“Human capital, creativity and innovation as pillars of leading technology systems”

AUTHORS	Iryna Petrova Fernando Pereira

ARTICLE INFO	Iryna Petrova and Fernando Pereira (2024). Human capital, creativity and innovation as pillars of leading technology systems. *Social and labour relations: theory and practice*, *14*(1), 42-51. doi:10.21511/slrtp.14(1).2024.04
DOI	http://dx.doi.org/10.21511/slrtp.14(1).2024.04
RELEASED ON	Friday, 08 November 2024
RECEIVED ON	Wednesday, 03 April 2024
ACCEPTED ON	Friday, 27 September 2024

JOURNAL	"Social and labour relations: theory and practice"
ISSN PRINT	2410-4752
ISSN ONLINE	2415-3389
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	State Higher Educational Establishment "Kyiv National Economic University named after Vadym Hetman", Social and Labour Relations Institute

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
25	1	0

BUSINESS PERSPECTIVES

Publisher

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10, Sumy, 40022, Ukraine

www.businessperspectives.org

V. HETMAN KNEU

Founder

State Higher Educational Establishment "Kyiv National Economic University named after Vadym Hetman", Prospect Peremogy, 54/1, Kyiv, 03057, Ukraine

https://kneu.edu.ua/

Received on: 03rd of April, 2024
Accepted on: 27th of September, 2024
Published on: 08th of November, 2024

Iryna Petrova, Sc.D (Economics), Prof. of Kyiv National Economic University named by Vadim Hetman; Prof., Head of Marketing and Behavioral Economics Chair University of Economics and Law KROK, Ukraine.

Fernando Pereira, Ph.D. Student, University of Economics and Law KROK, Ukraine.

Conflict of interest statement:
Author(s) reported no conflict of interest

Iryna Petrova (Ukraine), **Fernando Pereira** (Ukraine)

HUMAN CAPITAL, CREATIVITY AND INNOVATION AS PILLARS OF LEADING TECHNOLOGY SYSTEMS

Abstract

The relevance of the research is determined by the need of modern agricultural enterprises for innovations. Only on the basis of innovative development they can be competitive and later enter industry 4. The purpose of the article is to analyze and justify an innovative approach to the formation of technological networks in the agricultural sector based on the use of competitive advantages of human capital and strengthening of its creativity. The authors note that in order to attract innovation, project managers must coordinate the company's strategy with the strategy of knowledge management and creativity development. The study summarizes the results of using an innovative model in the Brazilian agricultural sector that promotes human capital development and knowledge generation, as well as environmental sustainability (the UTAUT model). The evaluation of these results showed that a significant factor in the successful implementation of the innovation model is the creation of an appropriate organizational and management culture, focused on the involvement of innovations in the activities of agricultural enterprises. The authors conducted a survey of agricultural workers of large and small enterprises of this industry in order to identify their need and degree of readiness for innovations. The results of the survey showed significant differences between large and small enterprises in the given parameters, which require the choice of different ways and sources of strengthening their innovativeness.

The problem raised in the article is also relevant for Ukraine as a country with a traditional agricultural sector.

Keywords human capital, innovation, creativity, organizational culture, strategy, performance evaluation, project management, environmental sustainability of agrarian companies

JEL Classification J41, O31, Q12

І. Л. Петрова (Україна), **Ф. Перейра** (Україна)

ЛЮДСЬКИЙ КАПІТАЛ, КРЕАТИВНІСТЬ ТА ІННОВАЦІЇ ЯК ОСНОВИ ПРОВІДНИХ ТЕХНОЛОГІЧНИХ СИСТЕМ

Анотація

Актуальність дослідження визначається потребою сучасних аграрних підприємств в інноваціях. Тільки на засадах інноваційного розвитку вони можуть бути конкурентоспроможними та згодом увійти до індустрії 4. Метою статті є аналіз і обґрунтування інноваційного підходу до формування технологічних мереж в аграрному секторі на основі використання конкурентних переваг людського капіталу і посилення його креативності. Автори зазначають, що для залучення інновацій проектні менеджери повинні узгоджувати стратегію компанії із стратегією управління знаннями та розвитку креативності. Дослідження узагальнює результати використання інноваційної моделі в аграрному секторі Бразилії, яка сприяє розвитку людського капіталу та генерації знань, а також екологічній стійкості (модель UTAUT). Оцінювання цих результатів показало, що суттєвим фактором успішної реалізації інноваційної моделі є створення відповідної організаційної та управлінської культури, орієнтованої на залучення інновацій в діяльність аграрних підприємств. Автори провели опитування аграрних працівників великих і малих підприємств цієї галузі, щоб виявити їх потребу і ступінь готовності до інновацій. Результати опитування показали значні відмінності між великими і малими підприємствами по заданих параметрах, що вимагає вибір різних шляхів і джерел посилення їх інноваційності.

