# KAPITEL 2 / *CHAPTER 2* [2]
# BASIS OF MAPPING OF REORIENTATION OF THE NATIONAL ENTERPRISE MANAGEMENT SYSTEM FOR SUSTAINABLE DEVELOPMENT

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**Introduction**.

The research relates to processing management. It affects digital entrepreneurship and is driven by rapidly changing perceptions of efficiency, shifting the focus of all countries from extensive business profit maximization to intensive. The transformation of views is characteristic of the modern state of the domestic business environment, which has evolved rapidly since D. Pocetio developed his business from a small kiosk in the Podolsk department store of Kyiv to one of the largest Internet shops in Ukraine F.ua. Influenced by the globalization of economic relations, the virtualization of entrepreneurial activities (following the example of D. Pocatello) and the rapid degradation of the environment, the Disturbance of ecological balance, and the gradual depletion of natural resources, all activities of Ukrainian entrepreneurs are shifting to and evolving in the digital environment.

Procurement through the Intern is developing [3; 4]. The methods of searching and attracting clients over the Internet are expanding in lid-management. Internet marketing, advertising in search and social networks, and advertising on online thematic resources have also developed [5]. A list of specialized online resources for intellectual services without long-term contracts expanded. These resources develop remote formats for supplier-consumer interactions. Data security is almost entirely migrating to the Internet. Virtual centers for monitoring and processing information security events are being developed instead of classic (physical) means of protection [6]. In the digital environment, even the oldest forms of economic operations in education, entertainment, journalism, etc., are evolving.

Leading entrepreneurs in Ukraine (as well as all over the world) are increasingly introducing strategies for the digital transformation of economic activity in life. Entrepreneurs are doing so for sustainable development and want to work with those economic actors that match their level of digitization.

The changes produced by digital entrepreneurship are shifting to qualitatively new models of profit and consumer satisfaction. These changes provide opportunities for a regulated reorientation of the national business management system towards sustainable development.

The basis for determining the content of such regulated processes is the mathematical evaluation of shapes and vectors. It is the form and vectors of the evolution of entrepreneurship, the basis for its transition to more responsible economic activities.

The research objective is to develop a framework for mapping the regulated processes of reorienting the national system of business management towards sustainable development based on a mathematical assessment of forms and vectors.

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Most scientists divide the forms of digital activity into four generalized groups: trade in goods, trade in services, traffic business, and website business. That's typical for review sources (Kulik V.A. [1]) and highly specialized sources (in particular Borovyi A.I. [11], Sachynska, L.V. [12], Hlinenko L.K., Dainovskyi Yu.A. [13]).

Thus, among scientists and practitioners, the highest priority is given to digital forms of trade in goods (Dementyi D. [6], Demkiv Ya.V., Prokopyshyn-Rashkevych L.M. [7]). Some coverage in the specialized literature has found a digital format trade in services. However, non-financial services, online transactions (Dementiy D. [6]) testing of digital products (Tertychnyi, Ya.S. [9]) allocate as separate forms of entrepreneurship

The scientific works deal with traffic business and website business diversity but refer to different forms of economic activity, which differ in the content of the base processes. A typical example is contextual advertising, CPA networks, attraction or acquisition of thematic traffic, etc. (Dementiy D. [6], Panasiuk T., et al. [5], Sachynska L.V. [10]). At the same time (in the works of Dementia D. et al. [8]), attention is drawn to the fact that the list of forms of traffic business and website business is much broader on the processes by nature and logic of entrepreneurial income forming and peculiarities of servicing the needs of consumers.

The specific content behind these processes is taking many forms of digital entrepreneurship that have not previously been identified by scientists and practitioners as autonomous forms of digital business activity. In particular, local Internet stores, Internet-Drop Shipping, blogging, freelance, etc. [14; 15]). Such limited approaches to the content of digital entrepreneurship led to a generalized view of its forms and vectors.

## 2.1. Theoretical Background.

Analysis of the scientific work, research of the Internet service providers in Ukraine, and lead consulting companies (*Ernst &* Young Global Limited, PricewaterhouseCoopers) indicate that sustainable entrepreneurship development in Ukraine links to qualitatively new digital formats and vectors by which income generate. Its data that create from a set of elements that have final external manifestation as a numerical value and direction of evolution. The theoretical study core led to the conclusion that the diversity of forms of digital economy activity is uniform in the content of the core process. They combined into a single structure that will form a central component of shaping with a unified language of mathematical analysis of the vectors of digital entrepreneurship. The methods are available in the ANSYS AUTODYN software environment sharing to collect data and implement the mathematical estimation (which mapping basis formed) shaping techniques, value dependency analysis methods, factor regression, and mathematical analysis in two-dimensional and higher dimensional spaces. Factor regression sharing is a fundamental method. The approach uses the operation of several series models where the current values of these series depend on past values of the same time series.

This study showed that ANSYS AUTODYN there widely vector models; they are

generalized into numerically vector models to trigger simulations to reorient the national business management system towards sustainable development. It makes ANSYS AUTODYN the best code to model the processes of reorienting the national business process management system towards continuous development. Research procedures focus on a combination of «development» and vector processes in assessing the sustainable development of digital entrepreneurship in Ukraine. All made visible gains possible in the validity of the mapping of national business management system reorientation (Table 1).

**Table 1. - The basis of the mapping reorientation of the national system of entrepreneurship management towards sustainable development of Ukraine, 2010-2020**

