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QUADRATIC MODEL FOR ASSESSING THE IMPACT OF COVID-19 ON THE HUMAN RESOURCES SOFT SKILLS

Modelo cuadrático para evaluar el impacto de Covid-19 en las habilidades blandas de recursos humanos

Modelo quadrático para avaliar o impacto da Covid-19 nas habilidades sociais de recursos humanos

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ABSTRACT

We present an quadratic model of mechanism for assessing the consequences of the Covid-19 impact on the soft skills of the human resources potential in Ukraine. The model calculates the outcomes and underscores the importance of dedicating resources to the updating of soft skills taking into account remote work, the process of nowadays-digital transformation, and shifting job requirements during Covid times. Specific indicators related to the influence of employees' soft skills during the Covid-19 pandemic were determinated, and numerical 24 indicators where related to employees' soft skills. The calculation of the integral indicator is based survey of 100 respondents of employees of 10 enterprises. Analytical procedures are used through technical means of information by support of Microsoft Excel, namely, quadratic correlation and regression analysis, followed by the formation of a polynomial trend line of the fourth degree. The analysis outcomes affirm the emergence of two potential scenarios that have become feasible amidst the pandemic. Imposed by various constraints, employees have been compelled to adapt and enhance their competencies and other proficiencies in remote communication, in order to make informed decisions pertaining to enterprise management and economic activities.

KEYWORDS
Quadratic model, Covid-19, human resources, soft skills.

RESUMEN

Presentamos un modelo cuadrico como mecanismo para evaluar las consecuencias del impacto del Covid-19 en las habilidades sociales del potencial de recursos humanos en Ucrania. El modelo calcula los resultados y destaca la importancia de dedicar recursos a la actualización de habilidades blandas, considerando el trabajo a distancia, el proceso de transformación digital actual y los cambios en los requisitos laborales que surgieron durante la pandemia Covid-19. Fueron utilizados indicadores específicos, relacionados con la influencia de las habilidades blandas de personas que trabajaron durante la pandemia Covid-19, y se formaron 24 indicadores numéricos relacionados a las habilidades sociales de los empleados. El cálculo del indicador integral se basa en una encuesta realizada a cien empleados de de diez empresas. Para ello, se utilizan procedimientos analíticos con medios técnicos de información con soporte de Microsof Excel, mediante correlación cuadrática y análisis de regressão, seguidos de la formación de una línea de tendencia polinómica de cuarto grado. Os resultados do análise confirmam o surgimento dos cenários potenciais que se han vuelto factibles en medio de la pandemia. Por diversas limitaciones, los empleados se han visto en la obligación de adaptar y mejorar sus competencias y otras habilidades en comunicación remota, para poder tomar decisiones informadas en torno a la gestión empresarial y a actividades económicas.

PALABRAS CLAVE
Modelo cuadrático, Covid-19, recursos humanos, habilidades blandas.

RESUMO

Apresentamos um modelo quádrico como mecanismo para avaliar as consequências do impacto do Covid-19 nas habilidades sociais do potencial de recursos humanos em Ucrânia. O modelo calcula os resultados e destaca a importância de dedicar recursos à atualização de habilidades sociais ou ***soft skills***, considerando o trabalho a distância, o processo de transformação digital atual e os câmbios nos requisitos laborais que surgiram durante a pandemia Covid-19. Para isso, foram determinados indicadores específicos, relacionados com a influência das habilidades sociais de pessoas que trabalharam durante a pandemia Covid-19, e formaram-se 24 indicadores numéricos relacionados às habilidades sociais dos empregados. O cálculo do indicador integral basa-se numa enquete realizada a cem empleados de de diez empresas. Foram utilizados procedimientos analíticos con medios técnicos de informação com soporte de Microsof Excel, mediante correlação quadrática e análise de regresão, seguidos da formação de uma linha de tendência polinômica de quarto grau. Os resultados do análise confirmam o surgimento dos cenários potenciais que tem se tornado factíveis em meio da pandemia. Por diversas limitações, os empregados tem se visto na obrigação de adaptar e melhorar suas competências e outras habilidades em comunicação remota, para poder tomar decisões informadas en torno à gestão empresarial e actividades econômicas.

PALAVRAS-CHAVE
Modelo quadrático, Covid-19, recursos humanos, habilidades sociais.

Introduction

The emergence of the Covid-19 pandemic has triggered an unprecedented global transformation, challenging various societal dimensions, from economies to workforces. One of the significant ramifications of this transformative period is its influence on the landscape of human resources (HR), particularly in the realm of soft skills development. Soft skills, encompassing a spectrum of interpersonal, communication, adaptability, and problem-solving abilities, have assumed heightened importance as remote work and dynamic environments become the norm.

Amidst the global disruption caused by the pandemic, it has become evident that the traditional paradigms of work and skills have been swiftly redefined. As organizations adapted to remote work arrangements, virtual collaboration, and fluctuating demands, the role of soft skills in maintaining productivity and cohesion has become more pronounced than ever before.