Проблема, піднята в статті, є актуальною і для України як країни з традиційним аграрним сектором.

Ключові слова людський капітал, інновації, креативність, організаційна культура, стратегія, оцінка ефективності, управління проектами, екологічна стійкість аграрних підприємств

Класифікація JEL J41, O31, Q12

http://dx.doi.org/10.21511/slrtp.14(1).2024.04

INTRODUCTION

To compete in the market, organizations of agrarian sector should have valuable, rare, inimitable and non-substitutive resources that only human capital can provide. This resources-based capability needs a process that enables the company to innovate. Organizational process should structure the company for innovation. Innovation is understood as the creation of new products that increments or changes the market. Hence, some strategies may concern how to develop the knowledge management inside the company. However, different management styles can influence the outcome, since people's knowledge needs to be accessed in order to be transferred. Project managers should conduct strategies to allow the knowledge transfer to happen. These strategies can depend on what kind of innovation the company wants to reach. Innovation can be incremental using the widespread knowledge from the company or radical, requiring a change of resources to be achieved. The main factor concerning the knowledge inside the company is that it, as a resource, can be transferred among people to achieve the goal of the company. These knowledge resources are available in different forms, implicit or explicit. The major problem is how to explore that knowledge for the kind of innovation the company aims to achieve. The incremental innovation can be induced using existing knowledge from the company normative process. However, complex markets may require radical innovation from the company and existing processes may no longer be helpful. For radical innovation, an entrepreneurial management style should be exploited. Managers should understand that entrepreneurship inside the company requires a lot of effort and resources and that would mean risky for the company. Instead of giving entrepreneurs a free ride, project managers should understand that creativity demands different nontraditional techniques. Hence, project managers of agrarian sector should employ programs that promote creativity, which is determined in domains that should be trained or changed to enhance appropriate attitudes and practices in different levels (by the individual, by the group or by the organization). Yet, project managers should use these tools for human resources to let them collect data and explore information, creating different interpretations of solutions, resulting in varieties of approaches that can be used by the company in a process for selection and retention of knowledge.

1. LITERATURE REVIEW

Analyzing human capital as the most valuable asset of modern organizations researchers underline the significance of creativity as its essential component.

The founders of human capital theory convincingly showed that people's knowledge and abilities become a decisive factor in productivity growth. Investments in human capital provide its bearers with income, which stimulates them to constantly improve their skills, update and expand their knowledge. Managing a modern company essentially turns into knowledge management and the development of human resource competencies (Schultz, 1972; Becker, 2009).

At the same time, the essential characteristic of human capital is not only its creation and increase in the process of education, learning and training, but, mainly, its implementation in practical activities (Thurow, 1970).

According to the authors, the determining feature of human capital in modern conditions is its creative component. Creativity supposes that people are capable to produce new knowledge, generate new ideas, services and products and make original nonstandard decisions. This capability provides the main condition for competitiveness of human resources and companies as well. Florida (2018, p. 29), the author of creative class theory, points out that with creativity it is necessary to understand how to cleverly create new forms, which in essence has become the main driver of the formation of competitive advantage. Result of creativity is not absolutely evident; it is often uncertain and unpredictable. A pioneering follower of this phenomenon Simonton (2000), describes creativity as the fact of bringing something interesting into the world, which is not self-evident, but, as he well respects, "the accompaniment of novelty, colorings, and inconsistency".

Taking into consideration the complexity and uncertainty of creative activity companies should de-

velop the quiet new field of management – management of creativity. Ukrainian researcher Sitnik (2019, pp. 20-21) sees three directions in the management system of organizational creativity:

1) forming organizational structures that encourage creativity;

2) management of human and knowledge resources;

3) creative organizational culture and leadership.

We would like to especially underline that the management system of organizational creativity needs the adequate and sane type of organizational culture. On the contrary toxic culture can destroy necessary creative atmosphere and hinder the realization of creative potential of the human resources of companies. The same could be said about wrong style of leadership. Leadership of companies has to be oriented on initiatives, creativity and novelty. Authoritarian leaders can provide discipline and conformism but not creativity. More over creative development of organizations needs creative leaders.