| Y (Q) | Vector regression communication model expressed in XY regression functions У (two-factor models / numerically large vector models) | Assessment of the density of connections by the determinate rate (R*) |
|---|---|---|
| 1 | X 1 y=-87,31ln(x) + 743,3; X2y=0,3188x2-16,12x+527,72; X3y=-0,1407x2+12,823x+129,18; X4y=0,0573x2-8,587x+579,4; X5y=352,94x-0,317; X6y=-0,014x22,8371x+458,32; X7 y=0,033x32,073x2+ 39,37x+161,3; X8 y=-0,345x2+19,196x- 55,329; X9 y= -13,848x2 + 140,92x - 43,189; X10 y=47,274x-46,625 | X 1: 0,9445 /high; X 2: 0,9278 /high; X3: 0,8947/high; X4: 0,9827/high; X4: 0,9106/high; X5: 0,9192/high; X6: 0,978/high; X7: 0,9573/ high; X8: 0,9634 /high; X9-10: 0,9919 /high |
| 2<br><br><br><br>1/2 | X1 y= -0,0025x2 + 0,1831x + 0,6207; X2 y=-0,0105$x^2$ + 0,4875x + 1,4159; X3y= 0,0146x2 + 0,0548x+1,0588; X4 y= 0,0027x2 + 0,2235x - 1,8667; X5 y= -0,1845x2 + 3,5306x + 1,7208; X6 y=0,0051x2 - 0,049x + 4,0116; X7 y= -0,0167x2 + 1,5341x + 3,9806; X8 y=-0,0374x2 + 2,0827x + 0,8762; X9 y= -5,5939x2 + 36,932x - 21,323; X10 y= -0,1779x2 + 4,9855x - 9,1318; Y = -487.4128 +0.1554$X_1$ +1.1832$X_2$ | X1: 0,7755/ high; X 2: 0,8164/ high; X 3: 0,9811/ high; X 4: 0,9746 / high; X 5: 0,9715 / high; X 6: 0,8952 / high; X 7: 0,9982 / high; X 8: 0,9191 / high; X 9: 0,9196 / high; X 10: 0,9539/ high; Y 0,9968 / high |
| 3 | X1 y=9,2678ln(x)-15,769; X2 y= -0,081x+5,0671; X3y=0,003x3-0,1881x2+3,663x +6,67; X4 y= -0,0032x2 + 0,9546x-4,5066; X5 y= -0,38x2 + 7,8661x - 2,6943; X6y=0,001x3-0,107x2+4,3221x +5,79; X7 y= 0,0495x2 + 1,3586x + 18,96; X8 y= 0,0379x2 + 1,2887x+5,3926; X9 y= -14,389x2 + 107x-50,698; X10 y = 19,998x-40,1 | X1: 0,792/ medium; X2: 0,2439/low; X3: 0,977/high; X4: 0,947 / high; X5: 0,972 / high; X6: 0,9848 / high X7: 0,9859 / high; X8: 0,9838 / high; X9: 0,9236 / high; X10: 0,9302 / high |
| 4<br><br><br>3/4 | X1y=-0,0063x2+0,5777x-1,8303; X2y=-0,0036x2+0,3075x +2,2731; X3y=2,729ln(x)+1,1361; X4y=0,1877x+1,8349; X5 y=2,2318ln(x)+2,4133; X6y=-0,0008x2+0,193x+3,3307; X7y=-0,0038x2+0,338x+2,3211; X8y=-0,0184x2+1,246x-2,0983; X9y=2,9701ln(x)+5,2527; X10y=4,9223ln(x)+0,907; Y=-54.2664+0.425$X_1$ + 0.5574$X_2$ | X1: 0,9853 /high; X2:0,9665 /high; X3: 0,9671 /high; X4: 0,9933 /high; X5: 0,83/medium; X6:0,9339 /high; X7: 0,9878 /high; X8: 0,9513 /high; X9: 0,9667 / high; X10: 0,9449 /high; Y: 0,9986 /high |

| | | |
|---|---|---|
| 5 | X1y = 0,0128x2 - 1,4805x + 111,85; X2 y = 0,0891x2 - 4,8456x + 99,548; X3 y = 0,0355x2 - 2,33x + 54,59; X4 y = -1,1139x + 90,599; X5 y= 112,3x-0,597 | X1:0,8961/high; X2:0,9723/high; X3:0,945/high; X4:0,9791/high; X5:0,989/high |
| 5 | X5 y= 112,3x-0,597; X6 y= -0,0007x2-0,892x + 82,257; X7y=-16,43ln(x)+71,331; X8y=51,122x-0,394; X9y=-9,0879x+51,267; X10y=673,54x-1,735 | X1:0,9669/high; X2:0,9604/high; X3:0,9677/high; X4:0,9889/high; X5:0,9642/high |
| 6<br>5/6 | X1y=214,13ln(x)-347,6X2; X2y=142,42ln(x) + 34,695; X3y=14,599x+297,92; X4y=268,09e0,0124x; X5 y=142,12ln(x)+225,79; X6y=10,653x+259,54; X7y =356x0,2539;X8y=155,45ln(x)+286,76;X9y=568,2x0,2645; X10y=220,97ln(x)+409;Y=258.1317+0.03098$X_1$+0.08352$X_2$ | X1:0,839/medium; X2:0,9366/high; X3: 0,9522/high; X4: 0,966/high; X5: 0,9916high; X6: 0,9358/high; X7: 0,97/high; X8: 0,944/high; X9: 0,9543/high; X10: 0,9467/high; Y: 0,9911/high |

**Payment platform* ANSYS AUTODYN (AVR2 function)
*** Payment platform* ANSYS AUTODYN (AVRn function)
***** mapping fields: 1,2 - transformation in the labor market transformation; 3,4 - behavior, attitudes, and values of people as consumers transformation; 5,6 - business behavior transformation in the way of resources users.
*Source*: *Table. 3., Figures 1-3 (*Authors' results*)*

The "mapping" uses a data system with potentially different vectors of one or various forms of the digital economy. This data system uses a sustainable development vector matrix and is complemented by two-factor vector regressions and numerically vector regression. Due to the complexity of these processes, they implement in the ANSYS AUTODYN software environment. ANSYS AUTODYN allows to perform not only engineering analysis but also to model complex physical and mathematical phenomena. Since the ANSYS AUTODYN software environment supports the evolutionary modeling option, the data system it generates is ideal for describing the evolution of digital economic activity. All variables in a vector-regression model consider symmetrically, explaining the evolutionary attributes based on their lags and the lags of other variables in the model. The vector model forms the ANSYS AUTODYN environment. It lays on damage interdependencies of minimization ability of future generations to meet their needs.