The effects of the pandemic on HR soft skills are multifaceted. On one hand, the sudden shift to remote work has compelled employees to enhance their communication and adaptability skills to navigate the intricacies of digital interaction and asynchronous communication. Remote work environments have magnified the importance of effective virtual communication, with individuals required to convey ideas clearly, demonstrate empathy, and maintain team cohesion despite physical distance.

On the other hand, the pandemic has also underscored the significance of problem-solving and adaptability as organizations faced unprecedented challenges. Businesses have been compelled to swiftly pivot their strategies, reconfigure operations, and innovate to address rapidly evolving market dynamics. This has necessitated employees to exhibit agility, creative thinking, and the ability to troubleshoot novel problems.

However, the transformation in HR soft skills has not occurred without its challenges. Isolation, the blurring of work-life boundaries, and digital fatigue have posed hurdles to effective communication, collaboration, and maintaining a robust work culture. The chapter delves into these challenges and their potential long-term implications on employees' well-being, job satisfaction, and overall performance.

Through an in-depth exploration of real-world cases, industry insights, and empirical evidence, this chapter illuminates the multifaceted impact of Covid-19 on HR soft skills. Furthermore, it seeks to provide actionable strategies that organizations can adopt to foster the development of these skills in a dynamic and evolving work landscape. By navigating these challenges effectively and harnessing the opportunities presented, organizations can build a workforce equipped with the essential soft skills required for success in the post-pandemic era.

The object of this article is to present an quadratic model of mechanism for assessing and overcoming the consequences of the Covid-19 impact on the soft skills of the human resources potential in Ukraine. And the purpose of the article is to confirm the impact of the Covid-19 pandemic on the development of soft skills of employees using mathematical modeling based on the aggregation of survey data of employees and managers.

Analysis of recent research and publications

Recent research and publications have focused on understanding the quadratic model and mechanisms for assessing and overcoming the consequences of Covid-19 on the soft skills of the human resources potential in Ukraine. The Covid-19 pandemic has had a profound impact on economies worldwide, and Ukraine is no exception. Businesses and organizations have had to adapt to the challenges posed by the pandemic, leading to an increased emphasis on soft skills within the workforce (Podolchak et al., 2022).

One area of research has involved assessing the specific soft skills that have been most affected by the pandemic in Ukraine. Surveys, interviews, and data collection from organizations have been utilized to understand how soft skills such as adaptability, resilience, teamwork, and communication have been influenced by the crisis (Podolchak et al., 2021).

The economic implications of the impact on soft skills have also been explored. Researchers have examined the relationship between soft skills and key economic indicators such as employment rates, GDP growth, and labor market dynamics. Understanding these connections provides insights into the overall productivity and competitiveness of the workforce in Ukraine (Martyniuk et al., 2021).

In the current job market, soft skills are crucial. Companies focus on developing them, enhancing employee efficiency and task outcomes. Improved soft skills uplift corporate culture, market performance, and competitiveness (Juhász et al., 2023).

Intervention strategies have been a crucial focus of recent research. Developing mechanisms and interventions to mitigate the negative consequences of the pandemic on soft skills is seen as essential. Studies have explored various strategies, including training programs, mentoring initiatives, and policy recommendations, to enhance and rebuild the soft skills of the human resources potential in Ukraine (Martyniuk et al., 2021).

The digital transformation accelerated by the pandemic has also been a significant area of investigation. Researchers have explored the relationship between digital transformation and the demand for soft skills. The findings highlight how individuals with strong soft skills are better equipped to adapt to digital work environments and leverage emerging technologies effectively (World Health Organization, 2020).

Comparative analysis has provided valuable insights as well. By comparing Ukraine with other countries, researchers have identified best practices and lessons learned. These comparisons have examined the resilience of soft skills in different regions and the policies implemented to overcome the consequences of the pandemic. Additionally, government reports and initiatives in Ukraine provide valuable insights into the current efforts being made to assess and address the consequences of Covid-19 on soft skills.

Recent research and publications have not shed light in high level on the quadratic model and mechanisms for assessing and overcoming the consequences of Covid-19 on the soft skills of the human resources potential in Ukraine. The ongoing pandemic has presented unprecedented challenges for individuals, organizations, and the overall economy. Unders-

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tanding the impact on soft skills is crucial for devising effective strategies to mitigate the consequences and support the workforce in Ukraine.

Recent research has focused on examining a significant aspect, which is the evaluation of the particular soft skills that have been influenced by the pandemic. Studies have employed methods like surveys, interviews, and case analyses to recognize the shifts and difficulties individuals encountered in areas such as adaptability, resilience, communication, and problem-solving. This evaluation supplies valuable insights into domains that need attention and proactive measures (Vasiliou et al., 2023; Gnecco et al., 2023).

"HR potential" refers to the collective abilities, qualities, and capacities possessed by the human resources within an organization or a workforce. It encompasses factors like the skills, talents, experiences, and potential for growth that individuals bring to the table. On the other hand, "skills" are specific abilities or competencies that an individual possesses and can apply to perform tasks effectively. Skills can be both technical (related to a particular job or field) and soft (related to interpersonal, communication, problem-solving, and adaptability skills). In essence, "HR potential" is a broader concept that encompasses various attributes, including skills, while "skills" refer to the specific proficiencies and competencies possessed by individuals (Chen, 2023).