We maintain scientific statement that creativety is closely connected with innovation. Innovation is always a result of creativity. From that point of view, creativity is an interactive process, directing the creation of new ideas and their materialization, but also creating positive economic and social effects (Petrova, 2022).

It is a big problem to evaluate and measure creativity. Said-Metwaly (2017) has classified creativity literature review approaches defined on process, person, press and product. Amabile (1996) suggests KEYS psychometric survey for creativity perception of projects environments and obstacles. Kang, Im, Hong (2011) have explored "The meaning and measurements of the UTAUT model" by "invariance analysis" testing country, technology and gender.

Researchers note that innovation is the most meaningful factor of the economic growth. According to Hanusch and Puka, on Principles of Neo-Schumpeterian Economics (2005), innovation-driven economics is a perfect example of complex systems; therefore, the Neo-Schumpeterian corridor is a comprehensive system performance of innovation.

Besides, researchers tried to evaluate the impact of innovations on competitiveness of companies in different sectors of economy, in particular on industrial companies – Baregheh, Rowley, Sambrook (2009) - and in the agriculture sphere - Ulyanchenko et al. (2021) which proved the role of strategic resource potential management, including innovation, as the basis for increasing agricultural enterprises competitiveness.

Nascimento (2008), on Genotype and Environment in "Tests of Signals for Trend: An Application for Plant Breeding" pointed out that "the methods based on analysis of variance do not provide estimates of the adaptability of cultivars nor of the direction of their answers and treat stability in a descriptive way". Regression-based methods, which measure the response of each cultivar to environmental variations, allow the estimation of adaptability parameters, which are tested using the t test. However, the recommendation of cultivars through these methods requires a large number of estimates. On the other hand, methods, based on non-parametric analysis use few parameters for recommendation, but also deal with adaptability and stability in a "descriptive way", proposed the following hypothesis as criteria for the evaluation of Genotype x Environment type productivity. Thus, information obtained from genotypic performance, make it possible to find the so-called "ideal" genotype, that is stable to unfavorable environments, responsive to favorable environments, and that has high average. In this case, there are two hypotheses to be tested defined as:

- stable to environmental variations in the group of unfavorable environments;
- stable to environmental variations in the group of favorable environments;
- according to this approach, two types of tests could be provided. First, test for only one set of environments: cultivars with low or high favorable or unfavorable general adaptability and stability. Second, tests for two sets of environments, one for each set (favorable and

http://dx.doi.org/10.21511/slrtp.14(1).2024.04

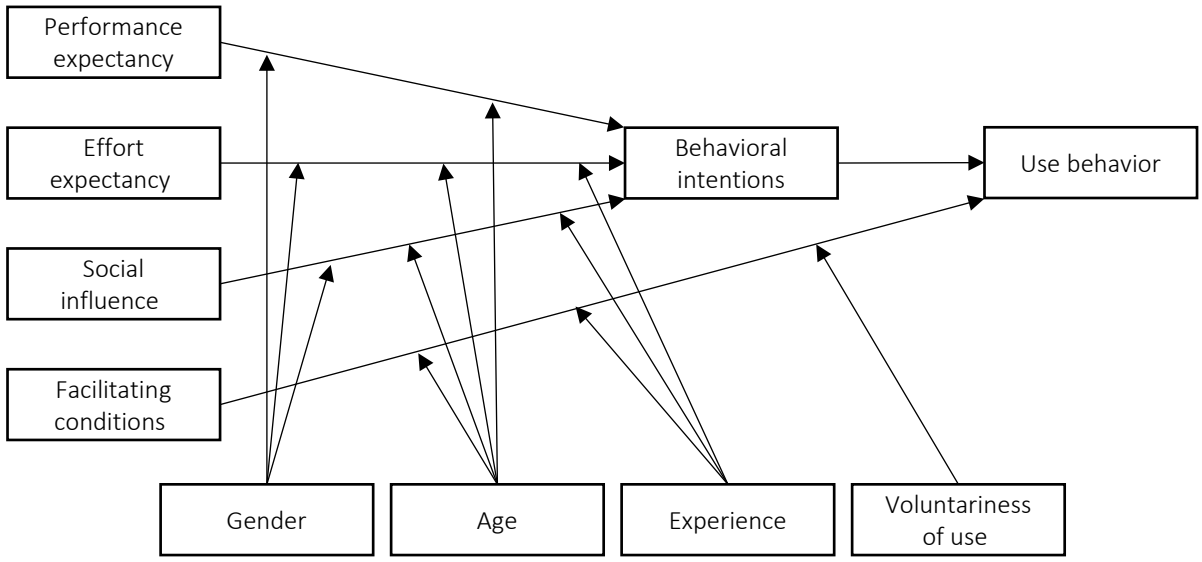

Figure 1. The UTAUT Model

unfavorable) considering only positive signs: "ideal" cultivars, either with favorable or unfavorable general adaptability and low or high stability" (adapted) (Nascimento, 2008).

