

10th International Scientific-Business Conference
LIMEN 2024

***Leadership, Innovation, Management and Economics:
Integrated Politics of Research***


SELECTED PAPERS

Vienna University of Technology (TU Wien), Austria
December 5, 2024 (hybrid)


Tenth International Scientific-Business Conference LIMEN
Leadership, Innovation, Management and Economics: Integrated Politics of Research
ISSN 2683-6149

Selected Papers (part of LIMEN conference collection)


Editors:

Francesco Badia 

PhD, Associate Professor, University of Bari Aldo Moro, Bari, Italy

Dhouha Jaziri 

PhD, Senior Lecturer, University of Sousse, Faculty of Economic Sciences and Management of Sousse, Tunisia


Julianna Csugány 

PhD, Associate Professor, Eszterházy Károly Catholic University, Institute of Economic Science, Department of Economics, Eger, Hungary

Organizational Committee:

Ana Fialho, PhD, Assistant Professor, Center for Advanced Studies in Management and Economics (CEFAGE-UE), University of Evora, Portugal

António Vieira, PhD, Assistant Professor, Center for Advanced Studies in Management and Economics (CEFAGE-UE), University of Evora, Portugal

Nikolina Vrcelj 

PhD, Association of Economists and Managers of the Balkans, Belgrade, Serbia

Nevena Bevanda, PhD student, Association of Economists and Managers of the Balkans, Belgrade, Serbia

Larisa Hrustek, PhD student, University of Zagreb Faculty of Organization and Informatics, Varaždin, Croatia

Magdalena Kuštelega, PhD student, University of Zagreb Faculty of Organization and Informatics, Varaždin, Croatia

Ivana Mirčević BSc, Association of Economists and Managers of the Balkans, Belgrade, Serbia

Uroš Mirčević, Ing., Association of Economists and Managers of the Balkans, Belgrade, Serbia

Goran Stevanović, BSc, Association of Economists and Managers of the Balkans, Belgrade, Serbia

Technical Editor:

Branimir Trošić

Published by:

Association of Economists and Managers of the Balkans – **UdekoM Balkan**

Džona Kenedija 13/2, 11070 Belgrade, Serbia

office@udekom.org.rs

+381 62 8125 779

Conference partners:

- Center for Advanced Studies in Management and Economics (CEFAGE-UE), Institute for Advanced Studies and Research, University of Evora, Portugal
- Department of Law, Economics and Sociology, University of Magna Graecia, Catanzaro, Italy
- Faculty of Economics, University of South Bohemia, České Budějovice, Czech Republic
- Rio de Janeiro Institute College (Faculdade Instituto Rio de Janeiro – FIURJ), Rio de Janeiro, Brazil
- European Professors of Industrial Engineering and Management (EPIEM)
- Udekom Center for Knowledge Advancement Novi Sad (Udekom Center), Novi Sad, Serbia

LIMEN Conference is co-organized by:

- Institute of Business Economics and Industrial Sociology, Faculty of Mechanical Engineering & Economics Sciences, Graz University of Technology, Graz, Austria
- Association of Economists and Managers of the Balkans - UdekoM Balkan

Printed by: SKRIPTA International, Belgrade

Print circulation: 100 copies

Belgrade, 2025

ISBN-978-86-80194-93-6

ISSN 2683-6149

DOI: <https://doi.org/10.31410/LIMEN.S.P.2024>

Disclaimer: The author(s) of each paper appearing in this publication is/are solely responsible for the content thereof; the findings, interpretations and conclusions expressed in the papers are those of the authors and do not reflect the view of the editor, reviewers, scientific committee members, the publisher, conference partners or anyone else involved in creating, producing or delivering this publication.



This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License

CIP - Katalogizacija u publikaciji
Narodna biblioteka Srbije, Beograd

005(082)

336(082)

004:007(082)

330(082)

502.131.1(082)

**INTERNATIONAL Scientific-Business Conference LIMEN
2024 Leadership, Innovation, Management and Economics:
Integrated Politics of Research (10 ; 2024)**

Selected Papers / 10th international Scientific-Business Conference LIMEN 2024 Leadership, Innovation, Management and Economics: Integrated Politics of Research, Vienna University of Technology (TU Wien), Austria December 5, 2024 (hybrid); [editors Francesco Badia, Dhouha Jaziri, Julianna Csugány]. - Belgrade : Association of Economists and Managers of the Balkans - UdekoM Balkan, 2025 (Belgrade : Skripta International). - XVIII, 235 str. : ilustr. ; 25 cm. - (International Scientific Business Conference LIMEN Leadership, Innovation, Management, Economics: Integrated Politics of Research, ISSN 2683-6149)

Tiraž 100. - Bibliografija uz radove. - Registri.

