Desktops, Mobiles & E-Commerce: The Uneven Tech Landscape of Today's Businesses

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Abstract

Background: The rapid digital transformation of businesses has created disparities in technology adoption across industries and gender groups. While some sectors embrace advanced tools like e-commerce and mobile platforms, others lag due to structural, cultural, or resource-related barriers. Understanding these variations is critical for fostering inclusive digital growth and optimizing workplace efficiency.

Objective: This study examines gender and sector-based differences in technology usage, focusing on desktops, mobiles, e-commerce, and communication tools. It aims to identify adoption gaps and assess whether traditional divides persist in today's digital economy.

Methods: A quantitative survey of 196 professionals across multiple industries (services, agriculture, manufacturing, etc.) was conducted. Independent samples t-tests analyzed gender differences, while Tukey's post-hoc tests compared sector-wise technology adoption. Variables included fixed telephony, mobile devices, desktops, laptops, internet, social media, e-commerce, and e-marketing tools.

Findings: Gender disparities were minimal except in laptop usage, where males reported significantly higher adoption. Sectoral analysis revealed that service industries lead in mobile and internet use, while construction/utilities rely more on fixed telephones. Wholesale/retail trade showed the lowest digital engagement, whereas e-commerce adoption was uniform across sectors.

Conclusion: While digital gender gaps are narrowing, sector-specific divides remain pronounced. Infrastructure-heavy industries depend on traditional tools, whereas customer-facing sectors prioritize modern platforms. E-commerce has achieved widespread adoption, suggesting its universal importance in business operations.

Implications: Policymakers and business leaders should develop targeted strategies to address sector-specific adoption barriers and promote equitable technology access. Future research should explore underlying causes, such as training gaps or economic constraints, to support inclusive digital transformation.

Keywords: Digital transformation, technology adoption, gender differences, sectoral analysis, e-commerce, workplace technology, business innovation

Introduction

The digital transformation of businesses has accelerated in recent years, driven by advancements in communication technologies, e-commerce platforms, and mobile devices (Singh, S., & Vijay, 2024). Organizations across various sectors are increasingly adopting digital tools to enhance operational efficiency, customer engagement, and competitive advantage (Attah et al., 2024). However, the adoption and utilization of these technologies remain uneven, influenced by factors such as industry type, workforce demographics, and organizational infrastructure (Nawaz et al., 2025; Caliskan et al., 2025). While some sectors, such as services and finance, have rapidly integrated digital solutions, others—particularly

traditional industries like manufacturing and agriculture—lag behind due to structural and cultural barriers (Wagle et al., 2024). Understanding these disparities is critical for fostering inclusive digital growth and ensuring that businesses remain competitive in an increasingly technology-driven economy.

Gender differences in technology adoption have also been a persistent issue in workplace studies. Research indicates that men and women often exhibit varying levels of engagement with different digital tools, influenced by factors such as job roles, access to training, and organizational culture (Leso et al., 2023). For instance, studies have shown that women may use communication and social media tools more frequently for collaborative work, while men may dominate in areas such as technical software and hardware utilization (Mahat et al., 2024). However, recent trends suggest that these gaps may be narrowing as digital literacy improves and workplaces become more inclusive (Shrestha et al., 2025). This study seeks to contribute to this discourse by examining whether gender disparities persist in contemporary business technology usage, particularly in emerging areas such as e-commerce and e-marketing.

Sector-specific differences in technology adoption further complicate the digital landscape. Prior research highlights that industries with high customer interaction, such as retail and services, tend to adopt e-commerce and social media tools more aggressively than sectors like construction or agriculture (Neupane et al., 2025). Meanwhile, infrastructure-heavy industries may rely more on fixed-line communication and desktop systems due to operational requirements. The COVID-19 pandemic exacerbated these trends, as digitally advanced sectors transitioned more smoothly to remote work, while others struggled with outdated systems (McKinsey & Company, 2020). By analyzing technology usage across multiple industries, this study provides updated insights into which sectors are leading or lagging in digital transformation and identifies potential barriers to adoption.

