Navigating the intersection of accounting and Artificial Intelligence: Assessing opportunities and risks

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Abstract: This paper aims to analyse how accounting professionals perceive the deployment of AI in the accounting field. The paper examines the perceptions of opportunities and risks of AI adoption in accounting. This study examined how demographics affect the way accounting professionals perceive the risks and opportunities of AI adoption. A total of 196 responses were collected from accountants working in different industries. The data was analysed using the Independent Samples t-test and One-Way ANOVA. The findings demonstrated that AI confronts accountants with opportunities and risks. Independent t-tests and one-way analysis of variance (ANOVA) results show no significant difference in the perception of risks in the accounting profession due to the adoption of AI based on gender, but there was a significant difference based on age. The results indicate that the perception of opportunities differs significantly by gender and age. The practical implication for organisations is to use the results of the study to prepare their workforce for the digital transformation caused by AI. This is one of the few empirical studies that take a demographics-based look at the perception of risks and opportunities of implementing AI in the accounting profession.

Keywords: accounting, artificial intelligence, opportunities, risks.

INTRODUCTION

Recent developments in emerging technologies, including AI, have gained global attention and affected almost all fields of business worldwide (Makridakis, 2017; Dwivedi et al., 2021). Industry 5.0 is new, and experts are scuffling to define it (Lindsay & Hudson, 2019; Ikegwu et al., 2022). As it is said to involve AI in a common man's life, it is also termed the AI revolution by some experts. The AI Revolution is expected to completely transform the way people work (Huang & Rust, 2018). Every industry will be affected, and the accounting and finance industry will not be untouched, of course. Along with its subsets, AI has lots to offer in the form of opportunities and challenges for the practitioners associated with the accounting and finance industry (Cockcroft & Russell, 2018).

According to Li & Zheng (2018), traditional accounting has been changed by the influence of AI, which improves efficiency, enterprises' competitiveness, and the overall industry. Moreover, Kruskopf et al. (2020)

stated that digital technologies, such as blockchain, AI, etc., are transforming workplaces and workflows within the accounting profession since they demand innovative and advanced abilities from workers and generate new business opportunities. Many scholars believe that the duties, as well as the expertise of auditors and accountants, will be replaced by AI in the coming years (Moll & Yigitbasioglu, 2019; Kend & Nguyen, 2020; Losbichler & Lehner, 2021). PwC's head, "Mike Baccala," stated that Artificial Intelligence is continually evolving and will be adopted, embraced, and transform the accounting profession (Kokina & Davenport, 2017).

The research work of Leitner-Hanetseder et al. (2021) points out numerous challenges associated with AI implementation within the field of accounting. As explored by Richins et al. (2017), the constant advancement within machine learning, as well as AI, has created different challenges faced by professionals in the accounting field. The implementation of AI is considered a major challenge for accounting professionals as this advanced technology is replacing several duties which accountants priorly performed (Moll & Yigitbasioglu, 2019; Kroon et al., 2021). Therefore, these accountants worry about losing their jobs in the near future if they are unable to adjust to the increasing prevalence of digital technologies in their industry. Li & Zheng (2018) further argued that accounting could not be completely replaced by AI; however, accountants needed to respond vigorously to its influence on their business field.

Emerging technologies are continuously transforming the way of work of accounting professionals (Jackson et al., 2022; Tiron-Tudor et al., 2022). The demographics impact the way emerging technologies are adapted (Rojas Méndez et al., 2017). It is imperative to analyse the perception of risk and opportunity in the accounting profession due to the adoption of AI in relation to gender and age.

This study aims to gain insight into the viewpoint of accountants concerning the usage of AI and the risks and opportunities associated with it. This study takes its base from TAM (Technology Acceptance Model). TAM is the most widely used model and was developed to predict the acceptance of new technology by employees at work. TAM asserts that individuals will devote more effort to learning and adopting a new technology or system if they are inspired to utilise it. As per TAM, an individual's motivation for using the technology can be anticipated by his/her sense of its usefulness and ease of use (Venkatesh et al., 2003).

The study contributes to the existing literature as there are a few studies which have taken into account demographic factors like age and gender while analysing the impact of AI on accounting professionals. The findings will shed new light on the implications of artificial intelligence.

METHODS

The study was conducted using the survey method. Convenience sampling, which is considered the least expensive and most efficient method of sampling (Malhotra, 2010) was used to collect the data.