ISBN 978-86-80194-93-6

a) Menadžment -- Zbornici b) Finansije -- Zbornici v) Informaciona tehnologija -- Zbornici g) Ekonomija -- Zbornici d) Održivi razvoj -- Zbornici


COBISS.SR-ID 184244233

Editorial Committee of the LIMEN Conference:

Albania

Klodiana Gorica 

PhD, Full-Time Professor, University of Tirana, Faculty of Economy, Department of Tourism and Marketing


Elvira Fetahu 

PhD, Associate Professor, Vice Rector, University of Elbasan "Aleksandër Xhuvani"


Blerta Dragusha 

PhD, Associate Professor, Dean of Faculty of Economy, Shkodra University "Luigj Gurakuqi"

Austria


Bernd M. Zunk 

PhD, Associate Professor, Graz University of Technology, Institute of Business Economics and Industrial Sociology, Graz


Josef Baumüller 

PhD, Associate Professor, TU Wien, Institut für Managementwissenschaften, Research Unit of Financial Enterprise Management, Theresianumgasse 27, 1040 Wien, Austria

Bosnia and Hercegovina

Sabina Đonlagić Alibegović 

PhD, Assistant Professor, University in Tuzla, Faculty of Economics, Tuzla


Anela Džananović 

PhD, Associate Professor, University in Travnik, Kiseljak


Brazil

Carla Dolezel Trindade 

PhD, Full-Time Professor, Rio de Janeiro Institute College (Faculdade Instituto Rio de Janeiro – FIURJ) headquartered in Rio de Janeiro

Simao Aznar Filho 

PhD, Full-Time Professor, Rio de Janeiro Institute College (Faculdade Instituto Rio de Janeiro – FIURJ) headquartered in Rio de Janeiro

Alex Sander Pires 


PhD, Associate Professor, Rio de Janeiro Institute College (Faculdade Instituto Rio de Janeiro – FIURJ) headquartered in Rio de Janeiro

Bulgaria


Elena Petkova 

PhD, Associate Professor, Sofia University "St. Kliment Ohridski", Faculty of Geography and Geology, Geography of Tourism Department, Sofia

Croatia


Željka Kordej-De Villa 

PhD, Senior Research Fellow, Institute of Economics, Zagreb

Sandra Mrvica Mađarac 

PhD, College professor, College of Applied Sciences "Lavoslav Ružička" in Vukovar

Czech Republic

Petr Petera 

PhD, Assistant Professor, Prague University of Economics and Business, Prague

Ethiopia

Mahir Jibril Ahmed 

PhD, Assistant Professor, Addis Ababa University School of Commerce

Greece

Ioannis Konstantaras 

PhD, Assistant Professor, University of Macedonia, Thessaloniki

Hungary

Brigitta Pécsék 

PhD, Assistant Professor, Head of the MSc in Management and Leadership program in English, Eszterházy Károly Catholic University, Eger

Italy

Giovanni Campisi 

PhD, Assistant Professor, Department of Management, Polytechnic University of Marche, Ancona

Kuwait

Rezart Demiraj 

PhD, Assistant Professor, American University of the Middle East

North Macedonia

Kiril Jovanovski 


PhD, Associate Professor, Faculty of Economics, University ss. Cyril and Methodius – Skopje

Poland

Marlena Bednarska 

PhD, Assistant Professor, Department of International Economics at the Poznan University of Economics and Business

Portugal

Rui Fragoso 

PhD, Associate Professor, Center for Advanced Studies in Management and Economics (CEFAGE-UE), part of the Institute for Advanced Studies and Research, University of Evora

Andreia Dionísio 


PhD, Associate Professor, Center for Advanced Studies in Management and Economics (CEFAGE-UE), part of the Institute for Advanced Studies and Research, University of Evora

Orlando Gomes 

PhD, Integrated Member with Doctorate, Center for Advanced Studies in Management and Economics (CEFAGE-UE), part of the Institute for Advanced Studies and Research, University of Evora

Rui Dias 

PhD, Associate Professor, Institute Polytechnic of Setúbal, Business School, Setúbal, Portugal and Researcher at the University of Évora (CEFAGE)


Paulo Monteiro Alexandre 

PhD, Assistant Professor, Polytechnic Institute of Setúbal, Business School, Setúbal

Rosa Galvão 

PhD, Adjunct Specialist Professor, Department of Accounting and Finance of the School of Business Administration (ESCE) of the Setúbal Polytechnic Institute (IPS), Portugal

Romania

Mancia Mircea Sebastian 

PhD, Senior Lecturer, University of Oradea, Faculty of Civil Engineering, Cadastre and Architecture, Bihor


Edina Kulesár 

PhD, Lecturer, Partium Christian University, Faculty of Economics and Social Science, Department of Economics, Oradea

Serbia

Branislava Hristov Stancic 

PhD, Assistant Professor, Faculty of Economics and Business, Belgrade


Vesna Jablanovic 

PhD, Full-Time Professor, University of Belgrade, Faculty of Agriculture, Belgrade


Slovakia

Jozef Gáll 

PhD, Assistant Professor, Head of Department, Department of Tourism, Faculty of Commerce, University of Economics in Bratislava, Bratislava


Silvia Capíková 

PhD, Assistant Professor, Faculty of Medicine, Comenius University in Bratislava, Slovak Republic Faculty of Law, Comenius University in Bratislava

Maria Novakova 


PhD, Assistant Professor, Comenius University in Bratislava, Faculty of Law, Bratislava

Slovenia

Klavdij Logožar 


PhD, Associate Professor, University of Maribor, Faculty of Economics and Business, Maribor

Spain

Herenia Gutiérrez Ponce 

PhD, Researcher, Universidad Autonoma de Madrid, Ciudad Universitaria de Cantoblanco Ctra. de Colmenar Viejo, Madrid.