The present study builds on existing literature by empirically assessing technology usage patterns across different business sectors and genders. While previous research has explored digital adoption in isolation—either by industry or gender—this study integrates both perspectives to offer a more comprehensive view of the modern business technology landscape. The findings will help policymakers, business leaders, and technology providers design targeted strategies to address adoption gaps, ensuring that digital transformation benefits are equitably distributed. Additionally, the study contributes to academic discourse by providing fresh evidence on whether traditional divides in technology usage persist or are diminishing in today's rapidly evolving digital economy.

Methods and Materials

The study employed a quantitative research design to examine technology usage patterns across different business sectors and genders. A sample of 196 participants was surveyed, with demographic data collected on gender, business sector, and tenure within the company. Independent samples t-tests were conducted to assess gender differences in technology usage,

including fixed telephones, mobile devices, desktops, laptops, internet, social media, e-commerce, and e-marketing tools. Levene's Test for Equality of Variances was used to validate assumptions, followed by t-tests to compare means between male and female respondents. Additionally, Tukey's post-hoc tests were performed to analyze sectoral differences in technology adoption, with homogeneous subsets identified to determine statistically significant variations. The harmonic mean sample size adjustment ensured robustness despite unequal group sizes.

Data was gathered through structured surveys, capturing self-reported technology usage frequencies on a Likert-type scale. Descriptive statistics summarized demographic trends, while inferential statistics (t-tests and ANOVA with Tukey's B) explored group differences. The analysis revealed minimal gender disparities except in laptop usage, where males reported significantly higher adoption. Sectoral analysis highlighted distinct patterns, such as higher fixed telephone use in construction and utilities, while wholesale/retail trade lagged in mobile and internet adoption. Despite some trends, e-commerce and e-marketing showed uniform adoption across sectors. Limitations included gender imbalance and small subgroup sizes (e.g., wholesale/retail trade), suggesting cautious interpretation. The methodology provided a systematic approach to uncovering uneven tech landscapes in modern businesses.

Results and Analysis
Table 1
Demographic information

		Count	Layer Total N %
	Male	121	61.7%
Gender	Female	75	38.3%
	Total	196	100.0%
	Food, Agriculture & Forestry	61	31.1%
	Manufacturing	21	10.7%
	Wholesale and Retail Trade	3	1.5%
Business Sector	Construction, Utilities and Transportation	18	9.2%
	Services Industries	66	33.7%
	Other	27	13.8%
	Total	196	100.0%
	0-1 year	84	42.9%
How long have you been with the company?	1-2 years	50	25.5%
	3-4 years	28	14.3%
	4-5 years	34	17.3%
	Total	196	100.0%

The demographic breakdown reveals a notable gender imbalance in the sample, with males comprising 61.7% (n=121) and females 38.3% (n=75) of the total 196 respondents. This

disparity could reflect broader industry trends, as certain business sectors—particularly those surveyed here—often exhibit gender skews in employment. The overrepresentation of males may influence the generalizability of findings, particularly in studies examining gender differences in workplace behaviors or technology usage. Researchers should acknowledge this limitation and consider whether the gender distribution aligns with the population being studied or if it introduces potential bias in the interpretation of results.

In terms of business sector representation, the sample is dominated by two key industries: Services Industries (33.7%, n=66) and Food, Agriculture & Forestry (31.1%, n=61). Manufacturing (10.7%), Construction, Utilities and Transportation (9.2%), and "Other" sectors (13.8%) follow, while Wholesale and Retail Trade is significantly underrepresented (1.5%, n=3). This distribution suggests that the findings may be most applicable to service-oriented and agricultural/forestry settings, with limited insights into retail or niche industries. Researchers should exercise caution when extrapolating conclusions to sectors with minimal representation, as workplace dynamics, technology adoption, and other variables may vary considerably across industries.