## 2.2. Methodology.

The framework for the mapping of the regulated processes of the reorientation of the national business management system towards sustainable development is provided by the analytical link between a List of constructs or forms of business activity (the linked tasks of the basic processes in their content allowed to note their one-dimensional effect on the numerical values). Thus, the constructs are represented as trigger-factors (X), that go through qualitative changes in values that affect the

sustainability of Ukraine's development; Vectors of sustainable development. Linked tasks created by triggers and output indicators Y (Q), coefficients of determinations of regression XY models measured by constants. As trigger-factors (X) allocated the same structure (the mathematical magnitude models illustrating quantitative changes of boundary points: X1 – Local Internet shop; X2 - Internet Drop shipping; X3 Lead management; (X4) Freelance; (X5) Online education; (X6) Online entertainment; (X7) Cybersecurity; (X8) Blogging; (X9) Investment platforms; (X10) Arbitration of traffic and CPA network. Output indicators (У) to reorient the national system of entrepreneurship management to the sustainable development of Ukraine, formed in the directions of transformation: 1) in the labor market, in particular, by the number of employees needed to perform a certain amount of work in a timely and quality manner (Q1); by the number of production operations and communications for which there is dematerialization of workers' activities (Q2); 2) in the behavior, attitudes, and values of people as consumers and virtualization of the social reproduction system, in particular, by the number of physical equivalents of products and services replaced by virtual (Q3); by the number of assorted groups of services, products or trade assortment (Q4); 3) in the business behavior in the use of resources, in particular, by the number of physical infrastructure facilities (Q5); the volume of «green» revenues(Q6). Thus, trends in the movement towards sustainable development were presented in vector form with integration according to the degree of correlation. The responses of X to a dynamic load with a large number of high-velocity results can be complex. Therefore, the necessary properties of the reorientation processes are very difficult to find. However, the software environment not only forms two-factor models and defines the patterns that are observed equally in the material and non-material spheres of business constructs (for example, shops / Internet shops, Drop shipping / Internet Drop shipping, etc.). In ANSYS AUTODYN, two-factor vector models are automatically generalized in numerically large vector models.

## 2.3. Results and discussion.

To simplify the framework for the mapping of regulated processes (in reorienting the national system for the management of entrepreneurial processes towards the sustainable development of Ukraine), the structure of digital entrepreneurship has been formed. To help users, the ANSYS AUTODYN library contains over 150 types of processes covering the most common forms of digital entrepreneurship. The data are based on published sources and describe features of digital entrepreneurship, so the user can implement a mechanism of formation up to the point of the greatest diversity. According to ANSYS AUTODYN, form formation is based on the properties of only those processes that are common to the elements of the structure at the point of greatest diversity. This refers to the properties of the basic processes of income recovery and the logic of income generation as well as the satisfaction of consumer needs. Construction of digital entrepreneurship in Ukraine in the point of greatest diversity is presented in table 2.

**Table 2. - Construction of digital entrepreneurship in Ukraine at the point of greatest diversity**

| Features of the basic process | |
|---|---|
| income recovery /logic of income generation | satisfaction of consumer needs |
| Construct (vector point X) - Local Internet shop | |
| Development of a local Internet site for direct sales transactions / attracting a buyer to the site selection of products, goods and services ordering process confirmation of order and fulfilling the order ordering delivery service receipt of payment | Updating of product range, goods; the convenient system of order formation and payment |
| Construct (vector point X) - Internet Dropship-ping | |
| Online sales with delivery option from the manufacturer's stores / direct supplies contract selection of a trading platform attract buyers' receipt of payment from the buyer and delivery of the order to the supplier receipt of sales interest | The ability to buy a wide range of goods through a reliable seller. |
| Construct (vector point X) - lead generation | |
| Lead collection or contact information services / lead generation contract launch auto alarm chains for lead generation, convert traffic to payment for results action of lead | Result actions of lead users (targeted activity) |
| Construct (vector point X) - Freelance | |
| Services in virtual platforms, services in specialized groups of social networks / discussion of the terms of reference with the potential clients and taking orders at work on a special site order performance quality control order performance payment for order or refusal of payment | Work quality |
| Construct (vector point X) - Online education, Online entertainment | |
| Choice of market, direction of activity, of staffing product development establishing a platform 3 launch automation of product sales receive service fee | Usefulness, specificity, immediacy of uniqueness |
| Construct (vector point X) - Cybersecurity | |
| Secure data processing / security systems development testing and improvement of security systems establishment of an information security monitoring and processing center conclusion of the performance contracts receive service fee | Integrated data protection |
| Construct (vector point X) - Blogging | |
| Monetizing a blog / (1) Affiliate programs: referral link paid to act; (2) Direct sales: advertising attracting the client's direct sales; (3) advertising revenue: advertising click /paid to click; (4) advertising articles: advertising articles paid to advertising articles | Realization of goods or services, attraction of new customers |
| Construct (vector point X) - Investment platforms | |
| Platform development and operation / selection hash, that will fit all transactions on the network generation and retrieval of the secret key transaction closure receive service fee | Revenue generation for individual transactions |
| Construct (vector point X) - Arbitration of traffic and CPA network. | |
| Purchase and monetization of topical traffic for the Offer / attracting Offers (in the CPA network or directly) establishment of conditions for cooperation offer-arbitrator use traffic for Off receive service fee | Selling goods, services, services through the Internet |

* Offers - companies that need Off (selling goods, services, services or subscriptions through the Internet)

The procedure detailed in ANSYS AUTODYN made it possible to isolate the final structure of entrepreneurship such as a collection, which is quantified by entrepreneurs, among whom: 11,5% percent operate in local Internet shops; 8.5 percent are involved in Internet-Drop-Hopping; 11.9 percent in lead generation; 20.13% in freelance; 4.21% in online education; 20.73% in online entertainment; 1.2% in investment; 11.12% in cybersecurity; 8.98% in blogging; 2.55% in arbitration and CPA networks [15].

Due to differences in the content of the basic process, the Lagrange-Eulerian arbitrary method, which excludes incorrect errors in the calculation of deformation problems, discovers that the list of available designs on a worldwide scale is much more varied. And yet, according to the structure of digital entrepreneurship, its above-mentioned constructs are the main ones globally and in Ukraine.

In ANSYS AUTODYN, a description of the evolution of the sustainable development movement behind the constructs determines the vector form of the statement of results. It aimed at forming directed segments of factor-trigger (trigger factors) X and Output indicators (У) [20, c. 311-340;]. For the coordinate representation of vectors, the concept of projection of a vector over an axis is important.

For projection, the properties of the correlation density of its internal points attributed, illustrate how the sphere of digital entrepreneurship produces transformative effects: on the labor market; on the behavior, attitudes, and values of people as consumers; on the business behavior in the use of resources. In particular, for the transformation of the labor market from 2010 to 2020, the trend is to increase the number of jobs from 2,685.7 to 3,185 thousand [16]. However, the effect is related to the constructs that are dematerialized and require hybrid skills, namely, different activities. During the period under review, the job increase is in the constructs, for which it is cheaper for entrepreneurs to pay hybrid specialists than to automate their work or recruit a team for each new job.