Thus, the implementation of UTAUT model for performance evaluation in the technological system is very reliable. This information platform will provide the conditions for the innovation network to apply an integrated database in an accessible way. The basic elements of this model are performance expectancy, effort expectancy, social influence and facilitating conditions. All of them impact on behavioral intentions and then on use behavior which varies depending on gender, age, experience and voluntariness of use (Figure 1).

The model allows to monitor technological adoption in the network using innovation evaluation criteria by the creativity and knowledge, generated in the technological centers and results compared by the technological extensions in terms of quality and productivity through the simple collection of non-parametric data of the type "G vs. E" (Genotype x Environment).

2. AIM

The main goal is to prove the importance of human capital and knowledge management for innovation having human creativity as a source of competitive advantage. We are trying to describe their participation in formation and functioning of technological network that justifies the technological adoption in the agricultural sector, to promote environmental sustainability, entrepreneurship and the generation of knowledge.

3. METHOD

This study applies a mixed-methods approach to reveal the role of human capital and knowledge management for innovation. The methodology includes both analysis and synthesis, quantitative and qualitative methods to prove the interaction between the human capital, human creativity and knowledge management in innovation process and their integration in technological network.

We conducted investigation aimed to receive information from rural producers (both large and small) who supply agriculture products to markets or cooperatives to access the innovation technology applied to their business.

The structured questionnaire provided in this work comprises two main sections. The first section proposed questions demonstrating readiness and preparation of producers to change through innovation, including characteristics of their human capital. The questions of the second section

tried to evaluate organizational change through organizational culture assessment, knowledge generation measurement and life-cycle assessment.

4. RESULTS

The strategy of knowledge and innovation management should ensure that people's effort and company resources are well used by a set of tool programs of training and projects of changing management.

Knowledge management is a competitive advantage for the agrarian firm to innovate strategy aligning people's creativity and program tools to leverage creation and process to explore entrepreneurship inside the organization.

As human capital is an important competitive advantage resource when transferring knowledge, organization learning will be a matter of success or failure in this context. Innovation is too risky dealing with complex markets and a systematic approach is useful for conscious alignment between structure and organization culture. When innovation depends on endogenous as well as exogenous institutional evolution, structural and cultural interaction designates its values. In this way, organization congruence can ensure market success. For managers inside corporate ventures, a concept of the change is necessary before funding projects to be carried out by entrepreneurs in decentralized units. Strategic levels can oversee project level and frictions between corporate and divisions can be predicted. The usage of performance measurements indicators by top managers to address organizational readiness can support emerging culture to arise. Management styles can differ and affect organizational performance. A controlled information assessment system can drive the desired outcome when measuring strategy and culture. Project managers, facing innovation challenges, are still responsible for the project success within organizational resources. The complexity of systems, suggesting a deterministic chaos, can be overcome by exploring multiple collaborations. Considering public perception and complementary sources of knowledge in this ecosystem, the company should apply an ambidextrous approach. Using both strategies to process as well as entrepreneurs" creativity through an agile upward process for selection and retention of knowledge can be valuable, rare, inimitable and non-substitutable resources from inside out the company to compete ahead of the market and complement with innovation other firms and organization needs. However, the measurement of the process is equally important. Knowledge transfer will require creative efforts from people and tools for knowledge management may be essential as well.

Creativity is not easy to become tacit or explicit. It has to be encouraged by the company. Individuals and groups knowledge domains sometimes cannot be founded by themselves, demanding acquisition from another firm's knowledge spillover, resulting in project or market failures. The adaptation of the mass production mode to total quality reduced inventories, which resulted in the adoption of agile technologies in response to development time. This analogous situation also reflects on the need for organizations to adapt to more flexible structural models with the use of project management methodology from the creation to the maturation of the processes. In this way, that technological infrastructure has been modified over decades, as well as the time for the development of agile responses. It is important to maintain three ways: flow, feedback, and continuing learning and experimentation. This changing environment brings new challenges to the traditional way to get dynamic formats of work (Kim, Humble, Debois & Willis, 2021).