Employability rate reflects a nation's progress. In today's diverse workplace, being employable means more than skills—adaptability and initiative matter. Recruiters seek self-taught engineers with extra skills. Besides technical prowess, soft skills and social insights are vital. While technical abilities are prized, the capacity to connect and excel in various settings defines a lasting career (Bataklar and Toy, 2023).

In response to the identified consequences, researchers and practitioners have proposed various intervention strategies. These strategies encompass training programs, workshops, and initiatives aimed at enhancing and developing soft skills. Mentoring programs, career counseling, and online learning platforms have also been explored as means to support individuals in improving their soft skills and adapting to the post-pandemic work environment (Vovk et al., 2022).

Digital transformation has been a significant area of focus in recent research related to the consequences of Covid-19. The pandemic has accelerated the adoption of remote work, virtual collaboration tools, and automation technologies. Researchers have examined how this digital shift has impacted the demand for specific soft skills, such as digital literacy, virtual communication, and remote team collaboration. The findings contribute to understanding the evolving skill requirements in the context of digitalization (Gopika and Rekha, 2023).

Comparative analysis has provided valuable insights by examining the experiences of Ukraine in relation to other countries. By comparing strategies, policies, and outcomes, researchers have identified successful practices that can be adapted to the Ukrainian context (Podavale et al., 2023). Prior to the Covid-19 pandemic, the workforce was already facing disruptions due to evolving technologies and novel work methods, resulting in changes to the skill sets demanded of employees for ongoing relevance. (Manyika et al., 2017) projected that by 2030, around 375 million workers, equivalent to 14% of the global workforce, would need to learn new skills or change professions to keep up with automation and artificial

intelligence. A more recent worldwide survey conducted by McKinsey in 2020 revealed that 87% of executives acknowledged ongoing or anticipated skill gaps in the workforce within the next few years (Agrawal et al., 2020).

Similarly, the 2020 ILO's Rapid Assessment of Information and Communication Technology (ICT) Skills Demand (Wiryasti, et al., 2020) in world also shows that most hiring companies listed certain soft skills as requirement in addition to technical skills. Working as part of a team, communication and analytical and logical thinking are the top soft skills required by industries.

Overall, recent research and publications have emphasized the importance of addressing the consequences of Covid-19 on the soft skills of the human resources potential in Ukraine (Chumachenko et al., 2022). By assessing the impact, understanding the economic implications, devising intervention strategies practical insights and recommendations for policymakers, organizations, and individuals in Ukraine.

To effectively address the consequences of Covid-19 on soft skills, it is crucial for policymakers and organizations to prioritize investments in education and training (Strang, 2022). This includes promoting lifelong learning initiatives that focus on developing and enhancing soft skills at all stages of an individual's career (Musnandar, 2021). Collaboration between educational institutions, government agencies, and industry stakeholders is essential to ensure the alignment of educational programs with the evolving skill demands of the post-pandemic economy (Tilman, 2021).

In addition, we can be a whitneses The Covid-19 pandemic has disproportionately affected women working in factories in the Philippines. Many are unable to work from home and face the double burden of caring responsibilities. In STEM-related industries, women further confront challenges of staying and progressing in their roles compared to their male counterparts (International Labour Organization, 2020).

Furthermore, research has highlighted the importance of fostering a supportive and inclusive work environment that values and promotes the development of soft skills (Zuma, 2023). Organizations can implement strategies such as mentorship programs, team-building exercises, and recognition systems to enhance collaboration, communication, and problem-solving among employees. Flexible work arrangements and remote work policies can also contribute to improving work-life balance and facilitating the development of self-management and adaptability skills.

In terms of digital transformation, researchers emphasize the need for digital literacy initiatives and upskilling programs to equip the workforce with the necessary skills to thrive in a technology-driven work environment (Ryleeva et al., 2022). This includes training on digital tools, data analysis, cybersecurity, and online communication platforms (Yanto et al., 2022). The integration of digital skills with soft skills is crucial to ensure individuals can effectively leverage technology to enhance their productivity and contribution to the organization.

While research provides valuable insights, ongoing monitoring and evaluation of the implemented strategies are essential. This allows policymakers and organizations to assess the effectiveness of interventions, identify areas for improvement, and make evidence-based decisions (Taula'bi et al., 2023). Regular data collection on the state of soft skills, workforce

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development programs, and economic indicators can inform policy adjustments and support continuous improvement efforts (Mona and Kawilarang, 2022).

Recent research and publications have contributed to understanding the quadratic model and mechanisms for assessing and overcoming the consequences of Covid-19 on the soft skills of the human resources potential in world. The findings highlight the importance of assessing the impact, considering economic implications, implementing intervention strategies, embracing digital transformation, and conducting comparative analysis. By addressing the consequences of the pandemic on soft skills, policymakers, organizations, and individuals can support the recovery and future resilience of the workforce.