Among such constructs are arbitration traffic and the CPA network, investment platforms, blogging, freelance, cybersecurity, etc. In some constructs, there is a reduction in the number of employees (Q1), as their monotonous functions are replaced by IT solutions for Internet commerce, training platforms with autonomous options, etc. Additionally, there is a trend of the dematerialization of workers' activities (Q2). The number of productive operations and communications based on the use of information technologies is increasing for all constructs. Dematerialization reduces the number of jobs in simple, monotone employment.

Vector interpretation form of influence Q1 and Q2 on sustainable development through the transformation of the labor market according to 2010-2020 presented in *Figure 1*. In ANSYS AUTODYN, when there are a significant number of vector models, their content is automatically generalized in numerically vector models. Based on numerically vector models, simulations were launched to reorient the national business management system towards sustainable development. Simulations can adjust by world trends. Thus, the interpretation form of influence Q1 and Q2 on sustainable development in the numerical vector model can be granted as $Y = -487.4128 + 0.1554X1 + 1.1832X2$. The results simulation revealed a high density of connection between a numerical vector model and the process of sustainable entrepreneurship

development.

ANSYS AUTODYN can compare, view, and visualize information regarding the impact of Q1 and Q2 on sustainable development.

The transformation of people's behavior, attitudes, and values as consumers of digital business constructs is characterized by the desire to produce goods, products, and services used only in a specific virtual environment.

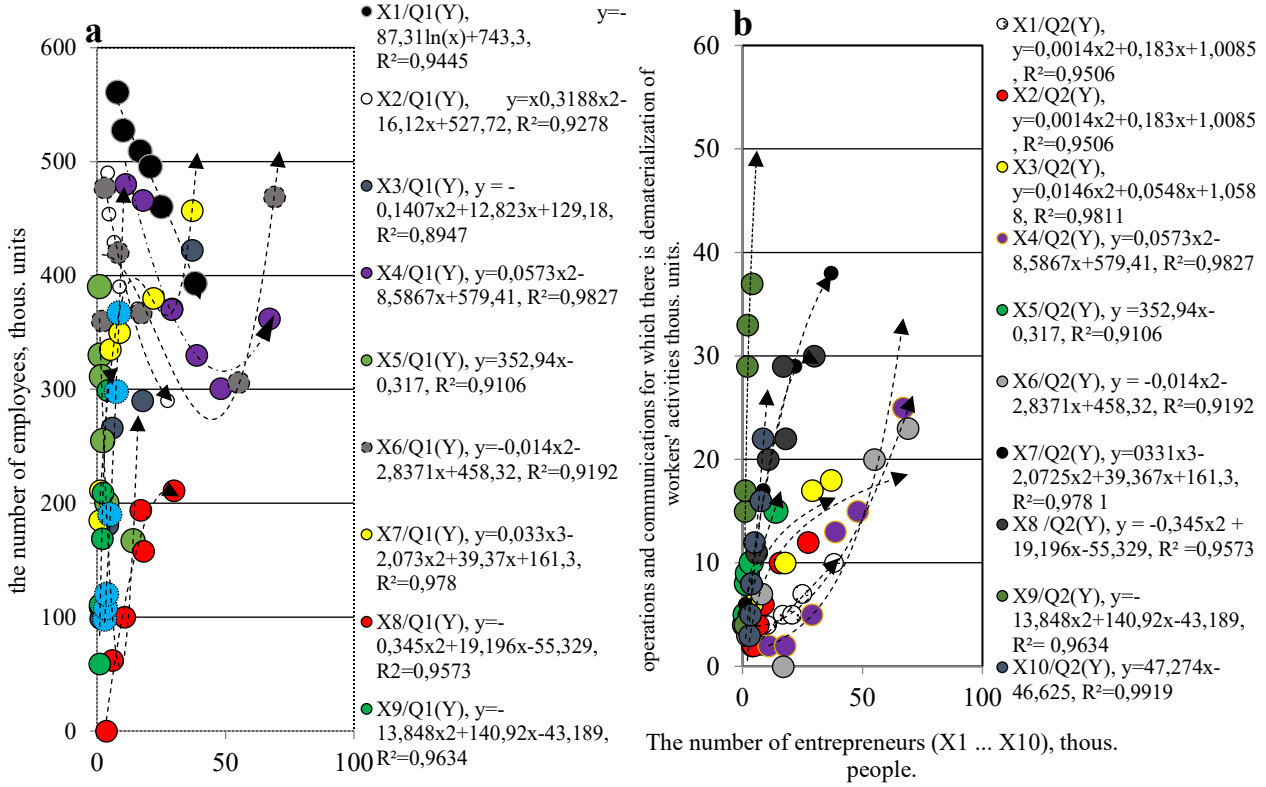


**Figure 1. - Vector interpretation form of influence Q1 and Q2 on sustainable development through the transformation of the labor market, 2010-2020***

*a - Sustainable development vectors with integration X and Y (Q1); b - Sustainable development vectors with integration X and Y (Q2)

There have been sales for real money: various game items in online games; weapon screens at trading sites selling gambling equipment; game accounts; YouTube channels with subscriber databases; electronic equivalents of real money, etc. Concerning the nature of consumer behavior transformation, it can be identified not only by the increase in the number of physical equivalents of goods, products, and services that replace by virtual ones (Q3) but also by the expansion of the range of services, product or trade assortment (Q4). The rapid growth of Q4 is since the range of virtual goods, products and services is much broader than physical goods.

For example, an assortment of virtual calendars and planners contains classic calendars for a year, month, week, «to do» lists; blogging, cleaning and diary planners, budget planners; project and menu planners; tracker of habit; shopping lists, checklists for different topics. In addition, these virtual products may contain graphic, musical, audio-visual, and animation elements.

Real money equivalents, as virtual goods, show a constant increase in their quantity and classifications. The composition of electronic money equivalents

individuals for social networks, virtual worlds, online games, cryptocurrency markets, etc. [17; 18].

The effect of transforming people's behaviors, attitudes, and values as consumers is to increase the adaptability and flexibility of digital entrepreneurship, with a corresponding reduction in the costs of scaling-up processes.

