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DIGITAL PLATFORMS AND THEIR IMPACT ON THE ECONOMIC DEVELOPMENT OF UKRAINE

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ABSTRACT

This research aims to investigate the impact of individual attitudes towards digital platforms adoption on two critical dependent variables: household financial satisfaction and confidence in institutions, both of which are essential indicators of economic development. Additionally, the study aims to devise a policy framework for the efficient adoption of digital platforms in Ukraine's economy, fostering innovation, entrepreneurship, and investment. The analysis draws on data from the World Values Survey spanning the years 1980 to 2020. Logistic regression analysis is employed to examine the relationship between the concerned variables. Furthermore, game theoretic analysis is employed to present three distinct scenarios, exploring various decision variables, pricing strategies, digital infrastructure development policies, and preferences for local versus international platforms.

The results of the logistic regression analysis revealed a positive association between individual attitudes favouring technology and higher levels of household financial satisfaction and confidence in economic development institutions. Moreover, the game theoretic analysis yields valuable insights for policymakers and industry stakeholders, providing an enabling environment for digital innovation, entrepreneurship, and investment.

This study contributes to the existing literature by specifically examining the role of individual attitudes towards digital platforms and technology in driving economic growth. The application of game theoretic analysis to develop a policy framework for Ukraine's digital economy represents a novel approach to understanding the dynamics of digital adoption and its potential implications on economic development.

The research emphasizes the significance of individual attitudes towards digital platforms and technology as key drivers of economic development. Creating a culture that values innovation and technology is crucial for expanding Ukraine's digital economy and supporting inclusive and sustainable economic growth in the digital era. By effectively adopting digital platforms, Ukraine can promote economic development, empower its workforce, and enhance its competitiveness in the global market.

Keywords: technology, economic development, Ukraine, attitudes, game theory, logistic regression, world values survey

JEL Classification: Q55, Z00, O30

INTRODUCTION

The widespread use of ICTs has resulted in a dramatic shift in the national and international economy. Recent years have seen a significant rise in the importance of digital platforms as catalysts for economic growth and development, with these platforms disrupting conventional company models and paving the way for novel economic activity (Schor et al., 2021; Brynjolfsson and McAfee, 2014). These networks have made it easier than ever to buy and sell products and information, boosting productivity and creating new opportunities for business owners (Kagermann et al., 2013; UNCTAD, 2021). As nations strive for sustainable growth and increase competitiveness in the global market, understanding the impact of digital platforms on economic growth is of fundamental relevance to academics and policymakers. Ukraine is a country with a

growing tech industry and a strong desire for economic growth, making it an ideal setting in which to investigate the impact of digital platforms. Ukraine is poised to capitalize on the opportunities presented by digital platforms to boost economic growth and promote innovation thanks to its thriving start-up environment and pool of bright IT workers (Moiseienko, 2022; European Commission, 2020). To use digital platforms to their full potential for economic development, however, Ukrainians need a better grasp of the population-wide views toward innovation, technological science, and science.

The fundamental purpose of this scholarly investigation is to analyze the impact of digital platforms on the expansion of the Ukrainian economy. To do this, we analyze responses to the World Values Survey to learn more about people's perspectives on innovation and technological progress. The readiness of society to embrace digitalization and its potential impact on economic growth can be gauged in part by examining people's attitudes and acceptance of new technologies (Deursen, and Dijk., 2015; Bertot et al., 2010; Suslenko, and Kuznyetsova, 2022). We use the dependent variables "satisfaction with the financial situation of households" and "confidence in institutions". This variable is an excellent barometer of the economic development of the country as a whole and a reflection of people's general happiness (Helliwell et al., 2019; Lee and Shrum, 2012). The extent to which digital platforms contribute to the economic prosperity of Ukrainian households can be estimated by examining the correlation between these platforms and users' reports of financial satisfaction.

The present study delves into the intricate implications of digital platforms on economic expansion, employing a robust game theoretic analysis to elucidate their multifaceted impact. To accomplish this, three alternative scenarios are presented, offering valuable insights into potential approaches for the growth of digital platforms in Ukraine. These scenarios encompass a comprehensive range of economic, legal, and technical dimensions, furnishing policymakers and industry stakeholders with essential information to develop well-informed policies and strategies that effectively harness the advantages of digitalization (Mattsson and Reshid, 2023; Uriz, 2020).

The investigation holds considerable significance for various stakeholders, providing novel perspectives on the Ukrainian context and contributing significantly to the growing body of research on the pivotal role of digital platforms in economic development. Central to this research is the nuanced examination of individual attitudes and levels of financial well-being, fostering a deeper understanding of the driving forces propelling economies forward in the information age. This scholarly endeavour thereby enriches the theoretical underpinnings surrounding the interplay between individual attitudes and economic progress (Gawer and Cusumano, 2014; Kuznyetsova et al, 2021).

Furthermore, the game-theoretic study offers an insightful and forward-looking panorama of potential trajectories for digital platforms in Ukraine. The outcomes of this analysis can significantly aid policymakers in formulating judicious rules and regulations conducive to fostering digital innovation, entrepreneurship, and investment, thereby propelling the nation's economic growth (Edelman et al., 2016; Teece, 2018). This foresight may prove crucial in navigating the complexities and uncertainties inherent in the ever-evolving digital landscape.

Beyond the realms of academia, the implications of this research extend to industry participants, business owners, and financiers. By shedding light on both the opportunities and challenges associated with digital platforms in Ukraine, the study's findings enable stakeholders to make informed strategic decisions and discerning investment choices. These insights can be instrumental in bolstering the growth and sustainability of digital businesses within the nation, ultimately contributing to its economic prosperity (McGrath, 2013).

In light of the comprehensive exploration undertaken in this research, encompassing individual attitudes, financial satisfaction, and potential strategies for digital platform development, the study aspires to make a significant scholarly contribution to the burgeoning domain of Ukraine's digital economy. Moreover, it seeks to lay the groundwork for fostering inclusive and sustainable economic growth, resonating with the imperatives of the digital age.

The research is structured as follows: The first section describes the goals and context of the research. In Section 2, we examine the existing literature on the impact of digital platforms on Ukraine's economic development and identify areas where further research is needed. The approach, which includes the variables, data sources, and descriptive statistics, is discussed in Section 3. Results from a logistic regression study examining the impact of digital platform perceptions on life satisfaction and faith in the institutions most closely linked to economic development are summarised in Section 4. Section 5 explores the implications of the results within the current literature. In Section 6, a unique game theoretic analysis-based paradigm is offered, bringing insights for policy formation on digital platform uptake. Finally, Section 7 ends the study, summarizing major results and contributions, and offering possibilities for further research. This comprehensive and rigorous methodology intends to inform evidence-based strategies for Ukraine's digital transformation.

LITERATURE REVIEW

With a worldwide market of more than USD 3 trillion built on infrastructure, ICT devices, networks, advertising, and supply chains, we have been at the vanguard of the digital economy's evolutionary process from its beginnings. In this society, people are highly valued because they possess untapped social, economic, and ecological resources. Trust becomes a commodity depending on one's reputation and rating in today's digital market (Tapscott, 2008). It prepares the way for a trust-based sharing economy in which ratings, comments, and reviews are used instead of traditional cash (Botsman & Rogers, 2010). Trust used to be based only on a person's reputation inside his or her small community and was not transferrable across communities or people. The resulting increase in urban populations stimulated commercial activity and led to the development of reliable institutions. On the other hand, corruption and a lack of faith in institutions worsen both individual and communal economic situations and contribute to the spread of social inequality. Building confidence in online transactions requires being truthful, consistent, reliable, transparent, accurate, and admitting errors quickly. The quality and freshness of data play key roles in the trust economy alongside legitimacy, dependability, and environmental preservation.

In response to the pandemic, several nations are considering have taken steps to digitize their institutions and introduce technologies like online learning platforms in schools, telecommuting, and industrial automation. While proving that technology may improve lives, digital transformation has also shown how vulnerable digital practices and people's faith in them can be. To achieve societal objectives, people's perspectives on the roles of government, business, and corporations are essential. If a lack of trust or other cultural factors prevents nations from joining the innovation and digital revolution, action must be taken. According to (Watanabe et al. 2018), the development of business and our daily lives via the Internet has dramatically altered conventional means of communication, transportation, and production. Therefore, it has brought up the problem of GDP's shortcomings in measuring digital economic development.

The increased usage of digital platforms has presented new opportunities and challenges for both developed and developing nations. This study aims to synthesis existing research on the topic of the impact of the expansion of online resources on the Ukrainian economy. It examines prior research on the topic, evaluates pertinent sources, and synthesizes the results for the benefit of the reader. The term "digital platforms," which may also refer to "online platforms," is used to describe digital ecosystems that allow users, producers, and consumers to connect. Their increasing importance in determining economic patterns has drawn a lot of attention from academics and politicians. By encouraging entrepreneurship, boosting market efficiency, and expanding access to information and resources, digital platforms provide novel opportunities for the economic growth and development of emerging nations like Ukraine.

The problem of not having enough accurate data to make informed management choices was discussed in (Yarmoliuk, 2022). Decision-making at all levels of management is hampered by a lack of relevant knowledge and the existence of inaccurate information. The rest of the literature review is explained in Table 1 below as.

Table 1. Summary of the references.