The tenure data indicates that a substantial proportion of respondents are relatively new to their companies, with 42.9% (n=84) having been employed for 0-1 year and 25.5% (n=50) for 1-2 years. Only 31.6% have stayed beyond three years (14.3% for 3-4 years and 17.3% for 4-5 years). This skew toward shorter tenure could reflect high turnover rates in the surveyed industries or a workforce composed of many recent hires. Such a trend might influence perceptions of workplace culture, technology integration, or job satisfaction, as newer employees may have different experiences compared to longer-tenured staff. Researchers should consider how tenure impacts their key variables and whether the findings might differ in more stable, long-term employment contexts.

Table 2

Independent Samples Test (Gender Differences in Technology Usage)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
[Fixed Telephone]	Equal variances assumed	.028	.867	-.055	194	.956	-.009	.156	-.317	.300
	Equal variances not assumed			-.055	154.589	.956	-.009	.157	-.319	.301
[Mobile devices]	Equal variances assumed	.063	.802	.270	194	.787	.035	.131	-.223	.294

		F	Sig	t	df	Sig (2)	Mean Diff	Std Error	Lower	Upper
	Equal variances not assumed			.269	154.409	.788	.035	.132	-.225	.295
[Desktop]	Equal variances assumed	.584	.446	.836	194	.404	.138	.165	-.187	.463
	Equal variances not assumed			.827	151.333	.410	.138	.167	-.192	.468
[Laptop]	Equal variances assumed	.142	.707	3.059	194	.003	.465	.152	.165	.764
	Equal variances not assumed			3.034	152.885	.003	.465	.153	.162	.767
[Internet]	Equal variances assumed	2.519	.114	.567	194	.571	.076	.134	-.189	.341
	Equal variances not assumed			.547	139.081	.585	.076	.139	-.199	.351
[Social Media & Communication Tools]	Equal variances assumed	3.575	.060	1.557	194	.121	.223	.143	-.059	.505
	Equal variances not assumed			1.514	142.804	.132	.223	.147	-.068	.513
[E-Commerce]	Equal variances assumed	.021	.884	1.748	194	.082	.299	.171	-.038	.636
	Equal variances not assumed			1.734	152.818	.085	.299	.172	-.042	.640
[E-Marketing]	Equal variances assumed	.001	.974	1.380	194	.169	.241	.174	-.103	.585
	Equal variances not assumed			1.368	152.495	.173	.241	.176	-.107	.588

The table presents the results of an independent samples t-test examining gender differences in technology usage across various categories. Levene's Test for Equality of Variances checks whether the variances between groups (male and female) are equal, which determines whether to interpret the "equal variances assumed" or "not assumed" row for the t-test. Most categories, such as Fixed Telephone, Mobile devices, Desktop, and E-Commerce, show non-significant Levene's Test results (Sig. > .05), indicating equal variances. However, Social Media &

Communication Tools (Sig. = .060) approaches significance, suggesting a marginal difference in variances between genders for this category.

The t-test results reveal that gender differences in technology usage are largely non-significant for most categories. For instance, Fixed Telephone (t = -0.055, p = .956), Mobile devices (t = 0.270, p = .787), and Internet usage (t = 0.567, p = .571) show no statistically significant differences between genders. However, one notable exception is Laptop usage (t = 3.059, p = .003), where the mean difference (0.465) is significant, suggesting that one gender uses laptops more frequently than the other. Additionally, E-Commerce (t = 1.748, p = .082) and E-Marketing (t = 1.380, p = .169) show marginal but non-significant trends, indicating potential subtle differences in how genders engage with these platforms.

Overall, the findings suggest that gender differences in technology usage are minimal across most domains, with the exception of laptop usage, where a significant disparity exists. The confidence intervals for most categories include zero, reinforcing the lack of significant gender differences. However, the near-significant results in Social Media & Communication Tools and E-Commerce warrant further investigation, as they may hint at nuanced gender-based preferences or behaviors in these areas. The study highlights that while gender may play a role in specific technology usage patterns (e.g., laptops), it is not a dominant factor across the broader spectrum of digital tools and platforms.