Vector interpretation form of influence Q3 and Q4 on sustainable development through the transformation of the behavior, attitudes, and values of people as consumers to 2010-2020 (presented in *Figure* 2), converted ANSYS AUTODYN to an in the numerical vector model, can be granted as Y = -54.2664 + 0.4253X1 + 0.5574X2.

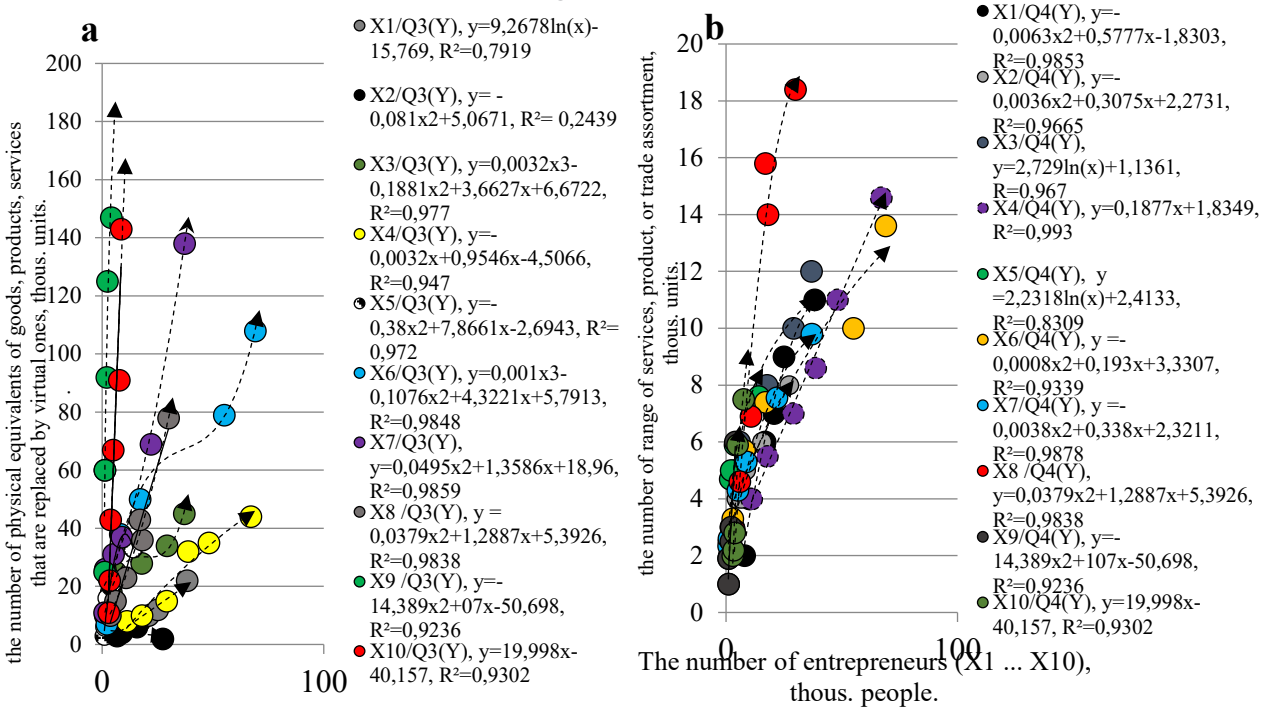


**Figure 2. - Vector interpretation form of influence Q3 and Q4 on sustainable development through the transformation of the behavior, attitudes, and values of people as consumers to 2010-2020***

*a - Sustainable development vectors with integration X and Y (Q3); b - Sustainable development vectors with integration X and Y (Q4)

The results simulation revealed a high density of connection between a numerical vector model and the process of sustainable entrepreneurship development. The numerically determinate rate (R) is 0.998.

Modern business behavior transformations in the use of resources, that produce the constructs of digital entrepreneurship, are connected with the reduction of the number of physical infrastructure facilities (Q5) in the face of «green» income growth (Q6) (Figure 3).

The effects are energy and resource-saving in entrepreneurial activities, which satisfy the interests of the society and link to the increasing cash receipts from low-carbon businesses and the use of non-renewable resources. Additional results connect with minimizing the mix of buildings, systems, services needed to produce goods, service delivery, and other functions that meet the needs of consumers and are necessary for efficient business.