The research methodology

The research methodology consist of following elements:

Analysis and collection of specific indicators related to the influence of employees' soft skills during the Covid-19 pandemic. Here are specific indicators related to the influence of employees' soft skills during the Covid-19 pandemic:

- Remote Communication Skills: Assess the ability of employees to effectively communicate through digital platforms, including video conferencing, email, and instant messaging. Look for indicators such as clarity of message, active listening, adaptability to virtual communication tools, and responsiveness.
- Adaptability and Resilience: Measure employees' ability to adapt to rapidly changing circumstances and their resilience in the face of uncertainty. This can include indicators such as the speed of adjustment to remote work, willingness to learn new technologies, and the ability to cope with disruptions and setbacks.
- Virtual Collaboration Skills: Evaluate employees' skills in collaborating with colleagues and teams remotely. Look for indicators such as effective virtual teamwork, cooperation, and coordination, including the ability to contribute ideas, give constructive feedback, and facilitate online discussions.
- Problem-Solving in Remote Environments: Assess employees' ability to solve problems and make decisions in virtual or remote work settings. Indicators may include their capacity to identify and analyze issues, propose creative solutions, and adapt problem-solving strategies to the virtual context.
- Emotional Intelligence in Remote Interactions: Evaluate employees' emotional intelligence and their ability to understand and manage emotions during virtual interactions. Look for indicators such as empathy, active listening, recognizing and addressing emotions in oneself and others, and maintaining positive relationships remotely.
- Self-Motivation and Time Management: Measure employees' self-motivation and ability to manage time effectively while working remotely. Indicators may include meeting deadlines, managing workload independently, and maintaining productivity in a flexible work environment.
- Digital Literacy and Technology Skills: Assess employees' proficiency in utilizing digital tools and technologies required for remote work. Indicators may include competence in using collaboration platforms, software applications, and online communication tools,

as well as the ability to troubleshoot technical issues.

- Leadership and Influence in Virtual Settings: Evaluate employees' leadership skills and their ability to inspire and influence others in virtual or remote work environments. Look for indicators such as providing guidance and support to colleagues, facilitating virtual meetings effectively, and maintaining team morale remotely.

These indicators provide a starting point to evaluate employees' soft skills in the context of the Covid-19 pandemic. We can adapt and refine them based on your specific research or assessment objectives.

Numerical indicators related to employees' soft skills during the Covid-19pandemic could be formed by using following system based on actual data (Appendix A):

1. Remote Communication Skills (*RC index*):

- (RC1) Percentage of employees consistently using clear and concise written communication in virtual work environments.
- (RC2) Average rating of employees' verbal communication skills during video conferences on a scale of 1-10.
- (RC3) Number of instances where employees actively participated in virtual meetings by asking questions and providing valuable input.

2. Adaptability and Resilience (*AR index*):

- (AR1) Percentage of employees who successfully transitioned to remote work within a specified timeframe.
- (AR2) Average time taken by employees to learn and adapt to new digital tools or software.
- (AR3) Number of instances where employees demonstrated resilience by adapting to changing work requirements or handling unexpected challenges.

3. Virtual Collaboration Skills (*VC index*):

- (VC1) Average rating of employees' ability to work collaboratively in virtual teams based on peer feedback surveys.
- (VC2) Number of successful collaborative projects completed remotely.
- (VC3) Percentage of employees who actively contributed to online discussions and shared valuable insights in virtual team environments.

4. Problem-Solving in Remote Environments (*PS index*):

- (PS1) Average time taken by employees to resolve work-related issues remotely.
- (PS2) Number of innovative solutions proposed by employees in response to remote work challenges.
- (PS3) Percentage of employees who successfully applied problem-solving strategies in virtual settings.

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5. Emotional Intelligence in Remote Interactions (*EI index*):

- (EI1) Average rating of employees' ability to demonstrate empathy and active listening during virtual meetings based on supervisor evaluations.
- (EI2) Number of instances where employees effectively managed conflicts and maintained positive relationships in remote work situations.
- (EI3) Percentage of employees who actively supported and provided emotional support to colleagues in remote work environments.

6. Self-Motivation and Time Management (*SM index*):

- (SM1) Average number of tasks completed by employees within designated timeframes while working remotely.
- (SM2) Percentage of employees consistently meeting deadlines in a remote work setup.
- (SM3) Number of instances where employees proactively managed their workload and showed high levels of self-motivation.

7. Digital Literacy and Technology Skills (*DL index*):

- (DL1) Percentage of employees who possess the required digital literacy skills for remote work tasks.
- (DL2) Average rating of employees' proficiency in using specific digital tools or software platforms.
- (DL3) Number of instances where employees effectively troubleshooted and resolved technical issues independently.

8. Leadership and Influence in Virtual Settings (LI index):

- (LI1) Average rating of employees' leadership effectiveness in virtual team environments based on 360-degree feedback.
- (LI1) Number of instances where employees successfully motivated and inspired team members during remote work situations.
- (LI1) Percentage of employees who actively facilitated productive virtual meetings and discussions.