In order to get the inputs, the questionnaire was distributed to the accounting experts from Audit, Banking, FMCG, education, manufacturing, and retail industries, among others. In total, 203 responses were returned, and after the post-data screening, 196 were valid and used for analysis.

A three-part online questionnaire was developed (demographic, opportunities and risks). The questionnaire evaluated replies based on respondents' demographic information and thoughts on the implementation and adoption of AI in the accounting profession. The respondents' perceptions of "opportunities for accountants" and "risks for accountants" were evaluated using five assessment items for each, adapted from (Voss & Riede, 2018). A five-point Likert scale ranging from "1: Strongly disagree" to "5: Strongly agree" was used to evaluate all the items.

RESULTS AND DISCUSSION

Several descriptive statistics were used for data analysis. The data was analysed using SPSS- 28. For hypothesis testing, the independent-samples t-test and one-way ANOVA were performed.

This study analysed the responses of 196 respondents. This comprised 60.7% male respondents (119) and 39.3% female respondents (77). The respondents within the age group of 20–24 years had the fewest responses (7.1%, 14), and the majority of respondents were above 40 years of age (42.3%, 83). The demographic characteristics are detailed in Table 1. The details of the respondents based on their industry are shown in Figure 1.

Table 1 Characteristics of Respondents

Characteristics	Frequency (N)	Ratio (%)
Gender		
Male	119	60.7%
Female	77	39.3%
Age in years		
20 – 24	14	7.1%
25 – 29	25	12.8%
35 – 39	30	15.3%
Above 40 years	83	42.3%
Work experience in years		
Less than 5	5	2.6%
5 - less than 10	20	10.2%
10 - less than 15	50	25.5%
15 - less than 20	33	16.8%
20 years plus	88	44.9%

In the social and organisational sciences, Cronbach's alpha is considered one of the most widely used measures of reliability (Bonett & Wright, 2015). Cronbach's alpha was applied in order to determine the reliability of the instrument. The acceptance criterion for Cronbach's alpha is 0.7 (Hair et al., 2013), and 0.8 is recommended (Pallant, 2020). The results shown in Table 2 demonstrate the reliability of the items of the questionnaire.

Table 2 Reliability Statistics (Cronbach's Alpha Output)

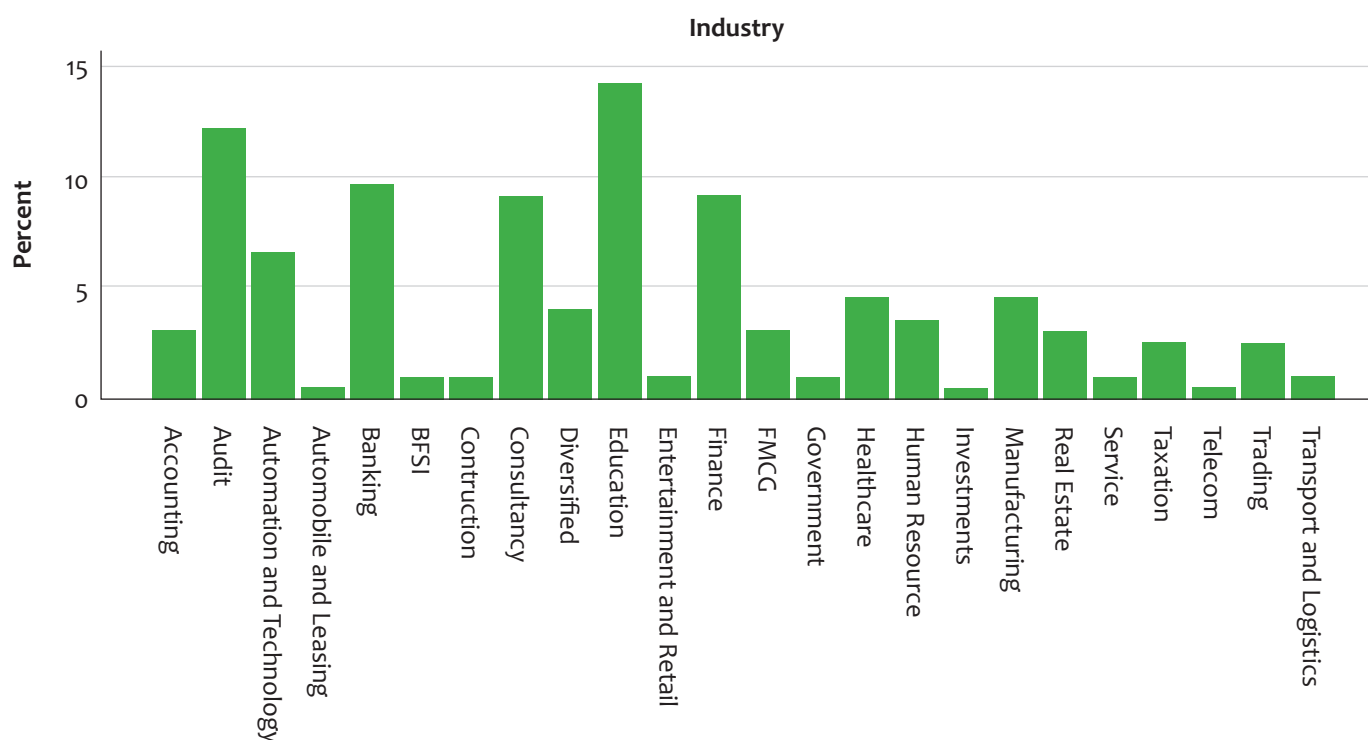|	Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
Opportunities in the accounting profession as a result of AI adoption	0.815	0.815	5
Risks in the accounting profession due to AI adoption	0.737	0.738	5