Transformation capacity demands interpersonal skills and the development of essential competencies for business success. This entrepreneurship must be able to take these ideas adapted to the transformation environment, synthesizing through project decisions that make it possible to operate sustainable businesses in all necessary aspects. It is true, that change must be nowadays implemented through projects. Take for example a comparison for the digital transformation between a big farmer "A" and a visionary entrepreneur "B" (Nieto-Rodriguez, 2022). Possibly, large farmer "A" will invest in knowledge to implement 4.0 technology in order to expand its business portfolio. This one will be able to make large ecological investments and to manage natural resources for the business and generate savings through carbon

http://dx.doi.org/10.21511/slrtp.14(1).2024.04

credits in regenerative agriculture. Entrepreneur "B", on the other hand, will need the existing portfolio to apply technology 4.0 to generate knowledge that generates value (Ondei, 2022). He should use methodologies such as design thinking with work cooperatives. According to Emil and Miroslav, "The theory of PPM divides project portfolio processes and then projects in a portfolio may compete as far as the in terms of resources and urgency". However, both are committed to forming teams to develop the idea with strategies in raising funds to scale the business and make it sustainable (Vacík & Špaček, 2017/2018). Government environmental data, along with private data, must be cultivated together, capturing value for value creation. According to a Fitch report, most production takes place on smaller individual farms, which account for the bulk of production. Large farmer "A" may have his investment funds focused on maintaining the business (Fitch Solutions Ukraine, 2022). Entrepreneur "B" will possibly have to raise funds via incentives through public calls. It needs the appropriate knowledge for the promotion program that allows him to introduce technology 4.0 and still seek investors to cross the abyss of disruptive innovation. Even though both still faced the same challenges for a new business environment. World Bank's Doing Business survey uses indicators, including "protecting investors", "enforcing contracts" and "starting a business", highlighting the challenging operating environment facing potential investors. These high barriers to entry will continue to stifle foreign direct investment into Ukraine" (Fitch Solutions Ukraine, 2022).

Beyond this, what is the strategic difference in project management between the two farmers? Which will be more successful in terms of value creation?

We realize that the large farmer benefits from the same logic as large corporations, in which he will be able to align his supply chain according to the needs of his production program. As if hypothetically:

H1: This farmer "A" is strategically aligned to the processes and the necessary structure, recruiting technical skills and motivating profit sharing from results in value creation.

H2: The entrepreneur "B" would be in the logic of the new knowledge economy, motivating the technological adoption for the development of processes by challenging a traditional structure that is seen as costly in the creation of value in this second hypothesis. Yet, the null hypothesis "System" H0 varies, according to the analysis of the environment for the project priority problem, because technology adoption depends more on managerial change in both cases than on simply investing in or fostering technology 4.0.

In this sense, the perspective is that the policy should adapt so that both small and large producers have sufficient institutional incentives to leverage their income through technological adoption. We take in consideration the challenges that each type of property can benefit from, relative to the scope of the solution, by either technological cost or time of adoption or even in the creation or generation of value added. Therefore, platforms with non-parametric statistical survey can served as a way to enable these pairs in such deployment of 4.0 technologies in positive or negative performance changes for better or worse those decision trends. In this way, we can create programs that benefit from supervised processes for the introduction of 4.0 technologies in the processes carried out by groups in each of the phases of the data project. We can reach it, for example, alerting to activate functions in these integrated processes in these hypothetical tests before and after attempts at successful cases, determining the probability of errors and successes occurring immediately. It will facilitate the decision making of entrepreneurs during the life cycle of the project, stimulating success in the production of knowledge.

In 2022, B3, a major Brazilian stock exchange, market and counter, launched the first FIagro-FIP, Realty funds on Agro Chain, to the public. The new 2022 regulation for rural assets allows even small properties to be accounted for, making it possible to go beyond fund quotas with the trade of assets through of market values via agribusiness credits and securitization bonds backed by agribusiness. Brazil, although one of the largest agricultural producers in the world, has only 3 major food companies listed on B3. The scheme has three folded:

- "Leaseback" is a Buy Option to the producer;
- "Buy to Lease" is a Buy Option to the leaser;
- "Land Equity" is a Buy Forward Contract on trade with dividends.