Index analysis. Application of analytical procedures for generalization and primary data processing. To unify all indicators for one absolute format, the procedure for calculating indices was carried out using the formula:

$$I_n = \frac{P_n}{P_{n-1}} \qquad [1]$$

n – period (years) of research;

I_n – indicator index for the analysis period;

P_n – indicator for the period of analysis;

P_n-1 – indicator for the previous period.

Formation of an integral indicator of the influence of Covid-19 on soft skills. At this stage, it was decided to evenly distribute the specific weight and significance level of each indicator of the country's development. The integrated index for each period are calculated by the formula (Appendix A):

$$I_{CP_n} = \frac{I_1+I_2+I_3+\cdots+I_n}{n} = \frac{\sum_{i=1}^{n} I_n}{n} \qquad [2]$$

$I_{Ст}$ – an Integral indicator of the influence of Covid-19 on soft skills;

n – period (years) of research;

I_n – indicator index for the analysis period;

The chosen approach for the research methodology provides several arguments for its selection, considering both the diversity of enterprises and the representativeness of the sample.

Firstly, the inclusion of a variety of enterprise types, including agricultural, service, educational, and IT sectors, ensures a well-rounded perspective on the impact of remote work. This choice acknowledges that different industries may experience distinct challenges and benefits when transitioning to remote work. For instance, service sectors might focus on customer interactions, while educational institutions might emphasize virtual teaching methods. Including this range of sectors enables a comprehensive understanding of the broader implications of remote work.

Secondly, the choice to involve a total of ten enterprises strengthens the representativeness of the study. While the number of enterprises isn't massive, the deliberate selection of two from each sector adds a layer of balance. This allows for a comparative analysis between sectors, enabling insights into potential sector-specific nuances in the effects of remote work.

The sample's representativeness is further supported by the inclusion of employees at various hierarchical levels within each enterprise. By involving individuals from ordinary employees to top management, the study aims to capture a holistic view of how remote work has affected different roles and responsibilities. This approach acknowledges that remote work might influence communication, collaboration, and decision-making differently at various organizational levels.

Furthermore, the use of an anonymous survey during a four month period at the beginning of 2023 offers a snapshot of employees' perceptions and experiences within a relatively recent timeframe. This enhances the accuracy and relevancy of the collected data, as it is reflective of the immediate aftermath of the Covid-19 pandemic.

Lastly, the focus on evaluating 24 indicators across eight main groups, spanning the years 2018 to 2022, provides a comprehensive analysis of the changes in the context of the pandemic. By comparing pre-quarantine and quarantine-introduced periods, the study can discern specific shifts in soft skills development and ascertain if these changes are linked to the pandemic-related remote work arrangements.

In conclusion, the methodology's careful consideration of enterprise diversity, representati-

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ve sampling from different sectors, inclusion of various hierarchical levels, recent timeframe, and comprehensive indicator evaluation supports the validity and depth of the research findings concerning the impact of remote work on employees' soft skills development.

Quadratic correlation-regression analysis. Conducting analytical procedures using the technical means of information support Microsoft Excel version 2016, namely, quadratic correlation and regression analysis, followed by the formation of a polynomial trend line of the fourth degree (Sokil, 2022). The calculation result is shown in Figure 2.

Analysis and forecast of the obtained results. After visualizing the trend line of the integral performance indicator of the influence of Covid-19 on soft skills, the trajectory and rhythm of sustainable processes within the country for the development of employees' soft skills becomes obvious. When forecasting this trend for one or two years, two scenarios are possible:

- Positive if $y = ax4 + bx3 - cx2 + dx - e \dashrightarrow \infty$, then the processes within the country contribute to the sustainable development of employees' soft skills and as a result this trend could be matched within all country.
- Negative if $y = ax4 + bx3 - cx2 + dx - e \dashrightarrow 0$, then the processes of soft skills development have a negative trend within all country in accordance.