Tunisia


Dhouha Jaziri 

PhD, Senior Lecturer, University of Sousse, Faculty of Economic Sciences and Management of Sousse

Turkey


Emel Yarimoglu 

PhD, Associate Professor, Yasar University

Aycan Hepsag 

PhD, Associate Professor, Istanbul University, Faculty of Economics, Department of Econometrics

United Arab Emirates


Ivana Ercegovac 

PhD, Lecturer, Lecturer and Program Chair at Faculty of Applied Media, Higher Colleges of Technology in Fujairah Campus

Ukraine

Maria Kucheriava 

PhD, Acting Head of Accounting Methodology Department, SESE the "Academy of Financial Management", Kyiv

Alla Zinchenko 

PhD, Associate Professor, National University Kyiv-Mohyla Academy, Kyiv



Contents

Index of Authors	IX
Index	XI
Preface	XIII
LIMEN 2024 Participants' Affiliation	XV
The Impact of Workplace Narratives on Organizational Behaviour – A Systematic Literature Review	1
Veronika Nagy Anikó Makkos László Buics	
Dimensions of Authentic Leadership: A Success for the Professional and Emotional Development of Leaders	11
Claudiu-Nicolae Ghinea Jugravu Mihai	
RTO vs WFA – What Is the Future of Flexible Working Model?	19
Žikica Milošević Andrea Ivanišević Minja Bolesnikov	
Professional Revolution in the Age of Artificial Intelligence: Key Skills for Success	29
Lorena Bastos Marlene Amorim Mário Jorge Ferreira Rodrigues	
Digital Transformation and HR: Challenges and Opportunities for Companies in North Macedonia	39
Milena Boshkoska Klisaroski Katerina Hadzi Naumova-Mihajlovska Tea Josimovska	
The Role of Successors in Implementing Digital Transformation and Its Impact on the Business Success of Family Enterprises	49
Tanja Gavrić Darijo Jerković	
AI Implementation Barriers in Manufacturing Firms: Austrian and Argentinian Companies Compared	59
Rudolf Gruenbichler Sergio Salimbeni Alexander Sitter Thomas Fenzl	
Key Determinants of Digital Transformation: A Preliminary Investigation into Essential Elements of Company Change	69
Ana Kutnjak	
The Impact of Organizational Rumor on ERP Project Success During Digital Transformation	79
Esmir Demaj	
Enhancing Decision-Making Through Generative AI: Human-AI Interaction in Organizational Contexts	89
Réka Koteczki Boglárka Eisinger Balassa	
Undergraduate IT Students' Intention to Utilize AI for Creative Projects	99
Katarina Pažur Aničić Renata Mekovec Marija Kuštelega	

Coherency of Big Data Analytics and Customer Relationship Management Strategy: Insights from Content Analysis	109
Magdalena Kuštelega Iva Gregurec Sandra Lovrenčić	
Beyond the Hype: Exploring ChatGPT's Role in Banking	119
Dan Costin Nițescu Adina Elena Călin Vanesa-Daniela Ungureanu Eugen-Marian Vierescu	
Fueling the Future: The Interplay of Environmental Consciousness and Hydrogen Vehicle Acceptance	131
Nikolett Gyurián Nagy	
Exploring the Value Drivers of Influencer-Generated Content: Effects on Followers' Engagement and Behavior	141
Óscar Soria-Martínez Raquel Sánchez-Fernández David Jiménez-Castillo Martina G. Gallarza	
Which Responsible Consumption Strategies are Generation Z Willing to Apply in Slovakia?.....	151
Lucia Bartková	
Sustainable Marketing and Its Impact on Higher Education Service Quality: A Comparative Analysis	159
Lidija Bagarić Dunja Meštrović Ivana Ivančić	
Influence of eWOM on Perception of Rural Tourist Destinations	169
Ivana Tonković Pražić Kristina Devčić	
Personalized Products For the Space Economy: The Astronaut Genetic Persona Mapping	177
Ivelina Ivanova-Kadiri	
The Importance of Change Management in Achieving Competitive Advantage – The Example of Large Croatian Companies.....	185
Anita Talaja Silvia Golem Ivanka Žaja	
Building Business Adaptability: Navigating Organizational Adaptation in Times of Disruption	195
Larisa Hrustek	
The Role of Entrepreneurial Education in Shaping University Students' Intentions Toward Entrepreneurship	205
Jetmir Muja Elvisa Drishti	
Exploring Drivers of Sustainability Reporting: Evidence from the Largest Portuguese Companies	215
Vanda Roque Sónia Monteiro Márcia Faria	
The Impact of the Customs Clearance Process on Unemployment and Foreign Direct Investments in Greece. A Panel Var Approach.....	225
Christos Katris Evangelos Daskalopoulos Aristeidis Mylonas	



Digital Transformation and HR: Challenges and Opportunities for Companies in North Macedonia*

Milena Boshkoska Klisaroski¹
Katerina Hadzi Naumova-Mihajlovska²
Tea Josimovska³

Received: January 12, 2025

Revised: July 14, 2025

Accepted: September 3, 2025

Published: November 3, 2025

Keywords:

Human resources;
Digital transformation;
Company;
Digital technology



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits non-commercial use, reproduction and distribution of the work without further permission.

Abstract: *Digital transformation (DT) is a process of integrating digital technology into all aspects of business, fundamentally changing how businesses operate and deliver value to customers. For successful DT, the human factor is more important than the technology itself. Therefore, this research aims to explore the perception of HR regarding the impact of DT in companies, specifically investigating their adaptation to ICT and the role of stakeholders in the digital transformation process.*

The authors conducted an online survey of 1000 employees in North Macedonia. The research focuses on what role employees play in addressing the impacts of DT. The statistical data from the questionnaire shows that the new technology will enable the employees to be more productive at their work and will help jobs to become less boring, repetitive, stressful, or mentally demanding. These results are crucial for decision-makers who must take responsibility for guiding employees through the process of DT.