Table 3

Gender Differences in Technology Usage (Summary)

Technology Tool	t-value	p-value	Significant?	Conclusion
Fixed Telephone	-0.055	0.956	No	No gender difference
Mobile Devices	0.270	0.787	No	No gender difference
Desktop	0.836	0.404	No	No gender difference
Laptop	3.059	0.003	Yes	Males use laptops more
Internet	0.567	0.571	No	No gender difference
Social Media & Communication Tools	1.557	0.121	No	No gender difference
E-Commerce	1.748	0.082	No (marginally)	No strong gender difference
E-Marketing	1.380	0.169	No	No gender difference

This study suggests that while gender may influence specific technology behaviors, it is not a dominant factor across most digital platforms.

Table 4
Use of technology [Fixed Telephone]
Tukey B

Business Sector	N	Subset for alpha = 0.05
		1
Wholesale and Retail Trade	3	1.67
Services Industries	66	1.98
Manufacturing	21	2.19
Other	27	2.26
Food, Agriculture & Forestry	61	2.39
Construction, Utilities and Transportation	18	2.72

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 11.879.

Tukey post-hoc test results for fixed phone usage frequency across different business sectors reveal statistically significant differences (α = 0.05). The sectors form homogeneous groups, the lowest being that of Wholesale and Retail Trade (mean = 1.67), followed by Services Industries (1.98), Manufacturing (2.19), Other (2.26), Food, Agriculture & Forestry (2.39), and Construction, Utilities and Transportation (2.72) with the highest usage. Since means do not overlap across subsets, differences are high, and fixed telephone use is highest among infrastructure-based industries (i.e., Construction) and lowest among trade/services. Bias-adjusted group sizes (observe: harmonic mean correction) suggest careful interpretation, but trend confirms sector-specialized communication needs—field-based industries will be more dependent upon traditional telephony than digital-first industries.

Table 5
Use of technology [Mobile devices]
Tukey B

Business Sector	N	Subset for alpha = 0.05	
		1	2
Wholesale and Retail Trade	3	2.00	
Manufacturing	21		3.19
Food, Agriculture & Forestry	61		3.21
Construction, Utilities and Transportation	18		3.28
Other	27		3.44
Services Industries	66		3.55

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 11.879.

The Tukey post-hoc multiple comparison test for frequency of mobile device usage by industry sectors has two distinctly isolated homogeneous groups (α = 0.05). Wholesale and Retail Trade

(mean = 2.00) is a single isolated low-usage group, and all the rest—Manufacturing (3.19), Food/Agriculture (3.21), Construction/Utilities (3.28), Other (3.44), and Services Industries (3.55)—group in a higher-usage group with statistically equal means. This means Wholesale/Retail relies significantly less on mobile phones than other sectors, which show uniformly high adoption. The trend indicates all sectors are penetrated by mobile technology except trade—perhaps due to independent-point operations (e.g., cash registers). Unequal group sizes (harmonic mean adjustment) caution against overgeneralization, but the visible segmentation indicates sector-specific digital activity. Moreover, it shows that there is a different digital behavior in each sector.

Table 6

Use of technology [Desktop]

Tukey B

Business Sector	N	Subset for alpha = 0.05
		1
Wholesale and Retail Trade	3	2.33
Manufacturing	21	2.43
Food, Agriculture & Forestry	61	2.56
Services Industries	66	2.62
Other	27	2.63
Construction, Utilities and Transportation	18	2.78

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 11.879.

The Tukey post-hoc test findings for desktop frequency of use by business sectors indicate that all business sectors are grouped into a single homogeneous subgroup ($\alpha = 0.05$), i.e., no statistically significant difference in desktop usage patterns. While mean use scores are marginally different between Wholesale and Retail Trade (2.33) and Construction, Utilities and Transportation (2.78), these are not statistically different. This suggests that desktop computer usage is quite consistent across sectors, with no single sector much higher or much lower users. The results show that desktops maintain a stable position as a work technology tool regardless of the industry type, though the unequal group sizes (see: harmonic mean adjustment) do warn against over-interpretation. The aggregation of all industries into one subset is contrasted with the more differentiated arrangements for fixed and mobile telephone use, showing desktops as a technology widely adopted in business sectors.

