management and different

tools of Industry 4.0, as well as have sectoral and territorial differentiation, caused by the corresponding specific differences.

With this in mind, an increase in the level of substantiation of this study's conclusions is a relevant scientific task. Its achievement will allow ensuring a better modelling of the processes of digitalisation of economic subjects and raising the level of their effectiveness during the integration of corporate products with companies' quality management.

The problem of substantiation of the influence of platform solutions and their integration with the tools of the digital economy on the parameters of product quality requires additional substantiation. This direction requires the development of the corresponding mechanisms that would allow for a clear plan for strength and means of the impact of managerial and digital tools on product quality and modelling of the possibilities of influence on these tools to reduce the level of system and management risks, as well as an increase in the level of effectiveness of the implemented measures.

Given the relative novelty of methodological provisions that are connected with digital maturity and constant change in the criteria of its assessment, there is also the issue of improvement of the indicators of companies' digital maturity and substantiation of the potential of this category. This potential must be developed not only from the position of influence on product quality through platform solutions but also from the position of general influence on the competitiveness and effectiveness of companies.

6. Conclusion

The digitalisation of economic subjects is one of the top-priority directions for the development of the economy in the EU. Its potential is in the digital technologies' ability to collect and produce large volumes of analytical information, with its further processing and acceleration of the execution

of routine operations. Apart from this, digital technologies ensure better conditions for working with managerial processes, including support for product quality. Thus, digital maturity can be viewed as an important factor in quality management, which can develop its potential most completely through complex platform solutions with quality management at companies.

The modern level of technological development has many tools to raise product quality. It is based on the system conceptual basis, which covers the set of international standards ISO, elements of strategic management, philosophy of total quality management, Lean Manufacturing, Six Sigma, and their integration around the platform managerial systems. The harmonious combination of all these elements forms an efficient means to ensure high product quality and competitiveness of companies of different sectors of the economy. However, a large share of the tools for the improvement of product quality lies outside of this system and can be involved with the help of digital technologies. Comprehensive integration of the tools of

Industry 4.0 with the corresponding platform solutions requires a high level of digital maturity in organisations, which will allow using the potential of the systems of quality management more fully and rationally.

The conducted research confirmed the presence of a connection between the level of digital maturity of companies from companies of different sectors of EU economies and the level of their use of platform solutions with quality management. The presence of such a connection is a sign of the deepening of the processes of digital transformation of EU companies, which is largely implemented within Europe's Digital Decade. However, complete integration of digital technologies into the systems of product quality management, in particular, through platform solutions, requires an increase in the level of companies' digital maturity, especially in the spheres connected with artificial intelligence, transborder online trade B2B, and work with large arrays of data.

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