1. INTRODUCTION

In recent years, progress in technology (automation, artificial intelligence) has reorganised the modern workplace, promising to reduce repetitive tasks and make it easier for employees. This research paper analyses the influence of demographic factors on employees' to be more productive at work. Especially, it examines whether age and gender impact on the potential productivity benefits of new technology. The analysis using a two-way ANOVA provides insight into demographic differences in beliefs about the impact of technology on employees in -the Republic of North Macedonia who perceive the impact of DT on their productivity, job satisfaction, and mental well-being, specifically focusing on their adaptation to new technologies. This research could help organisations tailor technology integration and support practices to maximise employee satisfaction and productivity across diverse groups. The gain results will contribute to understanding workforce adaptability and will contribute to making strategies for promoting digital skills training and support within organisations. Analyses in this paper contribute to a deeper understanding of how age and gender impact employees' attitudes toward DT. Previous research has focused on the general effects of DT on the labour market (Chinoracký & Čorejová, 2019; Dou et al., 2023; Huseynli & Huseynli, 2022), but it's necessary to examine individual perceptions of job security concerning DT, particularly as influenced by demographic factors. Exploring these perceptions is essential for companies that aspire to foster an accepting DT and for managers seeking to implement productive workforce development programs.

¹ "Ss. Cyril & Methodius" University in Skopje, Institute of Economics-Skopje, st. Prolet no.1, 1000 Skopje, Republic of North Macedonia

² "Ss. Cyril & Methodius" University in Skopje, Institute of Economics-Skopje, st. Prolet no.1, 1000 Skopje, Republic of North Macedonia

³ "Ss. Cyril & Methodius" University in Skopje, Institute of Economics-Skopje, st. Prolet no.1, 1000 Skopje, Republic of North Macedonia

* The research results presented in this paper are part of the project: Digital transformation from a human resources perspective, NIP.UKIM.23-24.20, "Ss. Cyril & Methodius" University in Skopje, Republic of North Macedonia

2. LITERATURE REVIEW

DT, along with the emergence of new technologies, has not occurred overnight but is the result of a long progression of technological advancements that have shaped industries, work, and organizational structures (Cascio & Montealegre, 2016). One key aspect that consistently emerges from the literature is that DT is not solely a technological shift but rather a holistic change involving human, cultural, and organizational dimensions (Fenech et al., 2019; Hanelt et al., 2021). As Erntsen et al. (2024) mention in their paper, embracing a human-centred approach proves to be essential for achieving a successful DT, because employees' perceptions and attitudes toward digital technologies significantly influence the success or failure of DT initiatives (Stef & Crişan, 2024). The implementation of new technologies may cause some jobs to become obsolete or evolve fundamentally (Parry & Battista, 2023; Piwowar-Sulej et al., 2024). New approaches to work also bring different ways for employees to experience their roles at work, introducing new challenges for both employers and workers. Because of the potential for replacing some traditional jobs, the duties of some workers may shift or even be eliminated (Hu et al., 2024). Instead of eliminating the reliance on human capital, DT increases the need for employees to leverage their analytical skills to tackle progressively more complex business challenges (Colombari & Neirotti, 2023; Ghasemaghahi et al., 2017). Supporting employees through this shift presents substantial challenges that go beyond the scope of traditional HR, underscoring the necessity for substantial financial and human capital investments in DT initiatives (Singh & Hess, 2020). The relationship between DT and productivity is well-documented in the literature. Studies consistently find that implementing advanced digital tools improves workflow efficiency, allowing employees to focus on more strategic and creative aspects of their jobs (Dong & McIntyre, 2014). A key advantage of the automation enabled with the DT process lies in its capacity to take over routine and repetitive tasks (Siderska, 2020), relieving human workers from these duties, which are sources of employee stress and dissatisfaction (Aldoseri et al., 2023). In spite of the fact that technology replaces repetitive tasks with automated tasks and frees up time for higher-order thinking and problem-solving activities, DT's productivity gains depend on how well workers adapt to new technology. (George et al., 2024). The process of adoption of new digital technologies is significantly influenced by demographic factors such as age and gender (Mensah & Onyancha, 2021; Qazi et al., 2022).

In the context of the Republic of North Macedonia, with approximately 80% of North Macedonia's population connected to the internet, the foundation for DT exists. However, only 32% of people have basic digital skills, highlighting a significant gap in readiness (UNDP, 2024). Without this essential groundwork, the impact of DT on employees remains uncertain.

3. METHODOLOGY

The research aim is to discover the role of *digital transformation and HR in companies in North Macedonia*. The main research problem is HR's perception of their adaptation towards DT. The research subject is focused on the employees in addressing the impacts of DT, particularly how new technologies influence their productivity and the nature of their work. Data were collected by means of a self-administered questionnaire, prepared in Google Docs. The questionnaire contained questions in a closed-ended format (demographic part) and logically connected questions that we used a 5-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree. The introduction part was designed to gather basic information like age, gender, education, region, sector, and nature of work (predominance of physical or mental work) for the employees. The other questions concern what changes will happen with their job over the next five years, did they agree or disagree with the company's responsibilities to their employees and what skills and abilities they have in the field of using ICT.