Industry

Figure 1 Details of respondents (Industry wise)

The goal of the study is to determine if there is a significant difference in the perception of risks and opportunities in relation to AI adoption in the accounting profession between males and females. The independent sample t-test was performed to determine the same. Table 3 summarises the results.

The results reveal that as regards the perceptions of risks in relation to AI adoption in accounting, the difference is not significant (t_{135} = −1.535, p = 0.127) in the scores of males and females. The mean score for Females is (M = 3.58, SD = 0.56) as compared to males (M = 3.73, SD = 0.71). The effect size, however, is medium (Hedges g = 0.62).Therefore, H1 is not accepted.

As regard the perceptions of opportunities in relation to AI adoption in accounting, the difference is significant (t_{194}) = −3.955, p < 0.05) in the scores of males and females. The mean score for Females is (M = 4.02, SD = 0.65) as compared to males (M = 3.62, SD = 0.7). The effect size, however, is medium (Hedges g = 0.68). Therefore, we accept H2. The results are different to the results presented by Gefen & Straub (1997) which indicates that females are getting comfortable with using the emerging technologies.

Table 3 Independent sample t-test Differences in perceptions of risk and opportunities between Males and Females

	Gender	N	Mean	Std. Deviation
Perception of risks in the accounting profession due to AI adoption	Male	119	3.5899	0.56138
	Female	77	3.7377	0.71397
Perception of opportunities in the accounting profession due to AI adoption	Male	119	3.6286	0.70892
	Female	77	4.0260	0.65160

To identify the difference in perceptions of opportunity and risks in the accounting profession as a result of AI adoption across different age groups, one way ANOVA test was performed. Participants were classified into the age groups of 20–24 years, 25–29 years, 30–34 years, 35–39 years and above 40 years.

Before performing the One-way ANOVA test, the data were examined for normality and homogeneity of variance assumptions. The data were normally distributed for each age group. The skewness and Kurtosis values were within the range of +2 and −2 and +7 and −7, respectively, which is an acceptable range (Schmider et al., 2010). There was a homogeneity of variance, as shown in Table 4.

Table 4 Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Perception of Risk in the accounting profession due to AI adoption	Based on Mean	.751	4	191	.558
	Based on Median	.432	4	191	.786
Perception of opportunities in the accounting profession due to AI adoption	Based on Mean	1.490	4	191	.207
	Based on Median	.858	4	191	.490

The ANOVA results suggest that the perception of risks in the accounting profession due to AI adoption differs significantly across different age groups ($F_{4,191}$ = 4.263, p < 0.003). Similarly, the ANOVA results show a significant difference in the perception of opportunities in the accounting profession due to AI adoption across the different age groups ($F_{4,191}$ = 3.606, p < 0.007)(Table 5 & Table 6). So, we accept H3 and H4. The results are similar to the earlier studies conducted by de Koning & Golderblom (2006) and Meyer (2011).