Article	Main Focus	Key Findings/Recommendations
Rakhimova, 2023	Switzerland's economic growth and smart economy	Smart economy promotes growth via digital tools and IT
Cherniaieva et al., 2023	Restructuring Ukraine's Internet services market	Prioritize infrastructure upgrades, barrier elimination, security
Aristova et al., 2020	Intellectual Property courts in major European nations	Need for solid legal framework for IP protection in Ukraine
Bezrukova et al., 2022	Impact of ICTs on EU member states' economic transformation	Certain EU nations have advanced digital economies
Hrosul et al., 2021	Evaluation of operational management in the service sector	Effective working capital management is crucial for growth
Lema and Rabellotti, 2023	Role of digital platforms in economic growth	Platforms can boost employment and innovation
UNCTAD, 2021	Challenges of digital platforms in Ukraine's economy	Address digital gap, legal frameworks, and data privacy
ElMassah and Mohieldin, 2020	Using digital platforms to enhance socioeconomic indices in Ukraine	Platforms can promote innovation and inclusion in the economy
Bosma et al., 2018	Importance of citizen views on innovation for economic development	Reward creativity and fiscal management in Ukraine
UNCTAD, 2020	Influence of attitudes towards technology on economic growth	Pro-technology countries invest more in R&D and progress
Examples from Amiti and Khandelwal, 2019; Boga, 2019	Success of digital platforms in India and China	Ukraine can learn from these examples to boost economic growth
Yarmoliuk, 2022	Information support in the shift to a digital economy	Use indicators to assess the quality of information support

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Limited internet connectivity in rural areas and regulatory impediments to digital entrepreneurship are two of the obstacles hindering the integration of digital platforms in Ukraine. However, with well-planned investments in infrastructure and legislative frameworks, these obstacles may be surmounted, resulting in substantial new avenues for economic expansion. The government of Pakistan (2021) cites "Digital Pakistan" as an example of an effort that encouraged technological innovation and adoption, hence fostering a digital ecosystem that helped to create new jobs and increase economic opportunity. Ukraine may model policies that promote the use of digital platforms and entrepreneurial endeavours after those already in place.

The economic future of a country is heavily influenced by its citizens' views toward innovation. Japan's economic performance may be traced in part to the country's culture, which places a premium on accuracy and technology (Sahoo et al., 2022). People in South Korea who had a more positive outlook on innovation were more likely to take part in entrepreneurial activities, which boosted the country's economy. (Nguyen et al., 2020). Ukraine may achieve similar results by encouraging a culture of innovation and risk-taking among its company owners and employees. Individuals' perspectives on innovation and technology in Ukraine are crucial in determining the country's economic future. IMD's World Digital Competitiveness Ranking (2020) shows that nations with more advanced levels of digital readiness and more positive attitudes toward innovation have a greater chance of experiencing better productivity growth and economic resilience. Ukraine may take advantage of this opportunity by investing in training its workforce in digital skills, pushing for wider use of technology in business, and fostering partnerships across the public, private, and nonprofit sectors.

According to the studies analyzed here, digital platforms can be influential in Ukraine's economic growth. There is a lot of room for expansion with these platforms, but there are also some serious problems that need fixing. Furthermore, knowing how people feel about new technologies and innovations might provide light on how a country can maximize its economic growth. Ukraine may assure a route to sustained economic growth by creating an atmosphere that stimulates innovation, embracing technology, and guaranteeing financial security.

AIMS AND OBJECTIVES

The study's primary aim is to examine how digital platforms have affected economic growth in Ukraine. The study's primary objective is to deduce how satisfaction with one's financial situation and trust in institutions connected to economic development is affected by respondents' attitudes toward the adoption of digital platforms and favourable views on technology. The objectives of this research are as follows: The study's overarching goal is to learn more about Ukrainians' perspectives on using new digital tools and platforms. The study's goal is to assess how prepared society is to embrace digitization and its potential influence on economic development by analyzing respondents' attitudes and acceptance of technology. We will find how satisfied Ukrainian families are with their financial situations. Households' level of satisfaction with their financial situation is an important barometer of economic development since it reveals information about people's lives as a whole. Moreover, people's trust in institutions such as governments, legislatures, and public agencies termed institutional trust is a leading predictor of economic health and is influential in shaping economic habits.

Policy scenarios that explore different decision variables and objective functions are also developed, providing valuable insights for policymakers and industry stakeholders, and game theoretic analysis is used alongside logistic regression analysis to develop a policy framework for the adoption of digital platforms in the Ukrainian economy. The study's goal is to provide recommendations for policymakers, industry players, entrepreneurs, and investors based on the findings.

These suggestions are meant to aid in the development of policies and plans that fully exploit the benefits that digitalization and the use of digital platforms may bring to Ukraine. By answering these questions, this research seeks to contribute to the literature on the issue of the impact of digital platforms on economic development and provide actionable suggestions for fostering equitable and sustainable economic growth in the digital age in Ukraine.

Research Question

- Do Individual attitudes towards the adoption of technology and digital platforms influence household financial satisfaction and confidence in institutions?
- What kind of policy framework can be devised to effectively increase the adoption of digital platforms in Ukraine?

METHODS

We calculated many separate regressions independently. The rationale for this is that factors are difficult to operationalize due to the dimensionality and inaccessibility of these ideas. To integrate the binary fixed effect model dependent variable

household financial satisfaction (C006m), an indicator of economic development, the logistic model based on the maximum likelihood approach is used in this research. However, its strength lies in its capacity to address a common limitation of the linear probability model—namely, the issue of boundedness. Assuming that error terms are independent and regularly distributed, (Bliss, 1934) explains logic analysis.

$$y_i = \begin{cases} 1, y_i * > 0 \\ 0, y_i * \leq 0 \end{cases} y_i^* = x_i'\beta + \varepsilon_i \quad (1)$$

$$P(y_i = 1|x) = P(y_i{}^* > 0|x) = P(x_i'\beta + \varepsilon_i > 0|x) = P(\varepsilon_i > -x_i'\beta|x) = 1 - F(-x_i'\beta) \quad (2)$$

$$P(y_i = 1|x) = 1 - \emptyset(-\frac{x_i'\beta}{\sigma}),\ \sigma \equiv 1 \quad (3)$$

$$F(x_i'\beta = \emptyset(x_i'\beta) = \int_{-\infty}^{x_i'\beta} \emptyset z.dz \quad (4)$$

A higher value of x may either raise or decrease the probability that y-i. = 1. As a result, probabilities can only be anticipated to be 1 or 0. Additionally, we have included checks for model fit using the McFadden, Cox, Snell (ML), and Nagelkerke pseudo-R square estimates. The maximum likelihood (ML) of a model is compared to a nested null model in these. The model fits data perfectly if the McFadden R squared statistic is between the range of 0.2 and 0.4 (McFadden, 1974). The supplemental file includes our estimated values for McFadden R square and Wald statistics. In the first place, we checked to see whether there was any unobserved heterogeneity (variation in the mean value) over time which was indicated. Therefore, Using OLS will result in heteroscedasticity if the mean value is dynamic. A similar connection between the error term and the dependent variable is produced by running a form of simple OLS known as pooled OLS when the dependent variable is associated with nations or cross-sections. To address this kind of heteroskedasticity, we need to use fixed-effect models. As a result, we use dummy variables for each year to mitigate the impact of the year-fixed factors. Predicted probabilities larger than one and less than zero are generated by OLS, making it unsuitable for use with dichotomous dependent variables. In this situation, logistic regression analysis is the most useful technique. In light of the fact that not all variables are included in the basic econometric model, the results section demonstrates that additional probabilities of being in a better financial situation may be determined as a function of the elements mentioned below.

$\pi_i = p(C006m = 1)$ probability for respondents that have the highest financial satisfaction = $\beta_o + \beta_1 E217 + \beta_2 A189 + X001m + \beta_4 X007m + \beta_5 X045 + \beta_6 X003$

$$\ln \frac{\pi_i}{1-\pi_i} = \beta_o + \beta_1 E217 + \beta_2 A189 + X001m + \beta_4 X007m + \beta_5 X045 + \beta_6 X003 \quad (5)$$

Here, the respondent's chances of being in a better financial situation are denoted by the fraction $\frac{\pi_i}{1-\pi_i}$*, where* π_i *is the likelihood of being in a better condition and* $1 - \pi_i$ *is the probability of being in a less favourable situation*.

This is what brings about the concept of log odds. We need to determine the likelihood of respondents reporting greater levels of financial satisfaction, which indicates a better-developed economic condition, and such factors as

$$\pi_i = \frac{\beta_o + \beta_1 E217 + \beta_2 A189 + X001m + \beta_4 X007m + \beta_5 X045 + \beta_6 X003}{1 + e^{\beta_o + \beta_1 E217 + \beta_2 A189 + X001m + \beta_4 X007m + \beta_5 X045 + \beta_6 X003}} \quad (6)$$

Through employing many attitude variables related to technological innovation and digital platforms, an enormous data set, we have provided significant insight to understand and foster the development of digital platforms in Ukraine that increase economic development.

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Data, Indicator of development, and Key variables

In this empirical study, we focus on a worldwide values survey created by Inglehart et al. in 2020 (Table 2, Table 3).

Table 2. Codes representing different variables employed in the study.