In order to complete the objectives of the study, the questionnaire was sent randomly to more than 5000 employees in the Republic of North Macedonia, and response was received from 1000 employees. The survey ran from February 1st to May 31st, 2024. Most of the employees belong to the Skopje region; they belong to the education sector and predominantly perform intellectual work. Most of them are female, between the ages of 36 and 45 years, and have higher education. The data analysis was accomplished using SPSS v20 statistical software. Two types of analyses were primarily conducted: the first one included descriptive data analysis, and the second one was two-way ANOVA. Due to the scope of the research, in this paper, we will show only two test for two variables using the two-way Anova.

4. EMPIRICAL RESEARCH AND DISCUSSION

The main research question in this paper starts with the part of the survey that refers to employees' expectations of what will happen with their jobs over the next 5 years if they introduce new technology. Three questions, out of eight, have the largest percentage share of the answers with the strongest intensity from the Likert scale, and from them, the two that affect the way of acting at the workplace are singled out. These are new technologies that will enable the employees to be more productive in their work and new technologies that will help jobs to become less boring, repetitive, stressful, or mentally demanding.

The paper will analyse the influence of age and gender on new technology that will enable the employees to be more productive in their work, and then we will analyse the influence of age and gender on new technology that will help jobs to become less boring, repetitive, stressful, or mentally demanding. Hence, the hypothesis is

Hypothesis One (H1): The employee's beliefs' regarding the influence of the new technology on the productivity is the same between different age groups and gender.

The following table (Table 1) provides descriptive data analyses. Across age groups, the mean scores are relatively consistent, with minor variations, indicating that age has less of an impact on this belief than gender. However, sample sizes vary widely across age groups, which may influence the observed means.

Table 1. Descriptive Statistics

Age	Gender	Mean	Std. Deviation	N
18-25	Male	1.67	0.577	3
	Female	2.33	1.397	15
	Total	2.22	1.309	18
26-35	Male	1.89	0.938	47
	Female	2.36	1.176	121
	Total	2.23	1.132	168
36-45	Male	2.14	1.083	157
	Female	2.29	1.193	359
	Total	2.24	1.161	516
>45	Male	1.86	0.967	70
	Female	2.25	1.120	228
	Total	2.16	1.097	298
Total	Male	2.02	1.032	277
	Female	2.29	1.170	723
	Total	2.21	1.139	1000

Note: Dependent Variable: New technology will enable me to be more productive in my work.

Source: Own elaboration

Because the sample size in the categories is different, Levene's test was applied to determine the assumption of homogeneity of the variance. In Table 2 is presented Levene's Test for Equality, a p-value = 0.003, indicating that the assumption of homogeneity of variances is violated, since $p < 0.05$. These results show that the variance in the dependent variable across groups is not equal, which could slightly impact the ANOVA results.

Table 2. Levene's Test of Equality

F	df1	df2	Sig.
3.153	7	992	0.003

Source: Own elaboration

Based on the data analysis on Table 3, the result for the Corrected Model shows that there is a significant ($p = 0.026$) relationship between the independent variables (age and gender) and the dependent variable (*new technology will enable to the employees to be more productive on their work*) as proved by the Sig. < 0.05 , meaning that there is a significant effect on the variables observed. The result for the intercept shows that a changing value of the dependent variable was not influenced by the independent variables, meaning that the value of the dependent variable can change even if there is no interference from the independent variables. However, the result of the test for the intercept shows a value of 0.000 or less than 0.05, meaning that there is a significant effect. The test results show that the value of F-count on the age towards belief in technology's productivity was 1.045 with a Sig. of 0.372, which means that it is not significant. This means that, overall, there are no statistically significant differences in the dependent variable across the different age groups. While the value of the F-count of gender towards belief in technology's productivity was 4.776 with a Sig. of 0.029, which means that it is significant. Males and females differ in their belief that new technology will enhance productivity, with females generally reporting slightly higher levels of belief (Mean = 2.29 for females vs. 2.02 from Table 1). These results prove that while age does not significantly influence employees' beliefs about the productivity-enhancing potential of new technology, gender differences do exist. Females appear to be slightly more optimistic than males about the impact of technology on their work productivity. However, the size of the effect is small, and that suggests that while significant, the practical implications may be limited. Interaction between Age and Gender ($p = 0.352$) is not significant and implies that these gender-based differences in beliefs are consistent across different age groups, without any notable age-specific effects.

Table 3. Tests of Between-Subjects Effects

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	20.620	7	2.946	2.290	0.026	0.016
Intercept	616.467	1	616.467	479.201	0.000	0.326
AGE	4.032	3	1.344	1.045	0.372	0.003
GENDER	6.144	1	6.144	4.776	0.029	0.005
AGE * GENDER	4.211	3	1.404	1.091	0.352	0.003
Error	1276.155	992	1.286			
Total	6203.000	1000				
Corrected Total	1296.775	999				

Note: Dependent Variable: New technology will enable me to be more productive in my work

Source: Own elaboration

Because the results don't have a statistically significant interaction, is interpret the Tukey post hoc test results for the different levels of age, which can be found in the Multiple Comparisons table (see Table 4), as shown below:

Table 4. Post Hoc Tests

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
18-25	26-35	-0.01	0.281	1.000	-0.73	0.71
	36-45	-0.02	0.272	1.000	-0.72	0.68
	>45	0.06	0.275	0.995	-0.64	0.77
26-35	18-25	0.01	0.281	1.000	-0.71	0.73
	36-45	-0.01	0.101	1.000	-0.27	0.25
	>45	0.07	0.109	0.905	-0.21	0.36
36-45	18-25	0.02	0.272	1.000	-0.68	0.72
	26-35	0.01	0.101	1.000	-0.25	0.27
	>45	0.08	0.083	0.735	-0.13	0.30
>45	18-25	-0.06	0.275	0.995	-0.77	0.64
	26-35	-0.07	0.109	0.905	-0.36	0.21
	36-45	-0.08	0.083	0.735	-0.30	0.13

Source: Own elaboration

Results in Table 4 shows that there are no statistically significant differences in the belief that new technology will enable the employees to be more productive in their work among employees of different age groups.