We conducted the research focused on analyzing of need and access of rural producers to information technology. The goal of this survey was to receive information from rural producers who supply agriculture products to markets or cooperatives to access the need of information technology applied to their business.

The Questions we proposed were:

1. What represents you best? (The 1st question is Qui-square (% of number of respondents)):

   a) Big farmer;
   b) Small producer;
   c) Researcher;
   d) Student.

2. Do you collect Genotype x Environment samples to improve the quality of your production? (The 2nd is McNamara for Signals of before and after the application of G vs. E samples (if so)):

   Y – Yes;
   N – No.

3. To what degree do you think Agro 4.0 can help your business? (The 3rd is Kolmogorov-Smirnov for Likert scale):

   1) Never heard of;
   2) Not much;
   3) Maybe;
   4) It could help me if feasible;
   5) I'd like to implement it.

4. Who do you think would lead the best situation for you? (The 4th the Binomial test. Each question provides its own answer and is not related to any other question):

   a) Leaseback (to buy your own production);

   b) Buy to lease (the leasing buy your production);

   c) Land equity (Buy speculating Sell Prices with dividends).

5. Have you ever heard of Agro funds?

   Y – Yes.
   N – No.

The hypothesis from respondents can be a test by Mann-Whitney (in belief of the 4.0 feasibility).

At Session 1 we evaluated the Preparation to change. We focused on participants and their creativity as well as on novelty, quality, resources and labor costs and time of project implementation.

At Session 2 we conducted knowledge generation measurement. Besides, we evaluate change of organizational culture during project life-cycle. Innovation test and vector of creativity potential also were studied.

According to results of research we could find out that the more advanced type of participants" relations was one which based on creativity, charismatic leadership, and brilliant human capital. Otherwise, models based on competitiveness or hierarchy and strict control were less effective.

CONCLUSION

The complexity of markets requires flexible strategies that align structure and culture for decisions that managers should make to ensure the project success. In the new era of knowledge, the industrial revolution called 4.0 overcomes traditional ways of generating value. This change has been taking place in an increasingly agile way and with less impact on business risks, suggesting a broader acceptance of the technology adoption curve, expanding the possibilities of applying Industry 4.0 to sectors that are more resistant to new technologies. Considering a classic sector such as agriculture in the face of climate

http://dx.doi.org/10.21511/slrtp.14(1).2024.04

and environmental sustainability challenges, the importance of adopting new information technologies should not be underestimated. In this sector, we have, on the one hand, large farmers who already have a consolidated supply chain and small rural producers, who need cooperatives to get support in the purchase of inputs, productivity and supply of products. In a scenario of technological disruption, in which some sectors have a competitive advantage for the adoption of new technologies, other traditional sectors have also demonstrated advantages for business sustainability.

Despite the technological implementation difficulties related to the cost of access to the scientific knowledge base, the agricultural sector has great prospects for improving the supply chain and quality of supply, including the environment through innovative and environmentally sustainable practices (KPMG, 2022). However, the model for monitoring the production of knowledge must allow participating companies to restructure their capital, that is, to induce growth in such a way that the technology system integrates the entire supply chain in order to innovate, aggregating the corporate, social and environmental challenges on the development agenda (CompreRural, 2022). The technological system will have the basic conditions to promote knowledge on non-parametric statistics on genotype x environment *(G vs. E)* interactions to encourage the adoption of new technologies (Chade, 2022). It's possible through calls leveraging funding for sustainable agricultural projects through the monitoring of the cycle of the project in operational and strategic terms for the formation of technological networks aimed at innovation and knowledge generation in the technological network. The UTAUT engagement model will allow the entry of all actors involved in the technological network for operational monitoring of productivity by the criteria established in a very simple way of non-parametric statistics by signs. Cooperatives or large producers will have the project life cycle monitored to raise capital, which will be of great interest to technological demand. Finally, the portfolio, program and project management model is applied in an integrated manner, not only linearly for the generation of knowledge, but in a network with all supervised members through a database that encourages the active participation of each one of those involved in the project. They are well evaluated and not just by finalistic criteria, by methods that allow the evaluation of the project itself, which is the means that will ensure the success of the network. These evaluations must be oriented to be applied in order to reach the people who make up the network the technology system as a whole and not only in the academic bias in the production of knowledge. However, in the extension of sustainability of the project, therefore, they are not quantitatively reflected in numbers of the socio-economic success of the enterprise, but qualitatively we understand that the knowledge generated depends on to satisfy the motivational needs of the entrepreneurs that make up the network. Project managers promoting creativity and addressing entrepreneurship in an active-innovation system by open-innovation collaboration, knowing complementing other firms and markets, knowing that even radical innovation demands time and efforts in a long-run, can experience autonomous strategy altogether outside the company, making small changes and improvement, preventing exogenous shocks while exploiting endogenous ventures. Creativity demands training and changing management, knowledge management demands information and sharing, projects need time and efforts to be complete, as much as a learning organization does. The generation of knowledge inside a company is a resource that any spillover can potentially substitute its competitive advantage in the market. Incentives and rewards must compensate the engaging people in the decision process. The alignment of strategy and operations may include cognitive-cultural values of the organization and structured criteria in the concept of performance indicators enable individuals, groups and the organization to deliver innovation properly and sustain the competitive advantage of the company throughout knowledge management. Although both parties need the partnership of researchers to generate knowledge, the demand for these technical skills will only be found in cooperatives or contracting. Therefore, the public-private partnership remains essential to foster this new production chain through these agile data application policies. However, it will still be the task of the project manager to carry out the process necessary for the successful transformation of the business at all levels. At least, will have the necessary parameters in management application tools both for the situation of the hypothesis "A" of large farmers to innovate (H1) with hypothesis "B" for small entrepreneurs to innovate (H2). It helps in integrated environments of common benefit be-