S002	Wave
S020	Year of Survey
A189	Schwartz: It is important to this person to think up new ideas and be creative
C006m	Satisfaction with the financial situation of household
E069_07	Confidence: Parliament
E217	Science and technology are making our lives healthier, easier, and more comfortable
E218	Because of science and technology, there will be more opportunities for the next generation
E234	The world is better off, or worse off, because of science and technology
X001m	Sex
X003	Age
X007m	Marital Status
X045	Social class (subjective)

Over the period, 1980–2021, data is gathered in waves using a standardized questionnaire administered in more than 90 countries. The academic community does, however, generally accept self-reported measurements (Lombardi et al., 2011). To conduct the regression analysis, we utilized the program R; further, descriptive statistics are found in appendix table 1a. The level of "financial satisfaction of households (C006m)" is one of the most useful measures of a country's economic development that we employ as a dependent variable. Individual and family well-being may be gauged by how pleased they are with their financial status, which includes their income, savings, and debt. It indicates people's capacity to provide for themselves and keep up a specific quality of life. Higher levels of financial satisfaction are typical of developed countries since they reflect the reality that their citizens can buy necessities. Researchers have linked economic development and social prosperity to more fair income distributions in which more people report feeling financially secure in their homes (Diener et al., 2013). In addition, an increase in financial confidence often follows a rise in consumer pleasure. A healthy economy is driven by consumer spending, which increases when individuals feel their financial situations are stable (Chen and Chen 2022).

Table 3. Descriptive statistics.

Descriptive statistics					
Statistic	**N**	**Mean**	**St. Dev.**	**Min**	**Max**
S002	14	2,720.3	8,455.5	0.0	31,456.0
S020	14	946,556.0	3,537,444.0	0.0	13,237,036.0
A189	14	1,091.9	2,505.7	0.0	8,663.0
C006m	14	933.5	2,060.6	0.0	6,464.0
E069_07	14	1,792.3	5,069.2	0.0	18,476.0
E217	14	2,467.6	7,418.2	0.0	27,903.0
E218	14	2,554.6	7,739.9	0.0	29,122.0
E220	14	2,014.9	5,752.2	0.0	21,566.0
E234	14	2,347.7	6,976.2	0.0	26,226.0
X001m	14	943.2	2,035.5	0.0	6,600.0
X003	14	22,175.9	80,928.2	0.0	303,287.0
X007m	14	940.4	2,030.4	0.0	6,560.0
X025R	14	1,533.5	4,215.1	0.0	14,857.0
X045	14	2,074.9	6,096.8	0.0	22,429.0

Financially satisfied households are more likely to have savings and invest in various assets, contributing to capital formation and financial markets' stability, Debt Management: Employment and Wages, Social Welfare and Poverty, Economic Mobility. It is important to note that financial satisfaction is just one of many indicators used to assess economic development. Nonetheless, it can provide valuable insights into the overall economic well-being and prosperity of households within a country.

The World Values Survey (WVS) is an international study of what people all over the world hold dear, from their social and cultural norms to their political and religious beliefs. The economy is not explicitly measured, although the survey does contain numerous factors that might be interpreted as reflecting characteristics of economic growth. Therefore, parliamentary trust (E069_07) serves as our second dependent variable measuring economic development. Individuals' faith in the economic system and its capacity to foster growth may be reflected in their degree of trust in institutions like the government, banks, and companies. The extent to which citizens are content with the way the government handles the economy is a measure of confidence in economic policies and results. The correlation plot representing the association among concerned variables is presented below in Figure 1.

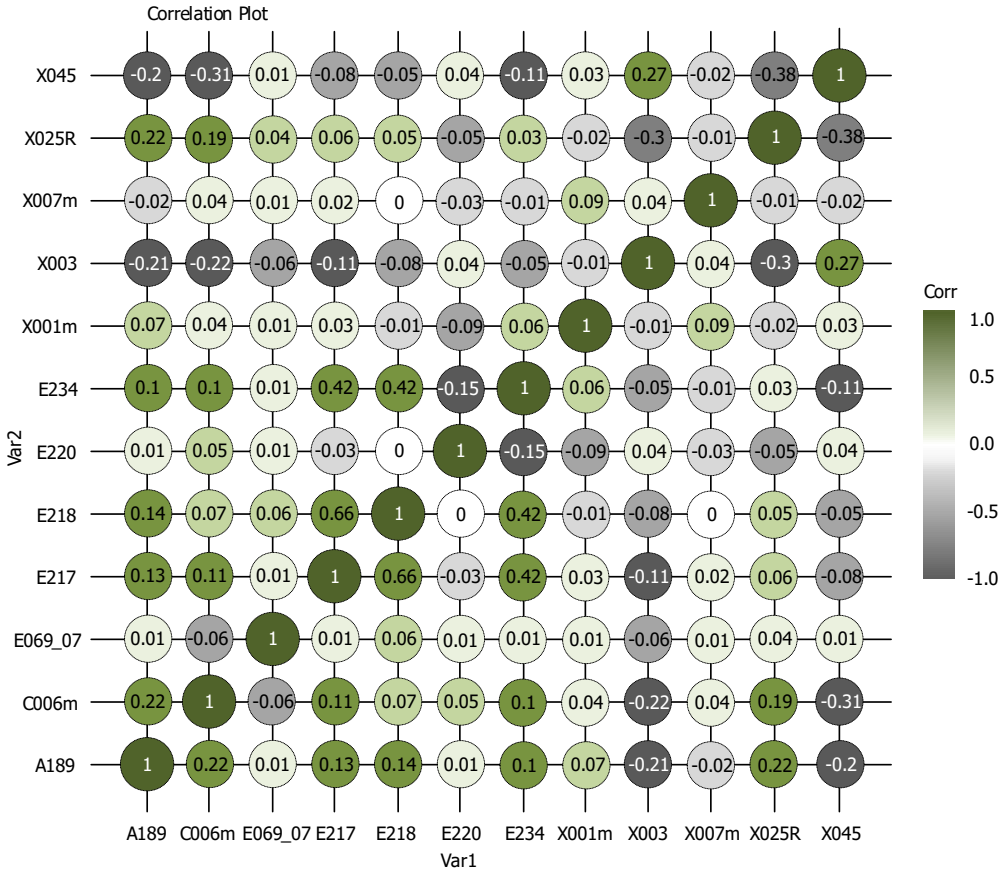

Figure 1. Correlation Plot for all variables involved in the study. *(Source: World Values Survey)*

Our goal here is to analyze the association between household financial happiness and the many independent variables that indicate people's perspectives on technology and the usage of digital platforms. Science and technology are making our lives healthier, easier, and more pleasant (E217) is a measure of people's opinions on how they feel science and technology have enhanced their quality of life. A more optimistic view of technology is indicated by a higher value for this variable, implying that those who score higher on this measure see technological progress as beneficial. One way in which people's minds are captured by the variable "Because of science and technology, there will be more opportunities for the next generation (E218)" is in their anticipation of the possibilities that the next generation may enjoy. A more optimistic view of technology's potential to improve prospects for future generations is reflected by a higher score on this indicator. The (E234) variable asks respondents if they believe that "the world is better off, or worse off, because of science and technology," with the goal of gaining an understanding of how people feel about the global impact of scientific and technological achievements. A more optimistic outlook is indicated by a higher score on this variable, which indicates that respondents think the world is better off as a result of scientific and technical advancement. The value that people put on original thought is captured by the variable "Schwartz: It is vital to this person to think of fresh ideas and be creative (A189). People that score higher on this variable tend to be more open to new ideas and developments, which may explain why they are enthusiastic about technology and digital platforms.

To further understand how the independent variables (E217, E218, E234, and A189) influence the dependent variable (household satisfaction with the financial situation), a regression analysis was conducted. One common indicator of economic health is people's level of contentment with their own financial condition. By regressing each independent variable

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on the dependent variable, this study hopes to determine whether people's perspectives on technology have a significant impact on economic growth. The results of the regression analysis will shed light on how optimistic and pessimistic outlooks on the utilisation of digital platforms have affected economic development in Ukraine. We also looked at how much people in Ukraine believe that innovation influences economic growth. S017 is weight, and the table also includes the age and sex of respondents as additional demographic data. Moreover, we always include year-specific dummies as a control variable in our regressions. Table 1 provides some descriptive information about the data presented here. The coefficients for each independent variable will be calculated in the regression analysis to show the magnitude and direction of their association. Coefficients that are positive signify a positive relationship, whereas negative coefficients imply a negative relationship. In addition, the significance level of each coefficient will shed light on whether or not the connection is meaningful statistically.

RESULTS

Our independent variables describe how Ukrainians' views on scientific and technical innovation affect the country's economic growth. All of these factors dictate the level of innovation and digital platform adoption in a nation. The logistic regression odds ratio Table 3 helped shed some light on the possible factors influencing satisfaction with the financial situation of households in Ukraine in the context of the link between digital platforms and their impact on economic development. Jobs, income, access to markets, and financial inclusion are just some of the areas that might be impacted by the rise of digital platforms and other technological advances. Let's investigate the potential connections between this setting and some of the Table's 4 variables.