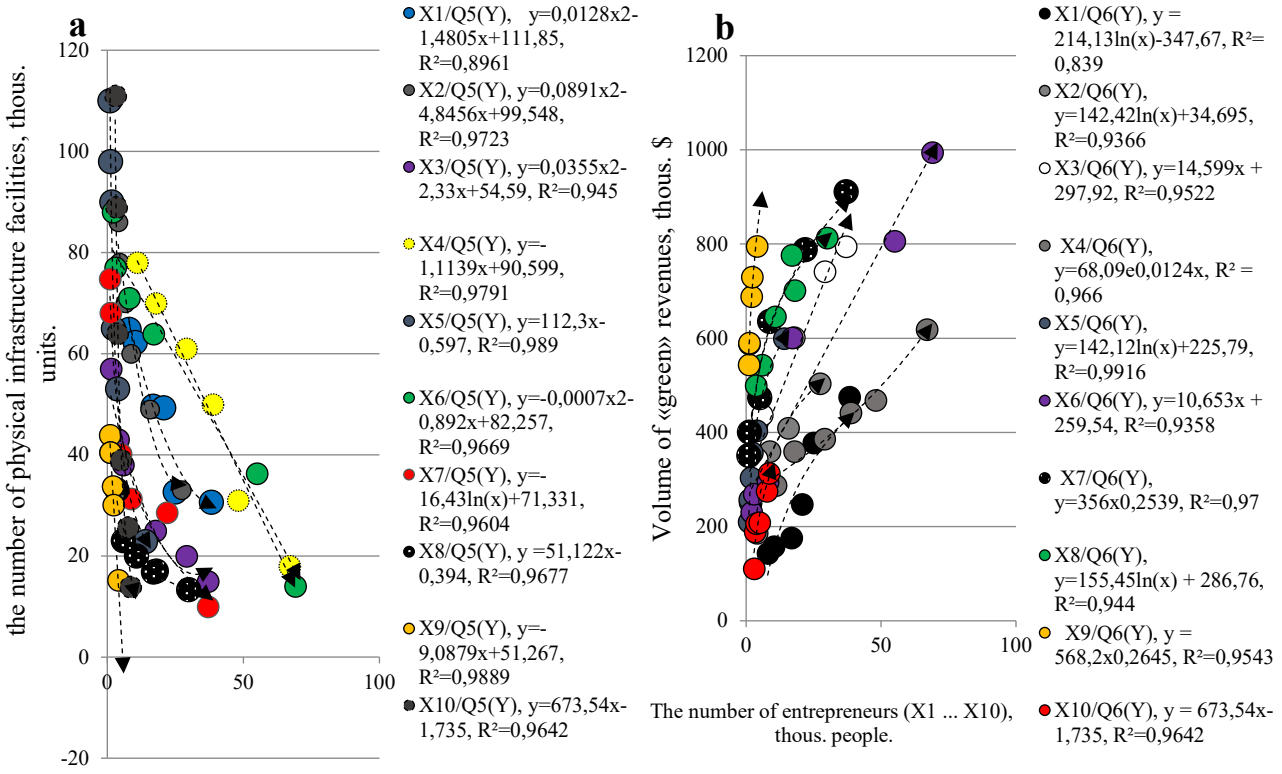


**Figure 3. - Vector interpretation form of influence Q5 and Q6 n sustainable development through the transformation of the business behavior in the use of resources to 2010-2020:**

a - Sustainable development vectors with integration X and Y (Q5); b - Sustainable development vectors with integration X and Y (Q5)

A typical example is the use of virtual infrastructure for business, which contains an environment that enables the team to operate effectively to profit generation, using only Internet connectivity. In particular: The Virtual Information Security Monitoring and Processing Center or the virtual office of Brama group, Nexus, etc.; A place on the Internet, which allows to carry out sell operations, virtual trading platforms for many sellers, Internet Drop-Hopping platforms; digital systems and learning management platforms, etc.

Vector interpretation form of influence Q5 and Q6 on sustainable development through the transformation of business behavior in the use of resources to 2010-2020**,** converted ANSYS AUTODYN to an in the numerical vector model, can be granted as Y=-258.1317+0.03098X1+0.08352X2. The results simulation revealed a high density of connection between a numerical vector model and the process of sustainable entrepreneurship development. The numerically determinate rate (R) is 0,9911. The impact of each of the identified digital business constructs on the sustainable development of Ukraine is unidirectional. It illustrated the vector matrix of the sustainable development of digital entrepreneurship in Ukraine (Table. 3).

**Table 3. - The vector-matrix of the sustainable development of digital entrepreneurship in Ukraine**

| | X, thous. people | Output indicators У (Q) | | | | | |
|---|---|---|---|---|---|---|---|
| | | Q1, thous. units. | Q2, thous. units. | Q3, thous. units. | Q4, thous. units.. | Q5, thous. units. | Q6, thous. $ |
| X1 Shops and local Internet shop | | | | | | | |
| 2012 | 10,22 | 527 | 4 | 6 | 4 | 62,2 | 158 |
| 2014 | 16,8 | 509 | 5 | 8 | 6 | 49,6 | 176 |
| 2016 | 20,7 | 495 | 5 | 10 | 7 | 49,3 | 248 |
| 2018 | 25 | 460 | 7 | 12 | 9 | 32,7 | 378 |
| 2020 | 38,2 | 393 | 10 | 22 | 11 | 30,6 | 475 |
| X2 Dropshipping and Internet Dropshipping | | | | | | | |
| 2012 | 4,5 | 454 | 2 | 5 | 4 | 78 | 278 |
| 2014 | 6,6 | 429 | 4 | 3 | 4 | 70 | 320,7 |
| 2016 | 8,7 | 390,1 | 6 | 4 | 5 | 60 | 360 |
| 2018 | 15,6 | 370,8 | 10 | 6 | 6 | 49 | 409,7 |
| 2020 | 27,3 | 290 | 12 | 2 | 8 | 33 | 503,9 |
| X3 Lead management and lead generation | | | | | | | |
| 2012 | 4 | 181 | 6 | 18 | 5 | 43 | 344 |
| 2014 | 5,8 | 266 | 7 | 25 | 6 | 38 | 437 |
| 2016 | 17,7 | 290 | 10 | 28 | 8 | 25 | 602 |
| 2018 | 29,1 | 370,8 | 17 | 34 | 10 | 20 | 742 |
| 2020 | 36,9 | 422 | 18 | 45 | 12 | 15 | 795 |
| X4 Intellectual services without a long-term contract, Freelance | | | | | | | |
| 2012 | 17,8 | 466 | 2 | 10 | 5,5 | 70 | 360 |
| 2014 | 29 | 370 | 5 | 15 | 7 | 61 | 386 |
| 2016 | 38,7 | 330 | 13 | 32 | 8,6 | 50 | 442,1 |
| 2018 | 48 | 300 | 15 | 35 | 11 | 31 | 468,9 |
| 2020 | 67 | 362 | 25 | 44 | 14,6 | 18 | 618,9 |
| X5 Education, online education | | | | | | | |
| 2012 | 1,2 | 330 | 5 | 6 | 2,5 | 98 | 258 |
| 2014 | 1,7 | 311 | 8 | 10 | 4,7 | 90 | 304 |
| 2016 | 2,2 | 255 | 9 | 16 | 5 | 65 | 357 |
| 2018 | 3,8 | 200 | 10 | 20 | 5,9 | 53 | 403,9 |
| 2020 | 14 | 167 | 15 | 33 | 7,6 | 22,8 | 600 |
| X6 Entertainment, online entertainment | | | | | | | |
| 2012 | 2,9 | 477 | 5 | 23 | 3,3 | 77 | 269,5 |
| 2014 | 8 | 420 | 7 | 38 | 5,7 | 71 | 294,4 |
| 2016 | 17 | 367 | 19 | 50 | 7,4 | 63,9 | 601,1 |
| 2018 | 55 | 306 | 20 | 79 | 10 | 36,3 | 806,3 |
| 2020 | 69 | 469 | 23 | 108 | 13,6 | 14 | 994,4 |
| X7 Data security, cybersecurity | | | | | | | |
| 2012 | 1,2 | 211 | 6 | 26 | 2,6 | 68,1 | 400,7 |
| 2014 | 5 | 335 | 11 | 31 | 4,3 | 40,2 | 474,2 |
| 2016 | 8,7 | 350 | 17 | 37 | 5,3 | 31,3 | 635,7 |
| 2018 | 21,9 | 380 | 29 | 69 | 7,55 | 28,6 | 788,16 |
| 2020 | 37 | 457 | 38 | 138 | 9,8 | 10 | 910,8 |
| X8 Review, journalism, blogging | | | | | | | |
| 2012 | 5,9 | 100 | 11 | 15 | 4,6 | 23 | 543 |
| 2014 | 10,7 | 158 | 20 | 23 | 6,9 | 20 | 646 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2016 | 18 | 194 | 22 | 36 | 14 | 17 | 702 |
| 2018 | 16,9 | 211 | 29 | 43 | 15,8 | 16,8 | 776,8 |
| 2020 | 29,9 | 299 | 30 | 78 | 18,4 | 13,3 | 813,3 |
| X9 Investment platforms | | | | | | | |
| 2012 | 1,1 | 109 | 15 | 60 | 5,5 | 40,5 | 588,5 |
| 2014 | 1,1 | 111 | 17 | 60 | 5,5 | 40,5 | 590 |
| 2016 | 2 | 169 | 29 | 92 | 7,6 | 33,8 | 688,8 |
| 2018 | 2,2 | 209 | 33 | 125 | 8 | 30,1 | 730,3 |
| 2020 | 4 | 299 | 37 | 147 | 9 | 15,2 | 795,4 |
| X10 Partnership advertising network, arbitration of traffic and CPA network. | | | | | | | |
| 2012 | 3,3 | 108 | 5 | 22 | 7 | 89 | 189 |
| 2014 | 3,7 | 120 | 8 | 43 | 7,8 | 64 | 207 |
| 2016 | 4,9 | 190 | 12 | 67 | 9 | 39 | 209 |
| 2018 | 7,6 | 298 | 16 | 91 | 10,6 | 25,7 | 275,6 |
| 2020 | 8,5 | 367 | 22 | 143 | 12,9 | 13,9 | 313,5 |