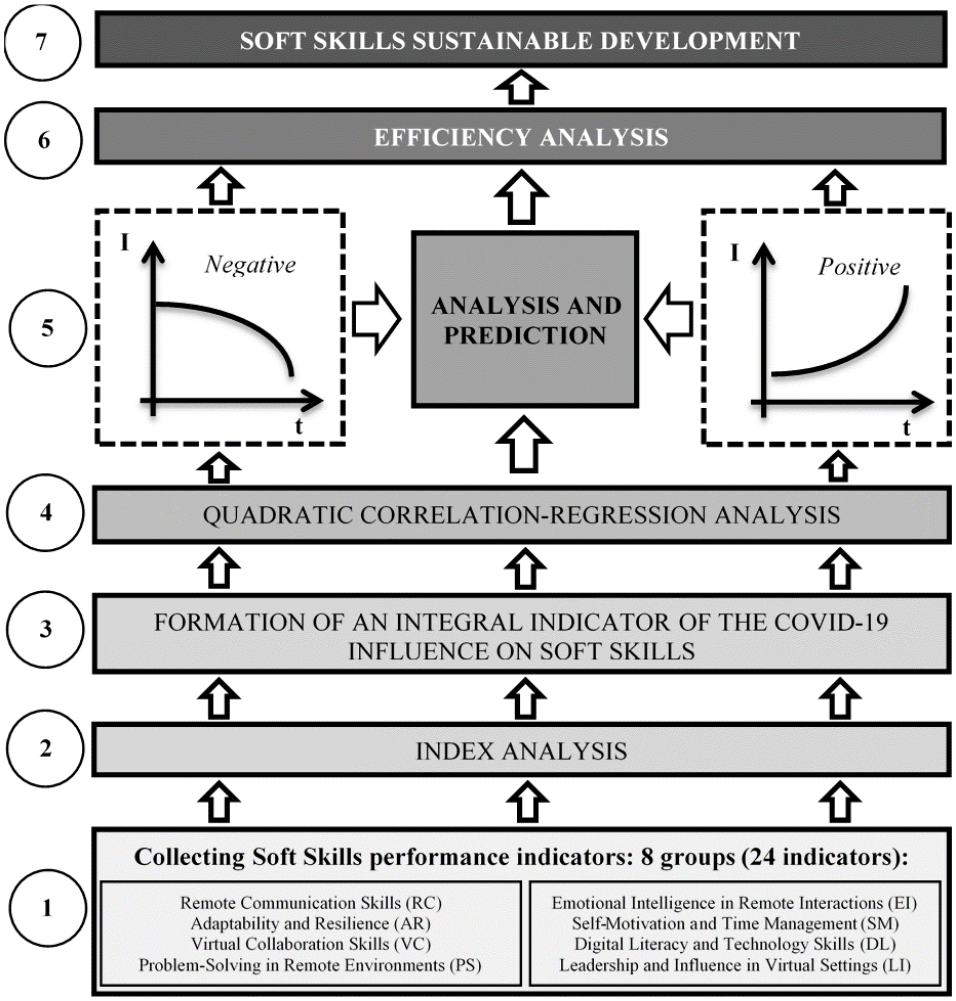
Authenticity assessment of approximate economic and mathematical models was carried out by the coefficient of determination R^2: the closer its value is to 1, the better the approximation function chosen by us describes the relationship between the studied quantities or phenomena. So if R^2:

- more than 0.8 - the constructed trend line forecast has a higher reliability;
- from 0.5 to 0.8 - the constructed forecast of the trend line has an average reliability;
- up to 0.5 - the constructed trend line forecast has low reliability.

Efficiency analysis of the integral indicator. Evaluation of the trend line of the performance indicator of the influence of COVID-19 on soft skills. Formation of the final conclusion of the level of the success rate of soft skills development and its dynamics. Confirmation of the theory about: direct and inverse dependence of the trend of Covid-19 spreading on the soft skills development.

Formation of the research hypothesis: is there a theoretical, methodological and methodological ability of the performance indicator to ensure the relevant trends of the influence of Covid-19 on soft skills. The whole research methodology is presented on Figure 1 and will be implemented using separate techniques.

Figure 1. Research methodology
Figura 1. Metodología de investigación

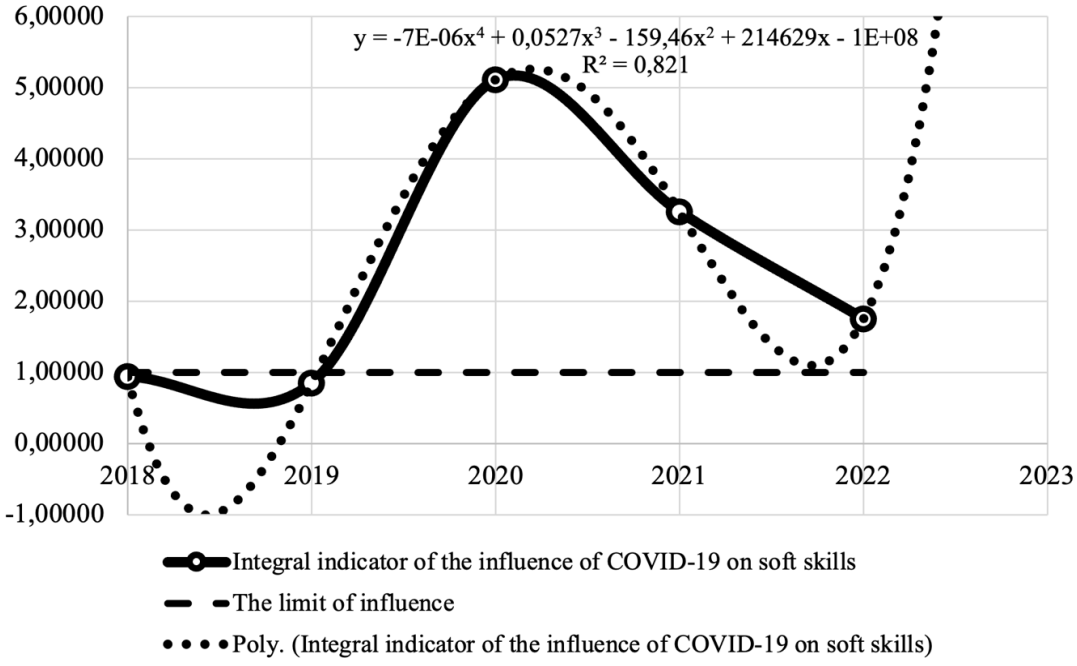


Source: own elaboration. Fuente: elaboración propia.