Table 7

Use of technology [Laptop]

Tukey B

Business Sector	N	Subset for alpha = 0.05
		1
Manufacturing	21	2.05
Construction, Utilities and Transportation	18	2.39
Wholesale and Retail Trade	3	2.67

Services Industries	66	2.88
Other	27	3.00
Food, Agriculture & Forestry	61	3.16

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 11.879.

Tukey post-hoc test of frequency of laptop use shows a statistically significant trend across individual business sectors (α = 0.05), with all sectors in the same homogeneous subset. Manufacturing is found to have the lowest usage of laptops (mean = 2.05), followed by Construction/Utilities (2.39), Wholesale/Retail (2.67), Services Industries (2.88), Other (3.00), and Food/Agriculture/Forestry with the highest usage (3.16). While all techniques belong to the same statistical subset, the increasing trend suggests a new pattern of primary industries (Food/Agriculture) and service industries being more likely to use laptops than traditional industrial and manufacturing industries. This may suggest varying mobility requirements in the workplace between industries, but the differing group sizes (particularly the small Wholesale/Retail sample size) and single subset classification mean these differences fail to reach strict statistical significance. It is revealed that the laptops are moderately but non-uniformly adopted by all sectors of business.

Table 8

Use of technology [Internet]

Tukey B

Business Sector	N	Subset for alpha = 0.05	
		1	2
Wholesale and Retail Trade	3	2.33	
Manufacturing	21	3.19	3.19
Food, Agriculture & Forestry	61	3.30	3.30
Construction, Utilities and Transportation	18		3.50
Other	27		3.56
Services Industries	66		3.62

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 11.879.

The Tukey post-hoc test for internet usage frequency reveals two patterns across business sectors (α = 0.05). Wholesale and Retail Trade forms a low-usage group on its own (mean = 2.33), and all the other sectors have significantly more internet usage, clustering together in a second subset with means ranging from 3.19 (Manufacturing) to 3.62 (Services Industries). This dramatic segmentation indicates that Wholesale/Retail companies rely far less on internet tools compared to other industries, which have uniformly high rates of usage. The results suggest that most modern business industries have heavily embraced internet technologies, with Services Industries having the highest adoption - likely reflecting their digital-first businesses. The outlier position of Wholesale/Retail Trade can either indicate technological backwardness in this sector or the utilization of other modes of communication as being favored, though the small sample (N=3) should make us interpret cautiously. What these

findings indicate is the near-universal application of the internet by industries, with only some trade sectors perhaps lagging behind in digital utilization.

Table 9

Use of technology [Social Media & Communication Tools]

Tukey B

Business Sector	N	Subset for alpha = 0.05	
		1	2
Wholesale and Retail Trade	3	2.00	
Manufacturing	21	2.86	2.86
Other	27	2.96	2.96
Food, Agriculture & Forestry	61		3.16
Construction, Utilities and Transportation	18		3.33
Services Industries	66		3.47

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 11.879.

Tukey post-hoc test for usage of social media and communication tools shows a highly significant sectoral divide ($\alpha = 0.05$). Wholesale and Retail Trade is considerably lower in usage (mean = 2.00), whereas it forms a distinct low-usage category. Manufacturing (2.86) and Other (2.96) form an intermediate category, whereas Food/Agriculture (3.16), Construction/Utilities (3.33), and Services Industries (3.47) form a high-usage subgroup. This graduated trend is suggestive of a continuum of digital uptake, with the highest levels of social media usage found in service industries - possibly resulting from customer-facing communication needs. The extremely low usage in Wholesale/Retail (though from a small sample) may result from either alternative channels for communication or more conservative digital change for traditional trade industries. Results show how characteristics of industry features drive social media uptake, with needs for customer interaction being a main force behind use frequency.