tween the parties that intend digital transformation through reports with indicators and storytelling from an inclusive technological system. It addresses a creative network for corporate, social and environmental stakeholders from all types that face common upcoming challenges to be included in the 4.0 revolution not forgoing simple productivity criteria to be weighted and prioritized in a project portfolio.

The authors consider that the model and technique considered in the article can be put in practice of companies both in Brazil and in Ukraine to facilitate processes of innovation and creativity.

AUTHORS CONTRIBUTIONS

Conceptualization: Iryna Petrova, Fernando Pereira.
Methodology: Iryna Petrova.
Project administration: Fernando Pereira.
Resources: Fernando Pereira.
Validation: Iryna Petrova.
Writing – original draft: Iryna Petrova.
Writing – review & editing: Iryna Petrova, Fernando Pereira.

REFERENCES

1. Amabile, T., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the Work Environment for Creativity. *The Academy of Management Journal, 39*(5), 1154-1184. https://doi.org/10.2307/256995
2. Baregheh, A., Rowley, J., & Sambrook, S. (2009). Towards a multidisciplinary definition of innovation. *Management Decision, 47*(8), 1323–1339. https://doi.org/10.1108/00251740910984578
3. Becker, G. (2009). *Human capital: A theoretical and empirical analysis, with special reference to education* (3rd Ed.). Chicago: University of Chicago press.
4. Chade, J. (2022). *Brasil propõe acordo global para estabilizar mercado de alimentos [Brazil proposes global agreement to stabilize food market].* (In Portuguese). Retrieved from https://noticias.uol.com.br/colunas/jamil-chade/2022/06/12/diante-da-fome-paises-se-desen-tendem-brasil-quer-regras-contra-distorcoes.htm
5. CompreRural. (2022). *Fundo compra fazendão no matopiba por r$ 155 milhões [Fund buys farm in Matopiba for R$155 million].* (In Portuguese). Retrieved from https://www.comprerural.com/fundo-compra-fazendao-no-matopiba-por-r-155-milhoes/
6. Fitch Solutions Company. (2020). *Ukraine Country Risk Report.* Retrieved from https://store.fitchsolutions.com/country-risk/ukraine-country-risk-report
7. Florida, R. (2018). *Homo Creativus. Like a new class will conquer the world* (432 p.). Kyiv: Our Format.
8. Hanusch, H., & Pyka, A. (2005). *Principles of Neo-Schumpeterian Economics* (Discussion Paper, No. 278). Augsburg: University of Augsburg, Institute for Economics. Retrieved from https://ideas.repec.org/p/aug/augsbe/0278.html
9. Kang, M., Im, I., & Hong, S. (2011). The meaning and measurements of the UTAUT model: a n invariance analysis. *ICIS 2011 Proceedings.* Retrieved from https://aisel.aisnet.org/icis2011/proceedings/researchmethods/3
10. Kim, G., Humble, J., Debois, P., & Willis, J. (2021). *The DevOps Handbook: How to Create World-Class Agility, Reliability, and Security in Technology Organizations.* Portland: IT Revolution Press.
11. KPMG. (2022). Entenda como o 5G mudará a economia brasileira [Understand how 5G will change the Brazilian economy]. *Correio Braziliense.* (In Portuguese). Retrieved from https://www.correiobraziliense.com.br/parceiros/kpmg/2022/06/5013863-entenda-como-o-5g-mudara-a-economia-brasileira.html
12. Nascimento, M., Cruz, C., Peternelli, P., Campana, A., Pinto, D., & Ferreira, R. (2008). Teste dos sinais para tendência: uma aplica-ção em melhoramento de plantas [Testing signals for trend: an application in plant breeding]. *Revista Brasileira Biometria, 26*(4), 19-30. (In Portuguese). Retrieved from https://bio-metria.ufla.br/antigos/fasciculos/v26/v26_n4/A2_Artigo_Moyses. pdf
13. Nieto-Rodriguez, A. (2022). The Rise of the Chief Project Officer. *Harvard Business Review*. Retrieved from https://hbr.org/2022/04/the-rise-of-the-chief-project-officer
14. Ondei, V. (2022). Fazenda do futuro: conheça o batalhão de Stanford que deseja revolucionar o Mato Grosso [Farm of the future: meet the Stanford battalion that wants to revolutionize Mato Grosso]. *Forbes.* (In Portuguese). Retrieved from https://forbes.com.br/forbesagro/2022/04/fazenda-do-futuro-conheca-o-batalhao-de-stanford-que-deseja-revolucionar-o-mato-grosso