Results

The procedures for collecting, analyzing, processing information according to the above research methodology (Fig. 1) made it possible to build a trend and forecast for an integral performance indicator of the influence of Covid-19 on soft skills sustainable development in Ukraine, which is shown on Figure 2.

Figure 2. The trend line of the integral performance indicator of the influence of Covid-19 on soft skills in Ukraine
Figura 2. Línea de tendencia indicador de desempeño de la influencia del Covid-19 en habilidades blandas en Ucrania

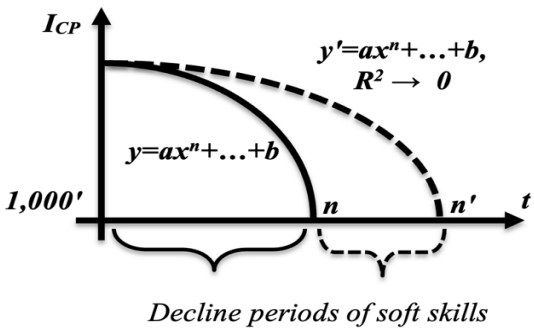


Source: own elaboration. Fuente: elaboración propia.

In general, with the help of empirical data (Appendix A) and Figura 2 we can visualize two options for the flow of events, in which further development of scenarios is possible.

The first scenario is for Ukraine and a gradual decrease in the predicted integral performance indicator, which after a certain time reaches in 2018-2019 a value of less than 1,0 - the point at which the integral performance indicator crosses the line of the limit of achievement (Figura 2). This point in time is the end of the dominant performance and the beginning of the decline of soft skills. These assumptions can be visualized and represented as a model of the soft skills decrease in Ukraine (Figura 3).

Figure 3. Model of the decrease in the progress of the soft skills in Ukraine
Figura 3. Modelo del aumento de ingreso de las habilidades blandas en Ucrania

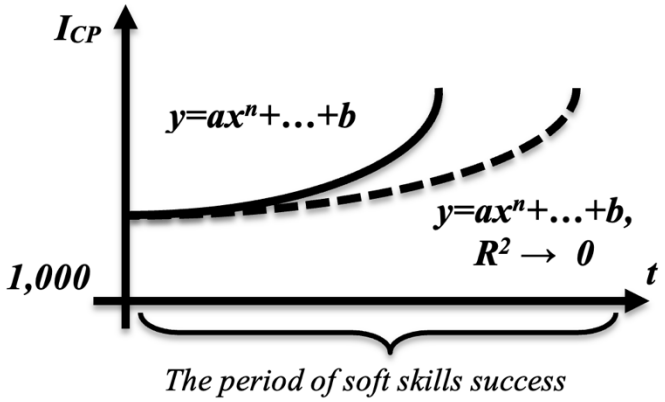


Source: own elaboration. Fuente: elaboración propia.

The elasticity of the curve line depends on the approximation coefficient: the larger the coefficient, the longer the period of decline of the curve before it intersects with the limit indicator of the academic limit of 1,000.

The second scenario is for Ukraine and an increase in the predicted integral performance indicator, which after a certain time reaches a value of more than 1,000 - the point at which the integral indicator crosses the line of the limit of achievement. These scenarios were typical in 2020 of Figure 2. These assumptions can be visualized and represented as a model of the soft skills increasing in Ukraine (Figura 4).

Figure 4. Model of the increase in the progress of the soft skills in Ukraine
Figura 4. Modelo del aumento de ingreso de las habilidades blandas en Ucrania



Source: own elaboration. Fuente: elaboración propia.

In this theory, the elasticity of the integrated index and, accordingly, the success of soft skills are also significantly affected by the level of approximation R2. If R2 tends to zero, then the progress process has features of greater positive effect.

The calculated data made it possible to build a trend line and forecast for 2023 (Figura 2), where the success of the soft skills by the Covid-19 influence are observed. The level of approximation R2 of the function of the integral indicator of the success of soft skills in Ukraine is 0.821, which indicates that the constructed trend line forecast has average reliability. Accordingly, the trend and forecast line has a positive value and growth in 2023, which indicates the prospect of soft skills in Ukraine in the coming periods.

Conclusions

The implementation of the quadratic model has been highly effective as evidenced by the research outcomes. The study has successfully validated the hypothesis, confirming the model's aptness in assessing the impact of Covid-19 on employees' soft skills advancement. The comprehensive findings derived from surveys and empirical analyses not only support these conclusions but also extend their applicability to the broader realm of sustainable development in employees' soft skills.

Moreover, the analysis underscores the emergence of two viable scenarios amid the pandemic's constraints. These circumstances have driven employees to adapt and enhance their competencies, particularly in remote communication, enabling informed decision-making in enterprise management and economic activities.

The rigorous analysis, along with the quadratic model's application, highlights a noticeable decline in the sustainable development of soft skills between 2020 and 2022. However, this setback has catalyzed the mobilization of diverse resources and opportunities, fostering an environment for enhancing and sustainably nurturing soft skills beyond 2023.