Table 5. Homogeneous Subsets

Age	N	Subset
		1
>45	298	2.16
18-25	18	2.22
26-35	168	2.23
36-45	516	2.24
Sig.		0.977

Source: Own elaboration

To further explore potential differences in employees' beliefs that new technology will enable the employees to be more productive in their work, Homogeneous analysis (Table 5) was conducted. The results confirm the previous conclusion that age does not play a significant role in shaping employees' views on whether new technology will enable employees to be more productive in their work.

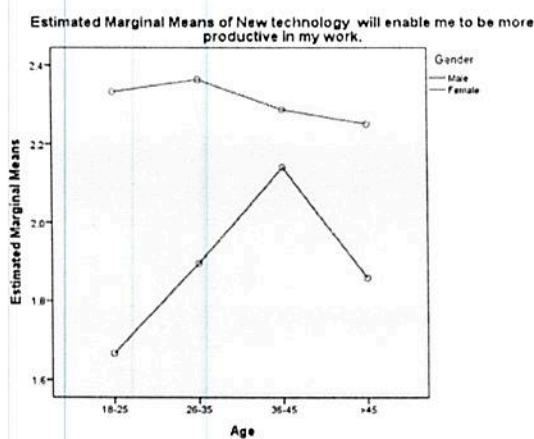


Figure 1. Profile Plots

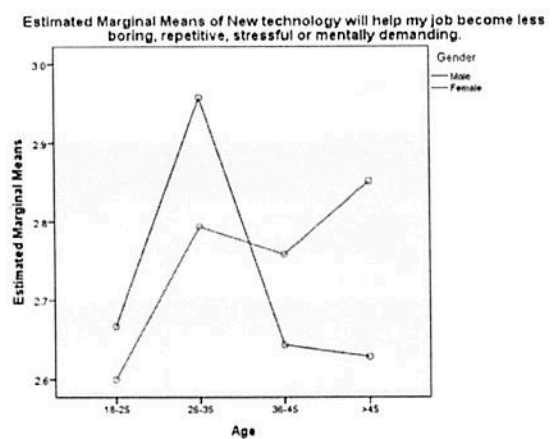


Figure 2. Profile Plots

Source: Own elaboration

In Figure 1, it can be seen that lines for males and females run roughly parallel across age groups, indicating that the interaction between age and gender is not significant. Thus, while gender appears to influence beliefs about new technology will enable the employees to be more productive in their work, age does not, and the relationship between age and new technology will enable the employees to be more productive in their work, does not differ by gender.

Table 6. Robust Tests of Equality of Means

	Statistic ^a	df1	df2	Sig.
Welch	0,371	3	78,858	0,774

Source: Own elaboration

When homogeneity of variances is violated in a two-way ANOVA test, we use Welch's ANOVA. Welch's ANOVA does not assume equal variances and is more reliable when this assumption is violated. From the results in Table 6, it can be seen that similar to the two-way Anova, Welch's Anova, which is robust to the violation of the assumption of homogeneity of variances, also shows no significant differences between age groups ($p = 0.774$). This further confirms that age does not significantly affect employees' belief in the productivity benefits of new technology.

Hypothesis Two (H2): Analyse the influence between age and gender on new technology that will help jobs to become less boring, repetitive, and stressful or mentally demanding

Table 7 provides descriptive data analyses. The descriptive statistics provide an overview of how different age and gender groups view the impact of new technology on improving job quality by reducing monotony, stress, or mental demands. Generally, female employees report slightly higher average scores across all age groups compared to males, suggesting that women may be slightly more optimistic about technology's potential to enhance job satisfaction. The age group with the highest average score is 26-35 years for both genders, while the youngest (18-25) and oldest (>45) groups show somewhat lower mean scores, though differences remain subtle.

Table 7. Descriptive Statistics

Age	Gender	Mean	Std. Deviation	N
18-25	Male	2.67	1.528	3
	Female	2.60	1.242	15
	Total	2.61	1.243	18
26-35	Male	2.96	0.999	47
	Female	2.79	1.154	121
	Total	2.84	1.112	168
36-45	Male	2.64	1.177	157
	Female	2.76	1.151	359
	Total	2.72	1.159	516
>45	Male	2.63	1.194	70
	Female	2.85	1.229	228
	Total	2.80	1.223	298
Total	Male	2.69	1.156	277
	Female	2.79	1.177	723
	Total	2.76	1.171	1000

Source: Own elaboration

In Table 8 is presented Levene's Test for Equality, the p -value = 0.645, indicating that the assumption of homogeneity of variances is not disturbed (since $p > 0.05$). This suggests that variability in

responses about the impact of new technology on job characteristics is consistent across different age and gender groups. This implies that age, gender, and their interaction do not lead to significant differences in the spread or dispersion of beliefs about technology making jobs less monotonous, repetitive, or stressful. It provides further confidence in the reliability of the ANOVA results, without concern for unequal variances.