http://dx.doi.org/10.21511/slrtp.14(1).2024.04

15. Pereira, F. (2021). Managerial context of weak performance for the brazilian technological system – sibratec (pp. 43-48). In D. A. Bushuiev (Ed.), *Upravlinnia proektamy u rozvytku suspilstva [Management of projects in the development of society]*. Kyiv: KNUBA. Retrieved from https://library.krok.edu.ua/media/library/category/materiali-konferentsij/pereira_0001.pdf

16. Petrova, I. (2022). Creativity development as an imperative for strategic human resource management. *Social and labour relations: theory and practice, 12*(2), 40-48. http://dx.doi.org/10.21511/slrtp.12(2).2022.05

17. Petrova, I., Sysolina, N., Kononenko, L., Sysolina, I., & Savelenko, H. (2024). Increasing the Innovative Potential of the Enterprises of the Agro-Industrial Complex of Ukraine: Fundamental Developments. *The International Journal of Multiphysics, 18*(3), 1320-1340. Retrieved from https://www.themultiphysicsjournal.com/index.php/ijm/article/view/1435

18. Said-Metwaly, S., Kyndt, E., & Noortgate, W. (2017). Approaches to Measuring Creativity: A Systematic Literature Review. *Creativity. Theories - Research - Applications, 4*(2), 238-275. https://doi.org/10.1515/ctra-2017-0013

19. Schultz, T. (1972). Human capital: Policy Issues and Research Opportunities. *Economic Research: Retrospect and Prospect, 6*, 1-84. Retrieved from https://ideas.repec.org/h/nbr/nberch/4126.html

20. Simonton, D. (2000). Creativity: Cognitive, Developmental, Personal, and Social Aspects. *American Psychologist, 55*(1), 151-158. https://doi.org/10.1037/0003-066X.55.1.151

21. Steffen, H., & Zanini, F. (2012). Initial public offerings in Brazil: the perceptions of financial executives. *Revista Contabilidade & Finanças, 23*(59), 102-115. https://doi.org/10.1590/S1519-70772012000200003

22. Sytnyk, N. (2019). *Kreatyvnyi menedzhment [Creative management]* (143 p.). Kyiv: KPI im. Ihoria Sikorskoho. (In Ukrainian)

23. Thurow, L. (1970). *Investment in Human Capital* (149 p.). Belmont.

24. Ulyanchenko, O., Vasyurenko, L., Litvinov, A., Utenkova, K., Filimonov, Y., & Kuksa, I. (2021). Strategic management of resource potential as a measure to increase the competitiveness of the enterprise in the agricultural sector. *Financial and Credit Activity: Problems of Theory and Practice*, *4*(39), 276–283. https://doi.org/10.18371/fcaptp.v4i39.241316

25. Vacík, E., & Špaček, M. (2017/2018). Project portfolio management as a tool for innovation project management. *Journal of management and change, 36/37*(1/2), 24-33.