Table 5 On e-Way ANOVA Results (Perception of Risks)

			ANOVA	
Age Groups (In years)	Mean	Std. Deviation	F	Sig.
20–24	3.9714	0.51951	4.263	0.003
25–29	3.4320	0.57643		
30–34	3.8909	0.63752		
35–39	3.4867	0.60500		
Above 40 years	3.5880	0.61553		

Table 6 One-Way ANOVA Results (Perception of Opportunities)

			ANOVA	
Age Groups (In years)	Mean	Std. Deviation	F	Sig.
20 - 24	3.6429	0.83086	3.606	0.007
25 - 29	3.8160	0.86008		
30 - 34	4.0364	0.73234		
35 - 39	3.4267	0.71387		
Above 40 years	3.7952	0.57846		

As Levene's statistic was insignificant, equal variances were assumed. The post hoc test (Tukeys HSD) was carried out to assess individual differences between the different groups. This was decided based on the Levene's test for homogeneity of variance (Garg & Gupta, 2021). For the perception of risks in accounting due to the adoption of AI, the test indicated that the mean score of the age group 25–29 years (M = 3.4320, SD = 0.57643) was significantly different from the age group 30–34 years (M = 3.8909, SD = 0.63752). The mean scores of the age group 30–34 years differed significantly from the mean score of the age group 35–39 years (M = 3.4867, SD = 0.605), as indicated by Table 6. No other significant differences were found between the other age groups (p > 0.05).

For the perception of opportunities in accounting due to the adoption of AI, the test result suggested the mean score of the age group 30–34 years (M = 4.0364, SD = 0.73234) was significantly different from the age group 35 - 39 years (M = 3.4267, SD = 0.71387).

There were no other significant differences found between the other age groups (p > 0.05), as indicated by Table 7 and Table 8.

Table 7 Group Differences (Risk)

Age group (In years)	Mean difference	Sig.	95% Confidence Interval	
			Lower bound	Upper bound
25–29 & 30–34	-.45891*	0.024	-0.8784	-0.0394
30–34 & 35–39	.40424*	0.043	0.0077	0.8008

Table 8 Group Differences (opportunities)

Age group (In years)	Mean difference	Sig.	95% Confidence Interval	
			Lower bound	Upper bound
30–34 & 35–39	.60970*	.002	0.1571	1.0623

We discuss the key findings of this study to emphasise its contribution and practical implications. Firstly, the study is one of its kind, which delves into the acuity of risks and opportunities related to AI adoption in accounting. There are a few prior researchers who have taken into account the impact of AI-based technologies on accounting professionals in relation to gender and age (Vărzaru, 2022; Fedyk et al., 2022; Lehner et al., 2022).

Secondly, the study adds to the literature by addressing the issue of the digital gender divide. The results do not show any significant differences gender-wise as regard the perception of risks related to AI adoption in the accounting profession, which means that both males and females think that they are at equal risk. Regarding opportunities, females see better opportunities as compared to males. This shows that the digital divide has narrowed.

Thirdly, the Organisations that have adopted or plan to adopt AI can use the results of the study and prepare their workforce for digital transformation. The result concerning the effect of age group on the perceptions of risks related to AI adoption in accounting shows significant differences in a few age groups. The highest mean score is for the age group of 30–34 years. This indicates that the Millennials are more concerned about the risks as compared to Gen Z and Gen X (Francis & Hoefel, 2018; Schroth, 2019). This seems logical as Gen Z is trained in technology, and Gen X is not the one who would deal a lot with technology. The result showed a significant difference between the two age groups regarding the perception of opportunities in the accounting

profession due to AI. The highest mean score is again for the age group of 30–34 years, that is, the Millennials. The organisation can tailor the learning and development of their accounting staff according to their needs (Watty et al., 2016).

CONCLUSION

In light of the fast pace of emerging technologies, professionals from all areas are facing challenges in adjusting to working with these technologies. Accounting professionals are going through the same where they have to learn and adapt to work with machines. It is important to understand the perspective of these professionals about the risks and opportunities they think would arise in the future. This study explored the same, considering the demographics of gender and age. The results show a significant difference in the perception of opportunities in accounting profession due to AI adoption based on Gender. Also, the results indicate a significant difference in perception of risks and opportunities based on age. However no significant difference was noticed as regards the perception of risks based on Gender. This work will give direction to organisations employing accounting professionals so that they can help them in dealing with these new technologies. Similarly, professionals of all age categories can get an understanding of preparing themselves for the future, which will be technology driven. The study has certain limitations. The first is the sample size used for the statistical analysis. The sample size of 196 may not represent the entire population. The sample size can be increased to get a better idea of the perceptions of the accounting professionals. Secondly, the study covers only two demographic variables, which are gender and age. Future studies can be done for the other demographic variables as well. Thirdly, this is a quantitative study, and qualitative studies can be conducted using the in-depth interview approach.