Table 4. The odds ratio for identifying the relation between digital platforms and their role in the economic development of Ukraine. Note: *p**p***p<0.01; the Dependent variable is satisfaction with the financial situation of the household (C006m) which is an indicator of economic development while the main independent variable is individuals' attitudes towards the adoption of digital platforms that are regressed on our dependent variable in three models separately as E217, E218, E234, AND A189. Heteroskedasticity robust standard errors are in parenthesis. All regressions include controls age (X003), gender(X001m), Social class (X045), and Income (X047R). While some factors employed in all estimations but not reported in this Table 4 are town size, religious denomination, and country. *(Source: https://www.worldvaluessurvey.org/WVSDocumentationWVL.jsp).*

	Dependent variable:		
	C006m		
	(1)	**(2)**	**(3)**
E217	7.194***		
	(0.022)		
E218		4.195*	
		(0.024)	
E234			8.207***
			(0.023)
A189	26.098***	26.243***	25.121***
	(0.034)	(0.035)	(0.034)
X001m	16.934*	17.755*	15.540
	(0.094)	(0.094)	(0.095)
X007m	26.951**	25.884**	26.992**
	(0.096)	(0.096)	(0.096)
X045	-45.809***	-45.825***	-45.869***
	(0.057)	(0.057)	(0.057)
X003	-1.556***	-1.612***	-1.521***
	(0.003)	(0.003)	(0.003)
Constant	70.659*	110.915**	81.605*
	(0.319)	(0.325)	(0.311)
No $of\ Observations$	2,324	2,319	2,308
$Log\ Likelihood$	-1,452.540	-1,454.595	-1,445.858
$Akaike$ Information Criteria	2,921.080	2,925.190	2,907.716
$McFadden\ R^2$	0.625126	0.624596	0.626851
Cox $and\ Snell\ (ML)$	0.875632	0.875970	0.878124
$Nagelkerke$ (Cragg and Uhler)	0.907984	0.908094	0.909800

Science and technology improving our lives E217: About a 7.194 odds ratio may be calculated. In other words, if a person is 7.194 times more likely to be happy with their family's financial status for every unit they are more likely to agree with the statement that science and technology are making life healthier, easier, and more pleasant. The following generation may benefit greatly from the advancements made in science and technology. Approximately 4.195 is the odds ratio in case E218. This indicates that the likelihood of being happy with one's family's financial situation increases by about 4.195 times for every unit increase in the respondent's agreement with the statement that science and technology will provide more opportunities for the next generation. E234: The odds ratio is around 8.207 due to the influence of science and technology on the globe. This means that an individual's likelihood of being happy with his or her family's financial situation increases by about 8.207 times for every unit increase in the respondent's perception of the world being better or worse off due to science and technology.

Importance of thinking up new ideas and being creative A189: The odds ratios are high (ranging from 25.121 to 26.243). This suggests that respondents who value thinking up new ideas and being creative are significantly more likely to be satisfied with their household's financial situation. X001m: Sex (Male vs. Female): The odds ratios are positive and relatively high (ranging from 15.540 to 17.755). This indicates that males tend to have higher odds of being satisfied with their household's financial situation compared to females. X007m: Marital Status (Married vs. Unmarried): The odds ratios are positive and high (ranging from 25.884 to 26.992). This suggests that married individuals are more likely to be satisfied with their household's financial situation compared to unmarried individuals. A person's attitude towards economic opportunities and digital platforms may be influenced by one's subjective assessment of one's social class. People who have a higher opinion of themselves may be more willing to take financial risks or invest in new digital businesses, which could affect their family's standard of living. X003: Age: The odds ratios are very small and negative (-1.521 to -1.612). This suggests that the adoption of digital platforms is somewhat lower among the elderly compared to the young.

Table 5. The odds ratio for identifying the relation between digital platforms and their role in the economic development of Ukraine.
Note: $^{*}p^{**}p^{***}p<0.01$; the Dependent variable is confidence in parliament (institutions) (E069_07) which is an indicator of economic development while the main independent variable is individuals' attitudes towards the adoption of digital platforms that are regressed on our dependent variable is E234. All regressions include controls age (X003), gender(X001m), Social class (X045). While some factors employed in all estimations but not reported in this table are year-fixed dummies. *(Source: https://www.worldvaluessurvey.org/WVSDocumentationWVL.jsp)*

	Dependent variable:
	E069_07m
E234	4.727*
	(0.026)
A189	1.863
	(0.038)
X001m	10.675
	(0.107)
X007m	0.312
	(0.107)
X045	1.105
	(0.063)
X003	0.784**
	(0.003)
Constant	-87.788***
	(0.361)
No $of\ Observations$	2,224
Log $Likelihood$	-1,218.570
$Akaike$ Information Criteria	2,453.141
$McFadden\ R^2$	0.670780
Cox $and\ Snell\ (ML)$	0.892766
$Nagelkerke$ (Cragg and Uhler)	0.925956

Estimated log odds of E069_07m for each unit change in the independent variables are shown by the coefficients. The accuracy of the estimated coefficients is shown by the standard errors. Using the exponential of the coefficient, one may get the odds ratio. If the odds ratio is larger than 1, then there is a positive correlation with the dependent variable, and if it is less than 1, then the correlation is negative. Perspectives on the widespread use of digital tools E234: With denoting statistical significance, the odds ratio is roughly 4.727. This shows that there is a roughly 4.727-fold rise in the likelihood

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of having trust in parliament (an indication of economic progress) for every unit increase in citizens' views towards using digital platforms. This finding suggests that there is a correlation between a person's outlook on embracing digital platforms and their faith in parliament, suggesting that those with a more optimistic outlook are more likely to have faith in institutions associated with economic progress. There is a 0.784-fold decline in trust in parliament for every year added to a person's age. This finding shows that, in the context of this study, younger people are more likely to have faith in Parliament than older people.

DISCUSSION

Recent scientific and technological developments, particularly in the area of digitization, have radically altered several sectors in the framework of digital platforms. The proliferation of e-commerce and online marketplaces, for instance, has helped startups and sole proprietors access a wider customer base, which might lead to more revenue. A greater willingness to use digital platforms for economic activity may result in greater financial pleasure for those who recognize and appreciate the good influence of technology on their life. For the E218 variable, as science and technology improve, new job possibilities and fields of study open up to younger generations. People may find employment and better their financial situations thanks to the gig economy, freelancing possibilities, and remote work choices made possible by digital platforms. Respondents who have faith in technology's ability to open up new doors may be more optimistic about the economy and their family's financial future. People's attitudes about using digital platforms for commercial gain might be influenced by their views on the global effect of science and technology captured through E234. Financial satisfaction may be influenced by whether or not people use digital platforms and technologies for economic activity; this is especially true if people perceive that technology has contributed favourably to social development.

Digital platforms typically thrive on innovative ideas and solutions, which are vital drivers of economic progress. Businesses and startups that use digital channels to sell ground-breaking goods have a better chance of flourishing and making a profit. Those who participate in surveys may be more willing to use digital platforms for business initiatives if they place a premium on innovation. According to our research, people's perspectives on new technologies and innovations are major motivators of economic development. Finland has a highly trained workforce and a strong innovation ecosystem because of its culture of lifelong learning and the adoption of technology breakthroughs (European Commission, 2021). Similarly, a study in Poland revealed that a country's innovative spirit was linked to higher R&D spending, which in turn boosted economic competitiveness (Kaminski et al., 2020). By following their lead, Ukraine can help spread an innovative culture that values learning new skills and has a healthy respect for technological advancements.

There is substantial evidence from our findings that women lack equal access to economic and digital platforms. Women may encounter stumbling blocks while trying to use the internet for financial gain. Marriage status may have a role in determining economic actions and choices. For instance, married couples may boost family income and financial pleasure by working together on entrepreneurial initiatives utilizing Internet platforms. The extent to which people of different ages are comfortable using and adopting new technologies may have a significant impact on the economy. Business practices may differ across generations, with younger people more likely to use digital platforms than older people. The possibilities and financial well-being of people of various ages might be affected by this gap. Overall, the findings in model 2 show that trust in parliament (a measure of economic success in Ukraine) is highly associated with attitudes towards using digital platforms. Confidence in parliament is not significantly related to other criteria such as the value of creativity, gender, marital status, or subjective socioeconomic class. However, there is a strong correlation between age and trust in parliament, suggesting that younger people may have more faith in the institution than their more senior counterparts.

Confidence in institutions is an indicator of economic growth and is provided as the dependent variable in table 4 "E069_07m" in the context of the relationship between digital platforms and their influence on economic development. Increased trust in government, parliament, and other public entities has been linked to better economic performance and societal progress. The economic environment is profoundly shaped by digital platforms, which also have the power to affect public trust in institutions via some channels. Transparency, efficiency, and accountability in government may all be improved with the use of digital platforms. Greater faith in institutions may result, for instance, from the implementation of e-government programs and the provision of online portals for accessing public services and information. Improved public confidence in the government's capacity to meet citizens' needs and steer the economy toward prosperity benefits everyone. The "Diia" (Action) site in Ukraine aims to better connect individuals, companies, and government agencies with a variety of digital resources. Economic growth and public trust in political institutions may both benefit from these efforts (Hladchenko, 2016). Ukraine is considered the second country in the world's lowest internet prices which we have depicted in Figure 2 below.