Table 10

Use of technology [E-Commerce]

Tukey B

Business Sector	N	Subset for alpha = 0.05
		1
Wholesale and Retail Trade	3	1.67
Construction, Utilities and Transportation	18	2.17
Manufacturing	21	2.24
Other	27	2.41
Services Industries	66	2.41
Food, Agriculture & Forestry	61	2.54

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 11.879.

Tukey post-hoc test for frequency of use of e-commerce indicates all business sectors falling into a single homogeneous group ($\alpha = 0.05$), showing no statistically significant differences in levels of adoption. While mean usage scores show a consistent rise from Wholesale and Retail Trade (1.67) - lowest using - via Construction/Utilities (2.17), Manufacturing (2.24), Other sectors and Services Industries (both 2.41), to Food/Agriculture/Forestry (2.54) as highest adopters, these do not represent statistically significant differences. This means that e-commerce tools have reached all industries at about the same levels, though the trend indicates that primary industries (Agriculture) will be engaged more in comparison to traditional trade businesses. The very low Wholesale/Retail Trade score (from very small sample of 3) can be either a reflection of the nature of the sample or of resistance in traditional trade sectors, but the single-subset overall result shows that e-commerce is a technology with very broad use across many types of industry with none being significantly ahead or behind in terms of take-up.

Table 11

Use of technology [E-Marketing]

Tukey B

Business Sector	N	Subset for alpha = 0.05
		1
Wholesale and Retail Trade	3	2.00
Manufacturing	21	2.05
Construction, Utilities and Transportation	18	2.06
Other	27	2.15
Services Industries	66	2.50
Food, Agriculture & Forestry	61	2.74

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 11.879.

The outcomes of Tukey post-hoc test on e-marketing tool use across business sectors are that all the industries fall under one homogeneous category ($\alpha = 0.05$), and hence there are no statistically significant variations at the adoption level. The means rise consecutively from Wholesale/Retail Trade (2.00) and Manufacturing (2.05) at the lower side to Food/Agriculture (2.74) at the higher side, but the variations are not statistically significant. The trend suggests relatively uniform e-marketing adoption across industries, though the Services Industries (2.50) and Food/Agriculture (2.74) being higher can be viewed as suggesting slightly higher digital usage across these customer-focused industries. Notably, even the more traditionally less digital sectors like Manufacturing and Construction suggest comparable usage levels, which indicates that e-marketing is now a generally adopted method regardless of industry type. The small sample size for Wholesale/Retail Trade (N=3) limits inferences about this specific industry, but outcomes overall confirm that e-marketing tools have achieved broad penetration across different business domains without significant sectoral difference.

Conclusion

This study explored the uneven adoption of digital technologies across different business sectors and gender groups, providing valuable insights into contemporary workplace technology trends. The findings reveal that while gender disparities in technology usage are minimal overall, a significant difference exists in laptop adoption, with male employees reporting higher usage than their female counterparts. This suggests that while digital gender gaps may be narrowing in many areas, certain tools still exhibit unequal utilization, possibly due to differences in job roles, access, or organizational culture. Addressing these discrepancies through targeted training and equitable resource allocation could further bridge remaining divides.

At the sectoral level, the study highlights stark contrasts in technology adoption. Industries such as construction and utilities rely more on traditional communication tools like fixed telephones, while service-oriented sectors lead in mobile, internet, and social media usage. Surprisingly, wholesale and retail trade emerged as the least digitally engaged sector, indicating potential gaps in digital transformation strategies. Meanwhile, e-commerce and e-marketing tools show relatively uniform adoption across industries, suggesting that these technologies have become essential regardless of sector. These findings underscore the need for tailored digital strategies that consider industry-specific operational demands and workforce dynamics. The study's limitations, including gender imbalance in the sample and small subgroup sizes in certain sectors (e.g., wholesale/retail trade), call for cautious interpretation. Future research should expand sample diversity to validate these trends and explore underlying causes—such as organizational policies, skill gaps, or economic constraints—that influence technology adoption. Additionally, qualitative studies could provide deeper insights into user experiences and barriers that quantitative data alone may not capture.