*Source*: research of the main Internet service providers in Ukraine (Ukrtelekom, Kyivstar, Volia, Triolen, Datahrup, Vega, Tennet, Arbiters, Frehat, O3, Lanet) and research of leading consulting companies (*Ernst* & Young Global Limited [14]*, PricewaterhouseCoopers* [15])

When hosts connect to shared storage the matrix is a database file ANSYS AUTODYN that contains information about Internet-service providers in Ukraine including values from the XY compositions and determines the direction of the sustainable development of digital business. Practically all hosts Internet service providers in Ukraine connect to shared storage ANSYS AUTODYN. So vector-matrix is a public database file ANSYS AUTODYN and contains generalized information about values that form the XY compositions and determines the direction of the sustainable development of digital business. When shared by a team of economic managers, the ANSYS environment will ensure the reorientation of the national real-time business management system control.

Keep track of the national business management system reorientation on sustainable development connected to the fact that the constructs of digital economic activity in Ukraine minimized the number of resources mobilized and more responsible activity transition lead [19; 20, p. 108-110]. The computational dynamics of ANSYS AUTODYN illustrate the gradual minimization of damage to the ability of future generations to meet their own needs. Factors that reduce the number of purchases of Ukrainians from foreign entrepreneurs (i.e., long delivery times, unsatisfactory return conditions, difficulties in accessing information in a foreign language) simultaneously increase the volume of domestic trade through local Internet shops.

In particular, in 2018, the turnover of local Internet stores was about 1,76 billion dollars, in 2019, the turnover was 2019 p. 2,76 billion dollars. In 2020, the total volume of this turnover in Ukraine increased to 3,06 billion dollars [4]. The structure of such turnover volume of «green» revenues gradually increases. From 2010 to 2020, construction (thanks to the logic of income generation) contributes to dematerialization of [14; 15]: workers' activities; physical infrastructure facilities. The dematerialization probably did not include all property complexes but refers to the part used for goods sale and the supply of trade services. In particular, the trading room replaces by its virtual counterpart. Vendor activities move to specialized websites. Of course, with the

sale of physical goods, there is still a need for production and storage infrastructure. The site with product catalogs allows entrepreneurs to allow fast diversify the assortment. There are now up to 11,000 outlet groups in local online shops. The virtualization of physical goods further expands the range of products *[14]*. Today local Internet shops offer a pattern, knitting patterns, records of master classes on the sewing of things, sets of thematic recipes, electronic maps, books, journals, checklists, etc. Through local online shops, entrepreneurs can operate with minimal resources. It can target audiences of potential clients with minimal staff. Specificity is available at the barrier to entry. It is determined by the type of goods, characteristics of their production, and storage.

Internet Drop-Hopping is the sale of physical goods and services. The remaining impact of Internet-Drop on the sustainable development of Ukraine is almost identical to that produced by the local Internet shop. Such an entrepreneur does not draw stocks from the warehouse.

The Drop shipper buys the goods from the manufacturer (when: he receives the order and payment buyer; he gives the order to the wholesaler for a commission). As a result, between 2010 and 2020, 86 thousand stayed 33 thousand objects in the physical infrastructure. There is a tendency to replace offices and call centers with virtual analogs.

The Drop shipper uses numerous automation services. These services provide the possibility to synchronize the price of the goods with the manufacturer and the drop shipper, automate margin and the transmission of customer addresses to the manufacturer, etc.

As a result, during the period under review, the number of productive operations and communications for which dematerialization workers' activities were available increased from 2 to 12 thousand units *[15]*. Thanks to dematerializing activity, the employee can simultaneously manage several shops with different types of goods. Logically employer requires fewer employees as an employer. The total number of employees engaged from 2010 to 2020 decreased from 490 thousand to 290 thousand people *[15]*.

The impact of lead generation on the sustainable development of Ukraine arises from the fact that there is an entrepreneur income from producing marketing services with virtual components.

At present, the production range of services goes diversities. For 2010 - 2020, the production of services includes over 12 thousand groups of services, formed by substitution for virtual analogs of most services with physical components. Among them: are a collection of contact information of the target audience, advertising, and marketing [14].

The lead generation income produces determined by the activity lead attracting and linked to payment for the results-oriented action of users. This form of entrepreneurship aims at Maximum dematerialization of the worker activity and physical infrastructure.