The Covid-19 pandemic has the potential to impact workers' soft skills as it changes the work environment and the way people interact. Here are some possible effects:

1. Communication: The shift to remote work can affect communication among employees. The lack of face-to-face contact can make it challenging to interpret nonverbal cues, perceive tone of voice, and ensure effective information exchange.
2. Collaboration and teamwork: Remote work can complicate collaboration and teamwork, as the absence of physical presence can reduce the level of interaction and meaningful communication among colleagues.
3. Leadership: Leaders may find it harder to build effective relationships with subordinates and maintain motivation in remote work settings. The reduced opportunity to observe and interact with subordinates can make it difficult to establish trust and effectively manage a team.
4. Adaptability and flexibility: The pandemic requires workers to quickly adapt to changes. New job requirements, including the use of new technologies and remote communication, may demand flexibility and the ability to learn quickly.
5. Stressors and self-management: Repeated exposure to stressful situations, such as the threat of illness or work-life balance, can affect employees' ability for self-management and emotional control.

The research hypothesis posits that the implementation of remote work due to the COVID-19 pandemic has a significant impact on the development and enhancement of employees' soft skills. Specifically, it is hypothesized that the adoption of remote work environments has led to a notable shift in the way individuals communicate, collaborate, problem-solve, and adapt, resulting in both challenges and opportunities for the sustainable growth of these essential skills.

Covid-19 transformed soft skills as remote work surged. Adaptability, resilience, digital communication, and creative problem-solving gained prominence. The pandemic posed unforeseen challenges, testing quick adjustments and coping mechanisms. Adapting to change, maintaining productivity, and innovative solutions became vital. Overall, Covid-19 reshaped soft skills, highlighting adaptability, resilience, communication, and problem-solving.

While the investigation was conducted within the context of Ukraine, the conclusions drawn from this study possess the potential for broader application beyond the country's borders. The impact of remote work on employees' soft skills is a phenomenon that transcends geographical boundaries. The diverse range of sectors, the longitudinal analysis, and the com-

prehensive approach to evaluating soft skills changes during the pandemic provide insights that could be relevant to various countries and regions globally. The study's findings offer valuable insights into the broader implications of remote work on employees' skill development across different contexts, extending its relevance beyond the scope of the Ukrainian investigation.

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Appendix A

Index analysis of experimental data

Year	RC index						AR index					
	RC1	I	RC2	I	RC3	I	AR1	I	AR2	I	AR3	I
2017	40		2		40		0		44		9	
2018	45	1,13	2	1,00	42	1,05	0	0,00	49	1,11	10	1,11
2019	47	1,04	3	1,50	45	1,07	0	0,00	49	1,00	12	1,20
2020	48	1,02	5	1,67	50	1,11	70	0,00	49	1,00	22	1,83
2021	50	1,04	7	1,40	55	1,10	80	1,14	48	0,98	40	1,82
2022	55	1,10	9	1,29	45	0,82	90	1,13	47	0,98	54	1,35

Year	VC index						PS index					
	VC1	I	VC2	I	VC3	I	PS1	I	PS2	I	PS3	I
2017	4		4		0		10		5		5	
2018	4	1,00	5	1,25	0	0,00	10	1,00	8	1,60	4	0,80
2019	5	1,25	5	1,00	0	0,00	10	1,00	5	0,63	5	1,25
2020	8	1,60	5	1,00	60	0,00	70	7,00	60	12,00	40	8,00
2021	9	1,13	7	1,36	50	0,83	80	1,14	50	0,83	55	1,38
2022	10	1,11	8	1,10	70	1,40	60	0,75	40	0,80	75	1,36

Year	RC index						AR index					
	EI1	I	EI2	I	EI3	I	SM1	I	SM2	I	SM3	I
2017	20		5		5		5		20		5	
2018	15	0,00	7	1,40	7	1,40	7	1,40	30	1,50	4	0,80
2019	20	0,00	4	0,57	6	0,86	5	0,71	25	0,83	2	0,50
2020	60	0,00	20	5,00	50	8,33	40	8,00	45	1,80	30	15,00
2021	40	0,67	30	1,50	44	0,88	70	1,75	35	0,78	45	1,50
2022	20	0,50	15	0,50	30	0,68	35	0,50	20	0,57	25	0,56

Year	VC index						PS index						Integral indicator
	DL1	I	DL2	I	DL3	I	LI1	I	LI2	I	LI3	I	
2017	15		5		5		5		5		5		**0,94347**
2018	15	0,00	7	1,40	7	1,40	4	0,80	4	0,80	4	0,80	**0,85354**
2019	15	0,00	8	1,14	8	1,14	7	1,75	3	0,75	6	1,50	**5,11045**
2020	40	0,00	20	2,50	20	2,50	30	4,29	65	21,67	80	13,33	**3,25530**
2021	50	1,25	35	1,75	21	1,05	35	1,17	45	0,69	75	0,94	**1,75500**
2022	80	1,60	49	1,40	15	0,71	21	0,60	20	0,44	35	0,47	**0,94347**