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REFERENCES

Bonett, D. G., & Wright, T. A. (2015). Cronbach's alpha reliability: Interval estimation, hypothesis testing, and sample size planning. *Journal of Organizational Behavior, 36*(1), 3–15. https://doi.org/10.1002/job.1960

Cockcroft, S., & Russell, M. (2018). Big data opportunities for accounting and finance practice and research. *Australian Accounting Review, 28*(3), 323–333. http://dx.doi.org/10.1111/auar.12218

de Koning, J., & Gelderblom, A. (2006). ICT and older workers: No unwrinkled relationship. *International Journal of Manpower, 27*(5), 467–490. http://dx.doi.org/10.1108/01437720610683967

Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., ... & Williams, M. D. (2021). Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management, 57*, 101994. https://doi.org/10.1016/j.ijinfomgt.2019.08.002

Francis, T., & Hoefel, F. (2018). *True Gen': Generation Z and Its for Companies*. McKinsey & Company. Available at: https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/true-gen-generation-z-and-its-implications-for-companies

Garg, A., & Gupta, P. K. (2021). Does CSR Expenditure and Sustainability Reporting Improve Firm Performance? Mandatory CSR Regimes in India. *Indonesian Journal of Sustainability Accounting and Management, 5*(1), 150–161. https://doi.org/10.28992/ijsam.v5i1.338

Gefen, D., & Straub, D. W. (1997). Gender differences in the perception and use of e-mail: An extension to the technology acceptance model. *MIS Quarterly: Management Information Systems, 21*(4), 389–400. http://dx.doi.org/10.2307/249720

Fedyk, A., Hodson, J., Khimich, N., & Fedyk, T. (2022). Is artificial intelligence improving the audit process?. *Review of Accounting Studies, 27*(3), 938–985. http://dx.doi.org/10.1007/s11142-022-09697-x

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). Editorial Partial Least Squares Structural Equation Modeling: Rigorous Applications, Better Results and Higher Acceptance. *Long Range Planning, 46*, 1–12. https://doi.org/10.1016/j.lrp.2013.01.001

Huang, M. H., & Rust, R. T. (2018). Artificial intelligence in service. *Journal of service research, 21*(2), 155–172. http://dx.doi.org/10.1177/1094670517752459

Ikegwu, A. C., Nweke, H. F., Anikwe, C. V., Alo, U. R., & Okonkwo, O. R. (2022). Big data analytics for data-driven industry: a review of data sources, tools, challenges, solutions, and research directions. *Cluster Computing, 25*(5), 3343–3387. http://dx.doi.org/10.1007/s10586-022-03568-5

Jackson, D., Michelson, G., & Munir, R. (2022). New technology and desired skills of early career accountants. *Pacific Accounting Review, 34*(4), 548–568. http://dx.doi.org/10.1108/PAR-04-2021-0045

Kend, M., & Nguyen, L. A. (2020). Big data analytics and other emerging technologies: the impact on the Australian audit and assurance profession. *Australian Accounting Review, 30*(4), 269–282. http://dx.doi.org/10.1111/auar.12305

Kokina, J., & Davenport, T. H. (2017). The emergence of artificial intelligence: How automation is changing auditing. *Journal of Emerging Technologies in Accounting, 14*(1), 115–122. http://dx.doi.org/10.2308/jeta-51730

Kroon, N., do Céu Alves, M., & Martins, I. (2021). The impacts of emerging technologies on accountants' role and skills: Connecting to open innovation—a systematic literature review. *Journal of Open Innovation: Technology, Market, and Complexity, 7*(3), 163.

Kruskopf, S., Lobbas, C., Meinander, H., Söderling, K., Martikainen, M., & Lehner, O. (2020). Digital Accounting and the Human Factor: Theory and Practice. *ACRN Journal of Finance and Risk Perspectives*, 9(1), 78–89. http://dx.doi.org/10.35944/jofrp.2020.9.1.006

Lehner, O. M., Leitner-Hanetseder, S., Eisl, C., & Knoll, C. (2022). Artificial Intelligence-driven Accounting (AIDA): Future Insights and Organisational Implications. In *Artificial Intelligence in Accounting* (pp. 6–34). London: Routledge.