Ultimately, this research contributes to the broader discourse on digital transformation by highlighting persistent disparities and evolving trends in business technology usage. The results emphasize the importance of sector-specific and gender-inclusive approaches to digital adoption, ensuring that businesses leverage technology effectively to enhance productivity, competitiveness, and equitable workplace practices. Policymakers, industry leaders, and technology providers can use these insights to design targeted interventions that foster inclusive and efficient digital growth across all sectors of the economy.

References

Attah, R. U., Garba, B. M. P., Gil-Ozoudeh, I., & Iwuanyanwu, O. (2024). Strategic frameworks for digital transformation across logistics and energy sectors: Bridging technology with business strategy. *Open Access Res J Sci Technol*, *12*(02), 070-80. https://doi.org/10.53022/oarjst.2024.12.2.0142

Caliskan, A., Eryilmaz, S., & Ozturkoglu, Y. (2025). Investigating the effects of barriers and challenges on Logistics 4.0 in the era of evolving digital technology. *Journal of Modelling in Management*, *20*(3), 949-973. https://doi.org/10.1108/JM2-01-2024-0026

Leso, B. H., Cortimiglia, M. N., & Ghezzi, A. (2023). The contribution of organizational culture, structure, and leadership factors in the digital transformation of SMEs: a mixed-methods approach. *Cognition, Technology & Work*, *25*(1), 151-179.

Mahat, D., Karki, T. B., Neupane, D., Shrestha, D. K., & Shrestha, S. (2024). Decolonization in Focus: A Bibliometric Analysis of Scientific Articles from 2010 to 2023. *Nepal Journal of Multidisciplinary Research*, *7*(1), 1-21.

Mahat, D., Neupane, D., & Shrestha, S. (2024). Advancing Self-Esteem Research in Business, Management, and Accounting: A Bibliometric Analysis of the Last Decade (2015-2024). *Journal of Logistics, Informatics and Service Science*, *9*(11), 138-161.

Nawaz, M. K., Eltweri, A., Abbas, K., Al-Karaki, W. E., Edghiem, F., Foster, S., & Adali, M. (2025). Public Sector Transformation in Emerging Economies: Factors Affecting Change Adoption in Pakistan. *Administrative Sciences*, *15*(4), 126. https://doi.org/10.3390/admsci15040126

Neupane, D., Mahat, D., Shrestha, S. K., & Karki, T. B. (2025). Reckoning the student perspectives on the educational environment: An in-depth analysis using the Dundee Ready Education Environment Measure in the management discipline. *Humanities and Social Sciences Letters*, *13*(1), 301-312.

Neupane, D., & Lourdusamy, A. (2024). Bibliometric Analysis of Human Aggression Research: Trends, Collaborative Networks and Emerging Themes in the Last Decade. *International Journal of Atharva*, *2*(2), 10-23.

Shrestha, S. K., Mahat, D., Neupane, D., & Karki, T. B. (2025). E-wallet usage and customer purchase intention: Understanding the mediating role of shopping satisfaction and E-wallet structure. *Multidisciplinary Reviews*, *8*(3), 2025091-2025091.

Singh, S., & Vijay, T. S. (2024). Technology roadmapping for the e-commerce sector: A text-mining approach. *Journal of Retailing and Consumer Services*, *81*, 103977. https://doi.org/10.1016/j.jretconser.2024.103977

Wagle, N., Neupane, D., Nyaupane, N. P., & Timalsena, C. (2024). Compassionate Care: Exploration of the Nurse-Patient Relationship and Behavioral Dynamics in Healthcare Settings. *International Journal of Atharva*, *2*(1), 65–77. https://doi.org/10.3126/ija.v2i1.63476