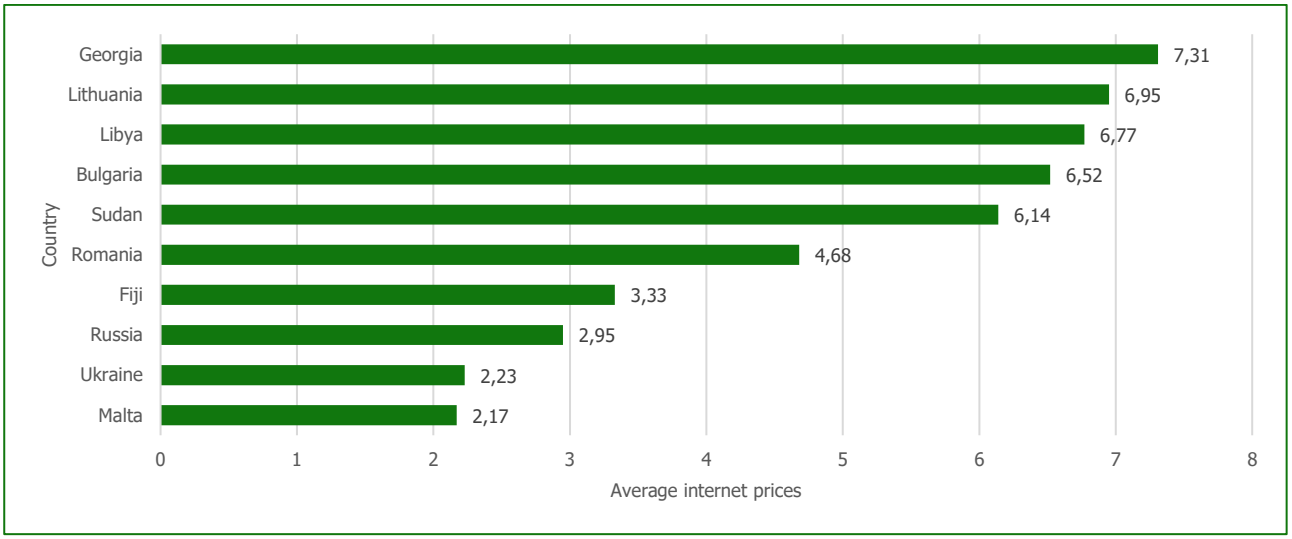

Figure 2. Countries of the World with the lowest internet prices, Ukraine stood at number 2 after Malta. Note: 10 Country of the lowest Internet Prices in the World. Malta is the number one country of the most inexpensive internet price. Not much different with Ukraine who ranks number two.

Ukraine's position as one of the countries with the lowest internet prices presents a valuable opportunity for the nation to boost individual digital platform adoption and drive economic growth. By investing in digital literacy campaigns, affordable devices, and internet access, and promoting e-government services, Ukraine can empower its citizens to harness the potential of the digital economy. Additionally, supporting startups, improving digital infrastructure, and ensuring data privacy and security will further stimulate innovation and entrepreneurship, leading to a thriving digital ecosystem that benefits both individuals and the nation's overall economic development.

More individuals may become part of the formal economy with the use of digital platforms like fintech services and mobile banking. When people have easier access to financial services, they are more likely to have faith in those services and the economy as a whole. Increased use of digital payment systems in Ukraine has expanded access to formal banking services, particularly in rural regions. Economic growth and public trust in the banking system may both benefit from this (Demirgüç-Kunt et al., 2022). E-commerce and online marketplaces provide startups and independent merchants access to a larger client base. The expansion of online business ownership has the potential to improve public opinion of the economy and its institutions. Online marketplaces in Ukraine, such as OLX and Prom.ua, have helped boost the country's economy and create new jobs for locals. Changes like this may boost people's faith in the organizations that help businesses grow (Ambrosio et al., 2022). Innovation and the development of digital skills are essential for economic growth, and digital platforms encourage both. people of countries that make investments in their people's digital literacy and education are more likely to feel supported by the government in their pursuit of economic independence. The Ukrainian government has taken steps to better prepare its workers for the digital economy by emphasizing the importance of digital literacy in K-12 and higher education institutions.

The evolution of digital platforms is changing the dynamics between businesses and their workers, consumers, and clients. Concurrently, there is a rising tide of interest in and the use of cutting-edge technologies. While many nations stand to gain from this development, governmental approaches vary widely. Experts agree that the spread of scientific and technological progress, which strengthens all sectors and industries related to every aspect of life, is at the heart of the digital revolution. As a result, new technologies are malleable since reaping their advantages depends on not only initial acceptance but also subsequent modification. Our findings bolstered evidence for a causal link between economic development and individual attitudes toward innovation. In addition, the 12a states are singled out in the Sustainable development goals for their support of cutting-edge research and development.

We are in the most interesting and difficult period in human history. Since the Industrial Revolution two centuries ago, we have made great strides in many areas, including the creation of technologies that make our lives simpler and the development of computers that are today more intelligent than we are. But there was a price to pay for everything. The use of Earth's resources underlies all of humanity's progress. We neglected Earth, our home and source of life, while we raced to create a modern society. Even if you are sceptical that we can turn the tables with the assistance of contemporary technology, the massive quantity of data we accumulate every second presents an amazing potential if we utilize it intelligently. Let's put this technology to good use, and teach the next generation how to utilize the internet for its beneficial effects on society and the economy.

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Game theoretic-based digital transformation policy for Ukraine

The purpose of this paper is to add to our knowledge of how digital platforms have affected economic growth in Ukraine. By examining the benefits, challenges, and policy implications associated with digital platforms, policymakers, businesses, and other stakeholders can make informed decisions to foster a thriving digital economy in Ukraine. The connection between digital platforms and their impact on Ukraine's economic growth may be better understood with the help of game theory. We may think about how individuals, corporations, and governments engage with digital platforms in this setting. Achieving a balanced regulatory framework that fosters innovation, protects consumer rights, and ensures fair competition can contribute to a healthy digital ecosystem and economic development. Increased user trust, platform adoption, and economic development may result from a focus on user rights, data privacy, and security. Collaboration between digital platforms, users, and the government may lead to policy formulation that encourages equitable growth, entrepreneurship, and the development of local digital solutions. However, game theory may provide light on the intricate interplay of digital platforms and their impact on Ukraine's economic growth.

A game theoretic study may be used to examine the role those digital platforms play in the Ukrainian economy. The Prisoner's Dilemma is a useful game theoretic framework that may be utilized here. The Prisoner's Dilemma is a paradigmatic example of the tension between individual rationality and group cooperation in game theory. The following may be understood about the relationship between digital platforms and economic growth in Ukraine:

- *Players*

1. Digital Platform Companies Representing the various digital platform providers operating in Ukraine.
2. Government of Ukraine: Representing the regulatory authority and policymaker responsible for overseeing the digital platform sector.
3. Ukrainian Businesses and Consumers: Representing the economic agents and users of digital platforms.

- *Game Dynamics*

Digital Platforms vs. Users: Platforms aim to attract and retain users by offering desirable services, competitive pricing, and a seamless user experience. Users, in turn, choose platforms based on their preferences, needs, and perceived value. Digital Platforms vs. Government: Platforms seek to navigate regulatory frameworks while maximizing their market position. The government strives to create an enabling environment for digital innovation while safeguarding public interests.

- *Establish the Payoffs*

Financial gains like increased sales and market share, new employment opportunities, and expanded economic growth and development are all examples of payoffs. Market dominance, network effects, regulatory compliance, and the strategies of competitors all have an impact on the profits of digital platform companies (DPCs). Attracting investment, fostering competition, and protecting consumer welfare all have an impact on the payouts (PGU) made by the Ukrainian government. Access to digital services, affordability, and the quality of services all play a role in the returns (PUBC) for Ukrainian businesses and consumers. When more people use your product, you get more money and a bigger slice of the market. However, if the industry dominated too much, you may face scrutiny from regulators or competition issues. Users can take advantage of digital platforms' affordability, accessibility, and convenience. However, issues of privacy, data security, and platform monopolies could prove difficult for them to overcome. Economic expansion, new employment opportunities, and technological advancement are all boosted by a dynamic digital economy. While it is important for the government to encourage new ideas, it must also strike a balance between these goals and those of protecting consumers' rights, maintaining open markets, and mitigating unintended consequences.

- *Strategies and Decisions*

Strategies for Digital Platform Companies (SDPC) might include things like pricing models, software and infrastructure investments, and regulatory compliance. Policy, legislation, and incentive creation by the Ukrainian government to provide an enabling setting for digital platforms are all possible outcomes of GU decisions. Their tactics will be referred to as SGU. Ukrainian businesses and consumers (UBC) refer to their decisions on digital platform engagement, service utilization, and regulatory compliance as SUBC. Strategies for growing user bases, enhancing platform features, and adding new services are all within reach for digital platforms. There are a variety of platforms users may interact with, and they can make their decision based on criteria including user experience, service availability, and cost. The government may ensure fairness and consumer protection in the digital economy by passing rules and laws that encourage growth and development in the sector.

- *Construct the payoff functions*

$PDPC = f(SDPC, SGU, SUBC)$

$PGU = g(SDPC, SGU, SUBC)$

$PUBC = h(SDPC, SGU, SUBC)$

Analyses may be conducted using the Prisoner's Dilemma model to determine the likelihood of collaboration or conflict between digital platform firms and the Ukrainian government. Weigh the benefits and drawbacks of both cooperating and not cooperating between DPC and GU in various circumstances. Examine how these benefits affect economic growth metrics including GDP growth, new job creation, and market competitiveness.

- *Cooperation Scenario*

If digital platform companies and the government of Ukraine cooperate and work together to create an enabling environment, it can lead to positive outcomes such as increased investment, innovation, job creation, and economic growth. Cooperation can be achieved through transparent regulations, fair competition practices, and collaboration between stakeholders.

- *Non-cooperation Scenario*

Negative effects, such as market domination, less competition, restricted access to digital services, and stalled economic development, are possible if digital platform providers and the government of Ukraine engage in non-cooperative behaviour. Regulatory hurdles, a lack of transparency, and monopolistic practices by digital platform firms are all examples of behaviour that are not cooperative. The investigation may delve further into the tactics and choices made by Ukrainian firms and customers in reaction to the actions of digital platform providers and the government. It may analyze how the results of the cooperation and non-cooperation situations affect their decisions and behaviour.