Leitner-Hanetseder, S., Lehner, O., Eisl, C., & Forstenlechner, C. (2021). A profession in transition: actors, tasks and roles in AI-based accounting. *Journal of Applied Accounting Research, 22*(3), 539–556. https://doi.org/10.1108/JAAR-10-2020-0201

Li, Z., & Zheng, L. (2018). The Impact of Artificial Intelligence on Accounting. in *Advances in Social Science, Education and Humanities Research (ASSEHR):* Proceedings of the 2018 4th International Conference on Social Science and Higher Education (ICSSHE 2018). https://doi.org/10.2991/icsshe-18.2018.203

Lindsay, J. & Hudson, A. (2019). *What is the fifth industrial revolution, and how will it impact the world?.* Metro News. Available at: https://metro.co.uk/2019/06/10/fifth-industrial-revolution-will-change-world-9738825/

Losbichler, H., & Lehner, O. M. (2021). Limits of artificial intelligence in controlling and the ways forward: a call for future accounting research. *Journal of Applied Accounting Research, 22*(2), 365–382. http://dx.doi.org/10.1108/JAAR-10-2020-0207

Makridakis, S. (2017). The forthcoming Artificial Intelligence (AI) revolution: Its impact on society and firms. *Futures, 90*, 46-60. https://doi.org/10.1016/j.futures.2017.03.006

Malhotra, N. K. (2010). *Marketing Research: An Applied Orientation* (6th ed.). New Jersey: Pearson Prentice Hall.

Meyer, J. (2011). Workforce age and technology adoption in small and medium-sized service firms. *Small Business Economics, 37*(3), 305–324. https://doi.org/10.1007/s11187-009-9246-y

Moll, J., & Yigitbasioglu, O. (2019). The role of internet-related technologies in shaping the work of accountants: New directions for accounting research. *The British accounting review, 51*(6), 100833. http://dx.doi.org/10.1016/j.bar.2019.04.002

Pallant, J. (2020). *SPSS Survival Manual: A step by step guide to data analysis using IBM SPSS* (7th ed.). London: Routledge. https://doi.org/10.4324/9781003117452

Richins, G., Stapleton, A., Stratopoulos, T. C., & Wong, C. (2017). Big Data Analytics: Opportunity or Threat for the Accounting Profession?. *Journal of Information Systems, 31*(3), 63–79. http://dx.doi.org/10.2308/isys-51805

Rojas-Méndez, J., Parasuraman, A., & Papadopoulos, N. (2017). Demographics, attitudes, and technology readiness: A cross-cultural analysis and model validation. *Marketing Intelligence and Planning, 35*(1), 18–39. http://dx.doi.org/10.1108/MIP-08-2015-0163

Schmider, E., Ziegler, M., Danay, E., Beyer, L., & Bühner, M. (2010). Is It Really Robust?: Reinvestigating the robustness of ANOVA against violations of the normal distribution assumption. *Methodology: European Journal of Research Methods for the Behavioral and Social Sciences, 6*(4), 147–151. https://psycnet.apa.org/doi/10.1027/1614-2241/a000016

Schroth, H. (2019). Are You Ready for Gen Z in the Workplace?. *California Management Review, 61*(3), 5–18. https://doi.org/10.1177/0008125619841006

Tiron-Tudor, A., Donțu, A. N., & Bresfelean, V. P. (2022). Emerging technologies' contribution to the digital transformation in accountancy firms. *Electronics, 11*(22), 3818. http://dx.doi.org/10.3390/electronics11223818

Vărzaru, A. A. (2022). Assessing artificial intelligence technology acceptance in managerial accounting. *Electronics, 11*(14), 2256. http://dx.doi.org/10.3390/electronics11142256

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly, 27*(3), 425–478. https://doi.org/10.2307/30036540

Voss, E. & Riede, H. (2018). Digitalisation And Workers Participation: What Trade Unions, Company Level Workers And Online Platform Workers In Europe Think. *European Trade Union Confederation*, Brussels (pp. 1–37). Available at: https://www.etuc.org/en/publication/digitalisation-and-workers-participation-what-trade-unions-and-workers-think

Watty, K., McKay, J., & Ngo, L. (2016). Innovators or inhibitors? Accounting faculty resistance to new educational technologies in higher education. *Journal of Accounting Education, 36*, 1–15. http://dx.doi.org/10.1016/j.jaccedu.2016.03.003