Table 8. Levene's Test of Equality

F	df1	df2	Sig.
0.732	7	992	0.645

Source: Own elaboration

Based on the data analysis in Table 9, the result of the two-way ANOVA for the Corrected Model shows that they are not statistically significant ($p = 0.596$). This indicates that, collectively, these factors do not explain a significant amount of the variance in the belief that new technology will make jobs less monotonous, repetitive, or stressful. The result for the intercept shows that it is highly significant ($p = 0.000$), indicating an overall trend in the belief about technology's impact on work characteristics, independent of age and gender. This result does not imply that the specific age or gender groups differ, but rather highlights a general perception. The main effect of age ($F = 0.795$, $p = 0.497$) and gender ($F = 0.018$, $p = 0.894$) on beliefs about technology's impact is not significant. This suggests there are no notable differences across different age groups or between males and females in this perception. Additionally, the lack of a significant interaction effect between age and gender ($F = 0.787$, $p = 0.501$) implies that any minimal differences in beliefs are consistent across age groups and not specific to any age-gender combination. These results indicate that neither age nor gender significantly influences the belief that technology will make work less repetitive or stressful. This uniformity suggests that perceptions of technology's impact on job characteristics may be shaped more by general factors than by descriptive data like age or gender.

Table 9. Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	7.600 ^a	7	1.086	0.790	0.596	.006
Intercept	1048.432	1	1048.432	762.926	0.000	.435
AGE	3.279	3	1.093	0.795	0.497	.002
SEX	0.025	1	0.025	0.018	0.894	.000
AGE * SEX	3.246	3	1.082	0.787	0.501	.002
Error	1363.231	992	1.374			
Total	9005.000	1000				
Corrected Total	1370.831	999				

Source: Own elaboration

Results in Table 10 suggest that there are no statistically significant differences in the belief that technology will reduce job demands between any age groups. This suggests that perceptions of technology's impact on making work less boring, repetitive, or stressful are consistent across different age groups.

The homogeneous subset analysis (Table 11) indicates that all age groups have similar mean scores regarding their beliefs about technology's potential to reduce job monotony and stress, with no significant differences between them.

Table 10. Post Hoc Tests

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
18-25	26-35	-0.23	0.291	0.861	-0.98	0.52
	36-45	-0.11	0.281	0.979	-0.84	0.61
	>45	-0.19	0.285	0.912	-0.92	0.54
26-35	18-25	0.23	0.291	0.861	-0.52	0.98
	36-45	0.12	0.104	0.679	-0.15	0.38
	>45	0.04	0.113	0.984	-0.25	0.33
36-45	18-25	0.11	0.281	0.979	-0.61	0.84
	26-35	-0.12	0.104	0.679	-0.38	0.15
	>45	-0.08	0.085	0.811	-0.30	0.14
>45	18-25	0.19	0.285	0.912	-0.54	0.92
	26-35	-0.04	0.113	0.984	-0.33	0.25
	36-45	0.08	0.085	0.811	-0.14	0.30

Source: Own elaboration

Table 11. Homogeneous Subsets

3. Age	4. N	5. Subset
7. 18-25	8. 18	6. 1
10. 36-45	11. 516	9. 2.61
13. >45	14. 298	12. 2.72
16. 26-35	17. 168	15. 2.80
19. Sig.	20.	18. 2.84
		21. 0.711

Source: Own elaboration

In Figure 2 presented above, it can be seen that the lines representing males and females are relatively parallel across different age groups. It can be concluded that the interaction between age and gender is not significant, gender looks like to influence on new technology that will help jobs to become less boring, repetitive, stressful or mentally demanding, age does not significantly influence on new technology that will help jobs to become less boring, repetitive, stressful or mentally demanding, nor does the relationship between age and new technology that will help jobs to become less boring, repetitive, stressful or mentally demanding differ based on gender.

5. CONCLUSION

DT continues to transform companies worldwide; understanding how employees identify these changes is essential for organisations, policymakers, and researchers alike. The present study, presenting a theoretical framework of the DT and HR, as well as empirical research of the HR regarding the impact of DT in companies from the 1000 respondents' employees in North Macedonia, allows the formulation of corresponding co-inclusions and generalisations. The degree of DT and HR of the employees in the companies determines the change in the working process and outlines the challenges and opportunities for them. According to the main research question and the two hypothesis (H1; H2) we can conclude that employees' beliefs regarding the influence of the new technology on the productivity is the same between different age groups and gender and employees' beliefs regarding the influence of the new technology that will help jobs to become less boring, repetitive, stressful or mentally demanding is the same between different age groups and gender. Only in the first hypothesis, according to gender, we can see that females appear to be slightly more optimistic than males about the impact of technology on their work productivity. Within the framework of the development, the predominant role of variables such as age, gender,

education, and new technology will enable the employees to be more productive in their work; and new technology that will help jobs to become less boring, repetitive, stressful, or mentally demanding, which is a challenge or opportunity for the companies. The results provide valuable insight into the ways different demographic groups view the productivity potential of new digital technology, and underline the importance of employee support and training strategies to optimise technology adoption and productivity enhancement in companies. Despite offering valuable insights into employee perceptions of DT in North Macedonia, this study is limited to self-reported data, which may be influenced by respondent subjectivity or respond in a socially acceptable manner; the sample, while large, is restricted to one country and may not be representative of broader regional or global trends and the study focuses on a limited set of demographic variables (age, gender, education) without considering other potentially influential factors. Future research should include a larger sample from multiple countries to enhance more general conclusions, and it could explore additional factors such as job position and previous experience with digital tools.