Previously, for the provision of intellectual services without a long-term contract, entrepreneurs used advertising resources such as: newspapers, magazines, TV advertisements, mail distribution; calendars, posters; word of mouth.

The digital form of such entrepreneurship, called freelance, reached significant proportions. The impact of freelance on Ukraine's sustainable development is directly related to the logic of income generation from such business activities. This process carries through the sale of services on Facebook, LinkedIn, or Freelance Exchanges and Services. As a result, intellectual services-oriented entrepreneurship without a long-term contract requires a lower physical infrastructure facility.

In 2010 were involved 78 thousand buildings, systems, or services. In 2020 for the construction were needed approximately 18 thousand objects were. Furthermore, from 2010 to 2020, various areas of intellectual work are virtualized. For example, in 2010, entrepreneurs provided 8 thousand virtual analogs of services, and in 2020 only 44 thousand [14]. The service nomenclature constituting the general economic interest of consumers was extensions from 4 to 14.6 thousand units. It is possible: to increase the number of clients without increasing the staff costs and office rent; to offer virtual services to clients anywhere in the world. Getting stable entrepreneur needs profit: professional development; global business connections; improved marketing and financial management skills.

Online education and online entertainment have a significant impact on the sustainable development of Ukraine. Given the worker's dematerialization and infrastructure in these areas, it is feasible to start without investment; to increase the number of customers without staff costs increase; to offer services to customers anywhere in the world. However, to receive a steady flow of income for entrepreneurs, it is unnecessary to create a product but to dematerialize staff activities as much as possible and automate the process of providing and selling services.

Cybersecurity is a construct that promotes sustainable development by pursuing the virtualization of products and services that form in server, storage, and network software environments. The income generation uses the reliability of the remote monitoring and processing center of information security events to protect against viruses, hacker attacks, and data counterfeiting. It was understandable that the number of services replaced by virtual analog increased from 11 to 138 thousand units between 2010 and 2020. The trend has been taking place against the environment of explosive expansion of enhancement of those services. For example, security management combating counteracting cyberattacks, detecting, preventing, responding, and localizing threats contain 49 thousand virtual service sets. These services are Cloud-based security; application security in multi-level systems; IT infrastructure security; security of processes of access to data and services; control and elimination of emergencies, etc. From 2010 to 2020, the number of productive operations and communications dematerialization of workers' activities increased to 38 thous. For example, the cloud security activities architects dematerialize. The processes and security technologies integration, taking into account user needs, applications, and data through cloud services, is dematerialized. Monitoring of incoming and outgoing Internet traffic via firewalls and anti-virus applications dematerializes. The same trends are characteristic data protection and communication channels by cryptographic gateways, ensuring stable operation of server equipment, etc. It results from a decline in infrastructure that cybersecurity utilizes for effective operations.

Blogging contributes to sustainable development through income-generating

logic. An entrepreneur-blogger does unuse physical infrastructure, but only a blog. A blog is a site entry containing text and images added. A simple blog alternating is a channel on YouTube etc. Entrepreneurial income schemes depend on the cost of access to the audience and opportunities for additional income generation. Thus, a blogger-entrepreneur with an English-speaking audience earns on average $ 7.60 per 1000 views in Ukraine per $ 1 per 1000 views.

Entrepreneur investment operator ensures sustainable development by creating and servicing dematerialized cryptocurrency platforms or investors. This form of entrepreneurship requires a significant initial investment in data centers that work on tasks to capture transactions in databases and adjustment of the database on the content of user transactions.

However, there are problems with the energy intensity of data centers that operate dematerialized structures. The energy efficiency of economic activity accelerates the degradation of the environment in cases where energy obtains from «dirty» coal-fired power plants. At the same time, in Ukrainian reality, such entrepreneurship may contribute to the introduction of a market for excess electricity produced by nuclear power plants (considering the electricity production surplus in Ukraine due to the impact of the COVID-19 pandemic on the national economy).

The arbitration of traffic and the CPA network contribute to sustainable development because each product of this sphere is virtual or contains virtual components. This entrepreneurship includes direct business (arbitration) and partnerships based on CPA networks (partner site networks). In particular, in 2020, the CPA network sites offer up to 4 thousand partner program groups, which developed to attract arbitration and offers. For income recovery, the entrepreneur-arbitrator uses purchase traffic. Purchase traffic transfer to partner programs, where the visitor passes to the partner's page via a referral link. The entrepreneur owner of the CPA network for its monetization is enough to use for the «off» page of the partner. At the same time, the arbitrator offers to offer up to 8.9 thousand sets of services. From 2010 to 2020, the construct note: a constant increase of physical equivalents of goods, products, and services replaced by virtual ones; expansion of the services; waiver of physical infrastructure. The entrepreneurs in the sphere of arbitration traffic and the CPA network use the office as a flexible working space that is unintended for permanent work [16].

## Conclusion

In ANSYS AUTODYN it is possible to combine the formative and vector processes in estimating the sustainable development of digital entrepreneurship in Ukraine. It allows for a sound approach to the development of levels of mapping, reorienting the national system of entrepreneurship management. The mapping should begin by breaking down all areas of entrepreneurship into sectors according to the specifics of the basic processes. This will ensure that areas for impact change are identified.

The identification of areas requiring effective changes in entrepreneurship is

desirable in the following directions: of the labor market. Identification by the number of employees, the number of productive operations and communications for which there is dematerialization of workers' activities is available; of behavior, attitudes, and values of people as consumers. Identification by the number of physical equivalents of goods, products, services that are replaced by virtual ones and the number of range of services, product, or trade assortment; of business behavior in the use of resources. Identification by the number of physical infrastructure facilities and volume of «green» revenues. The content of the mapping levels is formed through multiple iterations of changes to achieve the desired level of sustainable development. At the same time, the ANSYS AUTODYN environment makes it possible to implement a reorientation of the national system of managing the business processes, taking into account the systemic influence of factors and the strength of their interactions with the output indicators. This important because it is output indicators that determine the direction of sustainable development and form an understanding of how the interaction forces can change the structures of economic activity.

The results of the research are useful in the development of levels of mapping with the reorientation of the national system of business process management in the ANSYS AUTODYN software environment. These levels of mapping are easily understood even in the face of permanent increase information update and increases.