Nevertheless, we have outlined a general approach using mathematical notation to demonstrate the theoretical foundations of the relationship between digital platforms and economic development. Let's consider a simplified model in Table 6.

Table 6. Theoretical foundations of the Relationship between digital platforms and economic development.

Scenario	Decision Variables	Objective Function	Constraints	Results/Implications
Scenario 1	DPC: Pricing strategies, investment in technology, marketing efforts	Maximization of profits or market share	Budget limitations, regulatory compliance, resource availability	Impact on market competition, profitability, and innovation
Scenario 2	GU: Policies for digital infrastructure development, investment incentives, regulatory frameworks	Maximization of economic growth or digital adoption	Budgetary restrictions, political considerations, legal limitations	Impact on digital inclusion, job creation, and foreign investment
Scenario 3	UBC: Adoption and usage of digital platforms, preferences for local vs. international platforms	Maximization of utility or satisfaction	Affordability, access to technology, cultural factors	Impact on consumer behaviour, market dynamics, and economic participation

It serves as a starting point for organizing and presenting different scenarios related to digital platforms and economic development.

Scenario 1

In this scenario, digital platform companies (DPCs) make decisions regarding pricing strategies, investment in technology, and marketing efforts. The objective is to maximize either profits or market share. The model considers budget limitations, regulatory compliance, and resource availability as constraints. According to (Bulkot, 2021), fundamental building blocks for the development of Ukraine's smart economy are Intellectualization, informatization, innovation, investment, integration, social responsibility, and ecological change are all part of this equation. These factors are essential for efficient decision-making that fosters public good, boosts innovation and competitive standing, and shapes Ukraine into a smart economy.

Variables

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Pricing Strategies: Decision variables related to setting prices for products or services offered by DPCs. Investment in Technology: Decision variables representing the allocation of resources for technological advancements. Marketing Efforts: Decision variables related to marketing expenditures and promotional activities. Profits: The financial gains achieved by DPCs. Market Share: The percentage of the market captured by DPCs. The objective is to maximize the total profits generated by DPCs and the overall market share held by DPCs.

- *Constraints*

The total cost of pricing strategies, technology investment, and marketing efforts should not exceed the available budget. DPCs must adhere to regulatory requirements imposed by authorities. The allocation of resources should be within the available limits. We have used game theory to analyze the decision-making process of DPCs and their interactions in a competitive environment. We have employed optimization techniques such as linear programming or nonlinear programming to solve the game-theoretic model and derive optimal strategies.

Let x_1 be Pricing strategies, x_2 be the Investment in technology variable while x_3 be the Marketing efforts variable where п represents Profits. The objective function can be formulated as Maximize: п = f(x_1,x_2,x_3) Subject to Budget Constraints : g_1 (x_1,x_2,x_3) ≤ B; Regulatory Compliance Constraint: g_2 (x_1,x_2,x_3) ≤ R. While the Resource Availability Constraint is g_2 (x_1, x_2, x_3) ≤ A. The allocation of resources for pricing strategies, technology investment, and marketing efforts should be within the available limits (A). DPCs must adhere to regulatory requirements (R). Let's assume that there is a specific regulation related to pricing, and DPCs must comply with it. We can represent this constraint as g_2 (x_1) ≤ R. The objective is to maximize profits (п) based on the decision variables (x_1, x_2, x_3) representing pricing strategies, investment in technology, and marketing efforts. For example, DPCs may have a limited number of employees or a specific budget allocation for technology. We can represent this constraint as g_2 (x_2) ≤ A. Here, B represents the budget limit, R represents regulatory requirements, and A represents resource availability. We can then employ game theory and optimization techniques to solve the model and derive the optimal values of x_1, x_2, and x_3 that maximize the profits.

Example Scenario: DPCs need to decide on their pricing strategy, investment in technology, and marketing efforts. The available budget is USD 100,000, and there is a regulatory requirement that pricing should not exceed USD 10 per unit. The resource availability for technology investment is limited to USD 50,000.

Step 1: the objective is to maximize Maximize: п = f(x_1,x_2,x_3) based on the decision variables. Step 2 is Formulating the Budget Constraint which is the total cost of pricing strategies, technology investment, and marketing efforts should not exceed the available budget (USD 100,000): g_1 (x_1, x_2, x_3) ≤ USD 100,000. While Step 3 is Formulating the Regulatory Compliance Constraint: The pricing strategy x_1 should comply with the regulatory requirement of not exceeding USD 10 per unit: g_2 (x_1) ≤ USD 10. In step 4 we have been Formulating the Resource Availability Constraint: The investment in technology (x_2) should be within the available resource limit (USD 50,000): g_3 (x_2) ≤ USD 50,000.

By solving the model, we can obtain the optimal solutions for the decision variables (x_1, x_2, x_3) that maximize profits, subject to budget constraints, regulatory compliance constraints, and resource availability constraints. For example, the optimization analysis might yield the following results: x_1^* = USD 8 per unit (optimal pricing strategy) x_2^* = USD 30,000 (optimal investment in technology) x_3^*= USD 40,000 (optimal marketing efforts). These results indicate the optimal decisions for pricing, technology investment, and marketing efforts that maximize profits while considering budget limitations, regulatory compliance, and resource availability.

Scenario 2

We need to define the players, their strategies, the payoff functions, and the constraints. Let's consider the following elements:

- *Players*

GU (Governmental Unit) is Responsible for setting policies for digital infrastructure development, investment incentives, and regulatory frameworks.

- *Strategies*

Low investment in digital infrastructure and limited incentives. A moderate investment in digital infrastructure and moderate incentives. High investment in digital infrastructure and strong incentives.

- *Payoff Functions*

The objective is to maximize digital adoption. We can measure the payoff as a function of economic growth or the level of digital adoption resulting from the chosen strategies. Let's denote the payoff functions as follows: Payoff for GU: U (GU, Strategy) = f(strategy), where f is a function that maps the chosen strategy to a measure of digital adoption.

- *Constraints*

The model should consider constraints that reflect budgetary restrictions, political considerations, and legal limitations. For example, the total cost of implementing the chosen strategy should not exceed the available budget. The chosen strategy should align with the government's political agenda. The chosen strategy should comply with existing legal frameworks.

Let's assume that there are three strategies (S_1, S_2, S_3) available for the GU, and the GU wants to maximize economic growth (EG) or digital adoption (DA). Strategies: S = {S_1, S_2, S_3} While Payoff Function For each strategy, the GU's payoff is denoted as U (GU, S), where S represents the chosen strategy. Let's denote the game as G = (N, S, U), where: N is the set of players {GU}. S is the set of strategies {S_1, S_2, S_3} and U is the set of payoff functions {U (GU, S)}.

- *Payoff Function*

Assume that the GU's objective is to maximize economic growth (EG). We can define the payoff function for the GU as follows: U (GU, S) = EG(S). The specific form of the payoff function EG(S) depends on the measurement of economic growth and the impact of the chosen strategy on that growth. It can be a function that takes into account various factors such as GDP growth rate, job creation, foreign investment, and digital inclusion. We can formulate the problem as a constrained optimization problem, aiming to maximize the GU's payoff (economic growth) subject to the budget constraint and any other relevant constraints. Mathematically, the optimization problem can be stated as:

$$Maximize: U(GU,S) = EG(S)\ Subject\ to: C(S) \leq B, Legal\ Constraints, Political\ Considerations$$

By solving this optimization problem using appropriate optimization algorithms, we can obtain the optimal strategy that maximizes economic growth while satisfying the budget and other constraints.

Example: Suppose we have three strategies for the GU: S_1, S_2, and S_3, representing different levels of investment in digital infrastructure, investment incentives, and regulatory frameworks.

Let's assume the following data: Budget (B) = USD 10 million. The cost of Strategy 1 (C(S1)) is USD 4 million while the Cost of Strategy 2 (C(S2)) is USD 6 million and Strategy 3 cost is (C(S3)) = USD 8 million. Assuming that the weights for the factors in the economic growth equation are α = 0.4, β = 0.3, γ = 0.2, and δ = 0.1, and we have legal and political constraints, we can formulate the optimization problem as follows:

$$Maximize\ U(GU,S) = 0.4 * GDP\_growth + 0.3 * Job\_creation + 0.2 * Foreign\_investment + 0.1 * Digital\_inclusion\ Subject\ to\ C(S) \leq USD\ 10\ million\ (Budget\ Constraint), Legal\ Constraints, Political\ Considerations.$$

The ideal approach that maximizes economic development within the given budget while also satisfying legal and political limitations may be obtained by addressing this optimization issue using the relevant tools. The importance of intellectual property to economic growth and a nation's standing in the global market is highlighted by Aristova et al. (2020). It stresses the need for a strong legal and regulatory framework to preserve intellectual property to provide economic stability and the preservation of human rights. It is widely agreed that Ukraine needs its own Intellectual Property Court to better safeguard individual rights and promote economic development.

Scenario 3

- *Players*

Consumers: They choose between using local or international digital platforms.

Digital Platform Providers: They offer local or international digital platforms to consumers.

- *Payoffs:*

Consumers are Derived from the utility or satisfaction they receive from using a specific digital platform. *Digital Platform Providers* are Derived from the market share and revenue generated by their digital platforms.