References

- Aldoseri, A., Al-Khalifa, K., & Hamouda, A. (2023). A roadmap for integrating automation with process optimization for AI-powered digital transformation. *Preprints*. <https://doi.org/10.20944/preprints202310.1055.v1>
- Cascio, W. F., & Montealegre, R. (2016). How Technology Is Changing Work and Organizations. *Annual Review of Organizational Psychology and Organizational Behavior*, 3(1), 349-375. <https://doi.org/10.1146/annurev-orgpsych-041015-062352>
- Chinoracký, R., & Čorejová, T. (2019). Impact of Digital Technologies on Labor Market and the Transport Sector. *Transportation Research Procedia*, 40, 994-1001. <https://doi.org/10.1016/j.trpro.2019.07.139>
- Colombari, R., & Neirotti, P. (2023). Leveraging Frontline Employees' Knowledge for Operational Data-Driven Decision-Making: A Multilevel Perspective. *IEEE Transactions on Engineering Management*, 71, 13840-13851. <https://doi.org/10.1109/tem.2023.3291272>
- Dong, X., & McIntyre, S. H. (2014). The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies. *Quantitative Finance*, 14(11), 1895-1896. <https://doi.org/10.1080/14697688.2014.946440>
- Dou, B., Guo, S., Chang, X., & Wang, Y. (2023). Corporate digital transformation and labor structure upgrading. *International Review of Financial Analysis*, 90, 102904. <https://doi.org/10.1016/j.irfa.2023.102904>
- Erntsen, O. G., Krossøy, S. S., & Vikane, N. (2024). Achieving Sustainability through Digital Transformation Using a Human-Centric Approach: A Multiple-Case Study of Manufacturing Firms in Norway. <https://hdl.handle.net/11250/3156155>
- Fenech, R., Baguant, P., & Ivanov, D. (2019). The changing role of human resource management in an era of digital transformation. *Journal of Management Information and Decision Sciences*, 22(2), 166-175.
- George, A. S., Baskar, T., & Srikanth, P. B. (2024). The erosion of cognitive skills in the technological age: How reliance on technology impacts critical thinking, problem-solving, and creativity. *Zenodo*. <https://doi.org/10.5281/zenodo.11671150>
- Ghasemaghahi, M., Hassanein, K., & Turel, O. (2017). Increasing firm agility through the use of data analytics: The role of fit. *Decision Support Systems*, 101, 95-105. <https://doi.org/10.1016/j.dss.2017.06.004>
- Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A Systematic Review of the Literature on Digital Transformation: Insights and Implications for Strategy and Organizational Change. *Journal of Management Studies*, 58(5), 1159-1197. <https://doi.org/10.1111/joms.12639>

- Hu, Y., Pan, Y., Yu, M., & Chen, P. (2024). Navigating Digital Transformation and Knowledge Structures: Insights for Small and Medium-Sized Enterprises. *Journal of the Knowledge Economy*, 15(4), 16311-16344. <https://doi.org/10.1007/s13132-024-01754-x>
- Huseynli, B., & Huseynli, N. (2022). Digitalisation and transformation in labour market. *TURAN: Stratejik Arastirmalar Merkezi*, 14 (Special Issue), 210–217. <https://doi.org/10.15189/1308-8041>
- Mensah, M., & Onyancha, O. B. (2021). Demographic factors influencing the adoption and use of social media in university libraries in Ghana: A unified theory of acceptance and use of technology (UTAUT) approach. *Journal of Electronic Resources Librarianship*, 33(3), 170-194. <https://doi.org/10.1080/1941126x.2021.1949157>
- Parry, E., & Battista, V. (2023). The impact of emerging technologies on work: a review of the evidence and implications for the human resource function. *Emerald Open Research*, 1(4). <https://doi.org/10.1108/eor-04-2023-0001>
- Piwowar-Sulej, K., Blštáková, J., Ližbetinová, L., & Zagorsek, B. (2024). The impact of digitalization on employees' future competencies: has human resource development a conditional role here? *Journal of Organizational Change Management*, 37(8), 36-52. <https://doi.org/10.1108/jocm-10-2023-0426>
- Qazi, A., Hasan, N., Abayomi-Alli, O., Hardaker, G., Scherer, R., Sarker, Y., Kumar Paul, S., & Maitama, J. Z. (2022). Gender differences in information and communication technology use & skills: a systematic review and meta-analysis. *Education and Information Technologies*, 27(3), 4225-4258. <https://doi.org/10.1007/s10639-021-10775-x>
- Siderska, J. (2020). Robotic Process Automation — a driver of digital transformation? *Engineering Management in Production and Services*, 12(2), 21-31. <https://doi.org/10.2478/emj-2020-0009>
- Singh, A., & Hess, T. (2020). How Chief Digital Officers Promote the Digital Transformation of their Companies. *Strategic Information Management*, 202-220. <https://doi.org/10.4324/9780429286797-9>
- Stef, A., & Crișan, E. L. (2024). Analysis of the impact of human resources employees' perceptions on the process of digital transformation. *IIMT Journal of Management*. <https://doi.org/10.1108/iimtjm-02-2024-0023>
- UNDP. (2024). *Digital Readiness Assessment: North Macedonia*. Retrieved October 24, 2024, from https://www.undp.org/sites/g/files/zskgke326/files/2024-01/dra_mk_06.pdf