- *Assumptions:*

Consumers aim to maximize their utility or satisfaction when choosing between local and international digital platforms. Digital Platform Providers aim to maximize their market share and revenue. Consumers' preferences may be influenced by affordability, access to technology, and cultural factors. Consumer behaviour, market dynamics, and economic participation

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are impacted by the adoption and usage of digital platforms. Let $U(L)$ represent the utility of a consumer using a local platform. Let $U(I)$ represent the utility of a consumer using an international platform.

- *Payoff Function for Consumers*

The payoff for a consumer using a local platform: $P(L) = U(L)$. The payoff for a consumer using an international platform: $P(I) = U(I)$

- *Digital Platform Provider's Payoff Function*

The payoff for a local platform provider: $P(L) = f(L), where\ f(L)$ is a function of market share and revenue generated by the local platform. The payoff for an international platform provider: $P(I) = f(I)$, where $f(I)$ is a function of market share and revenue generated by the international platform.

- *Game Formulation*

We can then analyze this game-theoretic model to find equilibrium solutions. Depending on the specific utility functions, payoff functions, and other factors, different equilibrium concepts such as Nash equilibrium, Pareto optimality, or evolutionary stability can be explored. Let's assume that the utility functions for consumers are given by: $U(L) = aL + b\ U(I) = aI + c$. Here, $'a', 'b', and\ 'c'$ are parameters that represent the influence of factors like affordability, access to technology, and cultural factors on consumers' utility. $'L'\ and\ 'I'$ represent the market share of the local and international platforms, respectively. Using the utility functions, we can define the payoffs for consumers as follows: $P(L) = U(L) = aL + b\ P(I) = U(I) = aI + c.$ Let's assume that the payoffs for platform providers are directly proportional to their market share: $P(L) = kL\ P(I) = kI$.

Here, $'k'$ represents the proportionality constant relating market share to payoffs. To find equilibrium solutions, we can analyze the game by considering the best responses of each player to the strategies chosen by the others.

4. Consumer's Best Response: The consumer's best response is the strategy that maximizes their payoff given the strategy chosen by the platform provider. In this case, the consumer will choose the platform $(L\ or\ I)$ that maximizes their utility. For example, if the consumer compares their payoffs $P(L)\ and\ P(I)$, they will select the platform with the higher value.

5. Platform Provider's Best Response: The platform provider's best response is the strategy that maximizes their payoff given the strategy chosen by the consumer. In this case, the platform provider will choose the platform $(L\ or\ I)$ that maximizes their market share, as payoffs are directly proportional to market share. To find the Nash equilibrium, we need to identify the strategies where both players are playing their best responses simultaneously. Let's analyze two scenarios:

- **Scenario 1.** Consumer chooses local platform (L) If the consumer chooses the local platform (L), the platform provider's best response would be to offer the local platform (L) as well. This is because the platform provider can maximize its market share by matching the consumer's choice. Therefore, (L, L) is a potential Nash equilibrium.
- **Scenario 2.** Consumer chooses international platform (I) If the consumer chooses the international platform (I), the platform provider's best response would be to offer the international platform (I). Again, this allows the platform provider to maximize its market share by matching the consumer's choice. Therefore, (I, I) is another potential Nash equilibrium. It's important to note that the existence of multiple Nash equilibria is possible in this game, depending on the specific utility and payoff functions. The actual equilibrium outcome would depend on the values of the parameters $'a', 'b', 'c', and\ 'k'$, as well as other market dynamics and factors.

Let's consider a scenario for Ukraine.

Assume the utility functions for consumers in Ukraine are as follows: $U(L) = 0.8L + 0.2\ U(I) = 0.6I + 0.3.$ Here, $'L'\ and\ 'I'$ represent the market share of local and international platforms, respectively, and the coefficients $(0.8, 0.2, 0.6, 0.3)$ reflect the relative importance of affordability, access to technology, and cultural factors on consumer utility. Using the utility functions, the payoffs for consumers can be defined as follows: $P(L) = U(L) = 0.8L + 0.2\ P(I) = U(I) = 0.6I + 0.3.$ Assume the payoffs for platform providers are directly proportional to their market share: $P(L) = kL\ P(I) = kI$.

Here, 'k' represents the proportionality constant relating market share to payoffs.

To determine specific equilibrium outcomes, we need more information about the market dynamics, such as the market shares of local and international platforms and the values of 'k' for each platform provider. With that information, we can calculate the best responses from consumers and platform providers.

To compare the three $scenarios$ ($Scenario\ 1: DPC, Scenario\ 2: GU, Scenario\ 3: UBC$) and determine which is best in the context of Ukraine's current situation and future, we need to consider various factors, including the country's priorities, challenges, and potential benefits. We can provide a general analysis based on the information provided.

Scenario 1 DPC (Digital Platform Competition) focuses on pricing strategies, investment in technology, and marketing efforts by digital platform companies. In Ukraine, we can observe competition between local ride-sharing platforms and international platforms like Uber and Bolt. These platforms employ various pricing strategies, invest in technology to enhance their services and engage in aggressive marketing efforts. This competition has led to improved services, competitive pricing, and increased options for consumers. As a result, the market has expanded, benefiting both consumers and drivers.

Implications

This scenario emphasizes competition among digital platform providers, potentially leading to increased innovation and improved services. If implemented effectively, it could foster market competition, benefit consumers through better pricing and options, and drive economic growth in the digital sector. However, it may also face challenges related to regulatory compliance and resource availability, requiring careful management and coordination.

Scenario 2: GU (Government Support for Digital Infrastructure) involves government policies for digital infrastructure development, investment incentives, and regulatory frameworks. The objective is to maximize economic growth or digital adoption. Constraints include budgetary restrictions, political considerations, and legal limitations.

Implications

The goals of this scenario are to encourage the growth of the economy, broaden access to the Internet, and improve digital infrastructure. With government backing, businesses may flourish, new jobs can be created, and digital infrastructure can be improved. However, it requires forethought, cooperation between the public and commercial sectors, and efficient use of resources. The government of Ukraine has enacted laws to encourage the development of the country's information technology infrastructure. The introduction of technology parks, tax incentives for information technology businesses, and enhancements to the regulatory environment have all contributed to an increase in both foreign investment and employment. Government initiatives, such as "Digital Ukraine," have worked to increase citizens' access to the Internet and encourage economic development.

Scenario 3: UBC (User Behavior and Platform Preferences) This scenario centres around the adoption and usage of digital platforms, considering preferences for local versus international platforms. The objective is to maximize utility or satisfaction. Constraints include affordability, access to technology, and cultural factors.

Implications

This situation underscores the importance of understanding and meeting customer needs, while also recognizing the impact of cost, technological accessibility, and cultural aspects on platform preferences. Achieving consumer well-being, sustaining the market ecosystem, and facilitating broader economic inclusion can all be outcomes of a well-executed strategy. For instance, in certain regions, people might favour local digital platforms that align better with their culture and values. These local platforms could potentially offer more tailored features and experiences compared to their global counterparts. The decision-making process might be influenced by factors such as familiarity, relevance, and the overall user experience. This trend could foster a stronger sense of community and engagement among users. However, it is essential to acknowledge that international platforms, like Facebook and Instagram, often have substantial user bases in various countries, including Ukraine. These platforms provide opportunities for global connectivity and interaction, making them relevant choices for many users. In conclusion, understanding user behaviour and preferences and catering to these factors are pivotal in shaping the digital landscape. This approach takes into consideration affordability, technology access, and cultural elements, leading to heightened user satisfaction, dynamic market dynamics, and increased participation in the digital economy.

CONCLUSIONS

This research has explored the impact of individual attitudes towards digital platform adoption on two critical indicators of economic development: household financial satisfaction and confidence in institutions. Through logistic regression analysis of data from the World Values Survey spanning 1980 to 2020, the study revealed a positive association between favourable attitudes towards technology and higher levels of household financial satisfaction and confidence in economic development institutions. This finding emphasizes the significance of individual attitudes as key drivers of economic development in the

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digital era. Moreover, the study introduced a novel approach by applying game theoretic analysis to develop a policy framework for Ukraine's digital economy. Three distinct scenarios were presented, focusing on different decision variables, pricing strategies, digital infrastructure development policies, and preferences for local versus international platforms.

The first scenario (DPC) emphasizes the competitive nature of digital platform companies, where pricing strategies, technology investment, and marketing efforts play pivotal roles. The objective of maximizing profits or market share underscores the importance of innovation, efficiency, and customer-centric approaches. By fostering healthy competition, this scenario has the potential to drive economic growth, improve services, and benefit both consumers and businesses alike. Moving on to the second scenario (GU), we explore the significance of governmental support in digital infrastructure development. Policymakers' decisions on investment incentives, regulatory frameworks, and budgetary allocations can significantly shape the digital landscape and boost economic growth. Proper coordination between public and private sectors, alongside efficient resource utilization, is vital to achieve the desired results and enhance digital adoption for sustainable economic progress. The third scenario (UBC) centres around the preferences and behaviour of consumers in choosing between local and international digital platforms. Here, factors like affordability, access to technology, and cultural considerations emerge as crucial influencers. By understanding and catering to consumer needs, businesses can enhance market dynamics, improve user satisfaction, and increase economic participation.

In Ukraine's context, these scenarios present valuable insights and implications. The country's journey towards a smart economy relies on robust decision-making, technological advancements, and supportive policies. Embracing digital platform competition (DPC) can fuel innovation and economic expansion, while government support (GU) can accelerate digital adoption and stimulate job creation. Understanding consumer behaviour and preferences (UBC) can lead to tailored services, increased satisfaction, and heightened economic engagement. The article underscores that each scenario has its merits and challenges, and selecting the best approach for Ukraine necessitates careful consideration of the country's priorities, challenges, and potential benefits. A balanced approach, encompassing elements from all scenarios, may offer the most comprehensive strategy for fostering economic development through digital platforms.

While the study provided valuable insights into the impact of individual attitudes towards digital platform adoption on economic development indicators in Ukraine, it is essential to acknowledge certain limitations that warrant consideration in future research. Firstly, the use of data from the World Values Survey spanning 1980 to 2020 might not fully capture the rapidly evolving nature of digital technology and its implications on the economy. Given the pace of technological advancements, more recent and granular data could offer a more accurate reflection of the current state of digital platform adoption and its effects on economic development.

Secondly, the research focused on logistic regression analysis, which establishes associations between variables but may not establish causality definitively. Future studies could incorporate experimental designs or longitudinal approaches to better examine causal relationships between individual attitudes, digital platform adoption, and economic outcomes. Moreover, the study's policy framework scenarios were developed specifically for Ukraine, limiting the direct applicability of these scenarios to other countries or regions. Future research could explore the generalizability and adaptability of the proposed policy approaches to different economic and cultural contexts.

Lastly, the study primarily concentrated on household financial satisfaction and confidence in institutions as economic development indicators. While these are crucial metrics, future research could consider incorporating additional indicators such as employment rates, productivity measures, and income distribution to provide a more comprehensive assessment of the impact of digital platform adoption on overall economic development. Addressing these limitations would enhance the robustness and relevance of future research on the relationship between individual attitudes towards digital platforms and economic progress, contributing to a deeper understanding of the role of technology in shaping economies worldwide.

The scientific novelty of this study lies in its specific examination of the role of individual attitudes towards digital platforms in driving economic growth. By contributing to the existing literature on this subject, the research has shed light on the importance of creating a culture that values innovation and technology to fully exploit the benefits of digitalization for economic development in Ukraine. Based on these findings, concrete suggestions and potential policy recommendations for Ukraine's economic development can be formulated:

1. Digital Literacy and Awareness Programs: Invest in digital literacy and awareness programs to enhance the population's understanding of technology and its potential benefits. By fostering a tech-savvy population, Ukraine can create a conducive environment for digital platform adoption and usage.
2. Supportive Policies for Start-ups: Develop policies that support the growth of start-ups and scale-ups in the digital sector. This can include tax incentives, access to funding, and streamlined regulatory processes to encourage entrepreneurship and innovation.

3. Investment in Digital Infrastructure: Prioritize investments in digital infrastructure to improve internet connectivity and accessibility across the country. Enhanced digital infrastructure will enable more widespread adoption of digital platforms and foster economic growth.
4. Collaboration between Government and Industry: Facilitate collaboration between the government and industry stakeholders to co-create policies that encourage digital innovation and address challenges related to digital platform adoption.
5. Public-Private Partnerships: Foster public-private partnerships to drive digital platform adoption and investment. By leveraging the strengths of both sectors, Ukraine can create an ecosystem that supports sustainable economic growth.
6. Data Privacy and Security Regulations: Implement robust data privacy and security regulations to build trust among users and businesses in digital platforms. Ensuring data protection will enhance confidence in digital services and stimulate further adoption.
7. Incentives for Domestic Digital Platforms: Encourage the development and growth of domestic digital platforms that cater to the specific needs and preferences of the Ukrainian population. Supporting local platforms can contribute to economic growth and digital inclusion.

By adopting these recommendations, Ukraine can harness the potential of digital platforms to promote economic development, empower its workforce, and enhance its competitiveness in the global market. Creating a thriving digital economy requires a collective effort from policymakers, industry players, entrepreneurs, and investors, all aligned towards fostering an innovative and technology-driven ecosystem in Ukraine. As the country embraces digital transformation, it will position itself for inclusive and sustainable economic growth in the digital age.

Trend Forecast: Ukraine's Digital Economy's Outlook for the Future

Ukraine's economy is on the verge of a dramatic shift because of a confluence of new technical norms, consumer preferences, and government efforts. The rapid rise of digital platforms developed locally in Ukraine is the most notable of these tendencies. The need for platforms that cater to cultural complexity, linguistic variety, and customised user experiences will likely fuel the growth of this localization trend. Such sites have the potential to increase user participation and spark local innovation, leading to a digital ecosystem tailored specifically to the needs of the Ukrainian people. Additionally, a new wave of innovation and entrepreneurship is just around the corner. As a result of the country's growing tech sector and plenty of qualified IT specialists, Ukraine is seeing a surge of new digital businesses and startups. The recent uptick in startup activity has the potential to disrupt established corporate norms, boosting the economy and encouraging creativity in a variety of fields.

Ukraine's digital industry has the potential to be a powerful engine of modernisation across several sectors of the country thanks to its noteworthy pre-war successes and amazing resilience shown during the conflict. This strength is expected to have a large and beneficial impact on Ukraine's GDP, providing a vital boost to the country's economic recovery after the conflict. Ukraine's proactive approach to promoting cooperation in digital transformation not only displays a readiness to communicate its learned insights and solutions on a global scale but also indicates its commitment to enhancing its own digital environment. As evidence of their competence, Estonia plans to launch a pilot programme to create a national mobile application for citizens to use to connect with government digital services in a streamlined manner, similar to the Diia app. The project serves as an example of the possibilities for international cooperation and the exchange of information in the field of digital innovation. The shift to digital technology is also a powerful tool for improving post-war reconstruction's accountability and transparency systems. Digitization has the potential to foster a more efficient and responsive reconstruction landscape by quickening the modernization process. Box 1 - The Digital Objectives of Ukraine's Government for 2025, - summarises a key component of Ukraine's post-war recovery plan: increasing the IT sector's contribution to GDP by an ambitious 10 per cent (National Council for the Recovery of Ukraine from the Consequences of the War, July 2022).

- Attaining a 10 per cent share of GDP attributed to the Information Technology sector.
- Full execution of electronic public services, encompassing 100 per cent adherence to the outlined plan.
- Encompassing the entirety of critical information infrastructure facilities under the aegis of sensor-based coverage.
- Migration of 30 per cent of state information resources to cloud-based platforms.
- Provision of high-speed internet access to 95 per cent of the populace.

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Concurrently, a movement for digital upskilling and employee empowerment in the workplace is gaining traction. Education and training programs are being developed because digital literacy is seen as a need. Ukraine's ability to compete in the global digital economy will be boosted as a result of this trend, which also helps prepare the workforce for the digital era. There is a growing awareness of the need for public policy in tandem with digital change. Expect a shift toward regulatory frameworks that promote innovation and privacy for users and their data. Trust in digital platforms, investment, and long-term development are all bolstered by regulations like these. The future digital economy predicted by these tendencies is one that is thriving, inventive, and welcoming to everyone. Ukraine is well positioned to carve out its own place in the global digital arena thanks to the strength of digital platforms and the enthusiasm for local innovation. In the next years, Ukraine will become a worldwide leader in digital innovation because of a confluence of economic growth and technological proficiency.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

All authors have contributed equally

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ЦИФРОВІ ПЛАТФОРМИ ТА ЇХНІЙ ВПЛИВ НА ЕКОНОМІЧНИЙ РОЗВИТОК УКРАЇНИ

Це дослідження має на меті вивчити вплив індивідуального ставлення до впровадження цифрових платформ на дві важливі залежні змінні: фінансове забезпечення домогосподарств і довіру до інституцій, які є важливими індикаторами економічного розвитку. Крім того, дослідження має на меті розробити політичні рамки для ефективного впровадження цифрових платформ в українську економіку, сприяючи інноваціям, підприємництву та інвестиціям. Аналіз ґрунтується на даних Світового дослідження цінностей (World Values Survey) за період із 1980 по 2020 рік. Для вивчення взаємозв'язку між відповідними змінними застосовано логістично-регресійний аналіз. Крім того, для представлення трьох різних сценаріїв було застосовано аналіз теорії ігор, який досліджував різні змінні рішення, цінові стратегії, політику розвитку цифрової інфраструктури та переваги локальних і міжнародних платформ.

Результати логістичного регресійного аналізу виявили позитивний зв'язок між індивідуальним ставленням до технологій та вищим рівнем фінансового забезпечення домогосподарств і довіри до інституцій економічного розвитку. Крім того, теоретико-ігровий аналіз дає цінну інформацію для політиків і зацікавлених сторін галузі, забезпечуючи сприятливе середовище для цифрових інновацій, підприємництва та інвестицій.

Це дослідження робить внесок в існуючу наукову літературу, спеціально вивчаючи роль індивідуального ставлення до цифрових платформ і технологій у стимулюванні економічного зростання. Застосування теоретико-ігрового аналізу для розробки політичної бази цифрової економіки України є новим підходом до розуміння динаміки впровадження цифрових технологій та їхнього потенційного впливу на економічний розвиток.

Дослідження підкреслює важливість індивідуального ставлення до цифрових платформ і технологій як ключових рушіїв економічного розвитку. Створення культури, яка цінує інновації та технології, має вирішальне значення для розширення цифрової економіки України й підтримки інклюзивного та сталого економічного зростання в цифрову епоху. Ефективно впроваджуючи цифрові платформи, Україна може сприяти економічному розвиткові, розширити можливості своєї робочої сили та підвищити свою конкурентоспроможність на світовому ринкові.

Ключові слова: технології, економічний розвиток, Україна, ставлення, теорія ігор, логістична регресія, дослідження світових цінностей

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