The adoption of digital technology by subcontracting manufacturing companies in Algeria: Issues, benefits, and challenges

DERMECHI Feriel*

National Higher School of Statistics and Applied Economics, Koléa, Tipaza-Algeria

dermechi.feriel@enssea.edu.dz

ZAKANE Ahmed

Research Center for Applied Economics for Development (CREAD), Bouzareah-Algeria

a.zakane@gmail.com

Received: 04/02/2025 Accepted: 21/04/2025 Published: 04/06/2025

Abstract

This study examines the adoption of digital technologies by subcontracting manufacturing companies in Algeria, focusing on associated issues, benefits, and challenges. A random sample of 102 companies was surveyed using an online structured questionnaire covering company characteristics, digital technology use, and performance indicators. The results indicate that most subcontracting manufacturing companies gradually integrate digital technologies, such as e-commerce platforms and supply chain management systems. This adoption enhances operational efficiency, optimises resource management, and reduces production costs. However, certain challenges remain, particularly the high initial investment costs and the lack of digital skills among employees, which slow down their full integration into production and management processes.

Keywords: digital technologies; subcontracting manufacturing companies; Algeria; questionnaire.

Jel Classification Codes : L23 ; O55 ; C81.

*Corresponding author.

1. Introduction:

The rise of digital technologies has become a major driver of transformation in the global industrial landscape, including Algeria. In this context, subcontracting manufacturing firms, which occupy a strategic position within the national industrial value chain, are increasingly required to integrate information and communication technologies (ICT) to enhance their performance. The adoption of these technologies presents a significant opportunity to improve operational efficiency, optimise resource management, and strengthen firms' competitiveness. However, this transition also entails considerable challenges, including high investment costs, organisational resistance to change, and a lack of digital skills among employees.

From this perspective, it is crucial to assess the impact of digital technology adoption on the performance of subcontracting manufacturing firms in Algeria. The central research question, therefore, focuses on evaluating the contribution of ICT to enhancing the organisational, economic, and operational performance of these firms. The primary objective of this study is to identify the key benefits and constraints associated with digital technology integration and to formulate recommendations aimed at optimising its adoption within the subcontracting manufacturing sector. Three main hypotheses are examined:

- **H1:** The adoption of digital technologies significantly enhances the operational efficiency of subcontracting manufacturing firms in Algeria.
- **H2:** The major advantages of this adoption include improved resource management, reduced production costs, and an increased capacity to meet market demands.
- **H3:** The main barriers to this transition include the high cost of technologies, organisational resistance to change, and the lack of digital skills among employees.

To test these hypotheses, a survey was conducted on a random sample of 102 subcontracting manufacturing firms in Algeria. Data were collected through a structured online questionnaire covering firm characteristics, digital technology usage, and performance indicators.

The findings of this research will provide a comprehensive understanding of the current dynamics of digital transformation in Algeria's subcontracting manufacturing sector. By identifying both the opportunities and obstacles associated with this transition, the study will propose practical recommendations to help firms overcome barriers and maximise the benefits of digital technology adoption.

The remainder of the paper is structured as follows: Section 2 presents a literature review covering the theoretical and empirical foundations of ICT adoption in the manufacturing sector. Section 3 details the empirical methodology employed. Section 4 outlines the results of the statistical analysis, followed by a discussion of their implications in Section 5. Finally, Section 6 summarises the study's key findings and proposes directions for future research.

2. Literature review

The adoption of information and communication technologies (ICT) in the manufacturing sector has been extensively studied over the years. This literature review presents a selection of significant studies, as follows:

Porter & Millar (1985) were among the first to examine the impact of information technology on business competitiveness. Their study demonstrated that digital technologies can transform industrial structures and provide significant competitive advantages.

Brynjolfsson & Hitt (1996) analysed the relationship between ICT investments and firm productivity. Their analysis revealed that firms investing in ICT experience substantial productivity gains. They emphasised the importance of complementary investments in human capital and organisational restructuring.

Dedrick et al. (2003) conducted a comparative study on the impact of ICT on productivity across various countries. They found that manufacturing firms in developed countries benefit more from ICT due to better infrastructure and digital skills.

Melville et al. (2004) proposed a conceptual framework to understand the impact of ICT on business performance. Their study showed that ICT positively influences organisational performance by enhancing process efficiency and facilitating innovation.

Hitt & Brynjolfsson (2007) expanded on their previous research and found that firms combining ICT investments with appropriate organisational changes benefit from greater productivity gains. They highlighted the importance of aligning ICT strategically with organisational objectives.

Aral et al. (2012) examined the impact of ICT on business performance using longitudinal data. Their study showed that ICT use is associated with better financial performance, but this effect is moderated by the firm's ability to integrate these technologies into its operational processes.

Kohli & Grover (2008) explored how ICT can be a source of sustainable competitive advantage. They found that firms that succeed in aligning their ICT strategies with their business strategies achieve better performance.

Ghobakhloo et al. (2011) studied SMEs in Malaysia and found that adopting ICT enables firms to reduce costs, improve product quality, and increase their responsiveness to market demands.

Bharadwaj et al. (2013) examined the implications of ICT for business models and firm performance. Their study revealed that firms integrating ICT into their business strategies can improve their innovation and operational efficiency. Tambe (2014) explored the impact of big data on productivity in manufacturing firms. He found that companies investing in big data analytics achieve substantial productivity gains.

Chin et al. (2016) investigated the impact of big data technologies and data analytics on business performance. Their research showed that using big data can improve decision-making processes and enhance operational efficiency.

Raguseo (2018) investigated how ICT adoption affects the performance of manufacturing SMEs. His study revealed that ICT enhances SMEs' innovation capacity and responsiveness to market changes. Li et al. (2018) studied the effects of digital technologies on the performance of Chinese manufacturing firms. Their research showed that adopting digital technologies is associated with significant improvements in productivity and product quality.

Frank et al. (2019) examined the impact of Industry 4.0 technologies on the performance of Brazilian manufacturing firms. Their study demonstrated that adopting these technologies leads to significant increases in productivity and competitiveness. Wang & Hajli (2022) studied how ICT influences supply chain management in manufacturing firms. Their research showed that the use of ICT enhances supply chain coordination and efficiency.

Liu & Yang (2023) analysed the impact of digital transformation on the performance of Chinese manufacturing firms post-pandemic. Their study revealed that firms that adopted digital technologies fared better in coping with supply chain disruptions and achieved a faster recovery.

These studies highlight various aspects of ICT adoption in the manufacturing sector and underscore the importance of strategic alignment, complementary investments, and organisational change management to maximise the benefits of digital technologies.

3. Methodology

The methodology adopted is based on conducting a survey through a questionnaire, followed by the implementation of two complementary statistical approaches: univariate analysis and bivariate analysis. These analyses are carried out through a sequence of precise methodological steps, outlined below.

3.1. Survey through a questionnaire

This study is based on a questionnaire designed to analyse the adoption of digital technologies within subcontracting manufacturing companies in Algeria. The questionnaire consists of fifteen items, organised into three distinct sections. Each item employs a five-point Likert scale, allowing respondents to indicate their level of agreement or disagreement with the statements provided. This scale serves as a tool to continuously measure the perceptions and behaviours of Algerian manufacturing companies (Porter, 2001).

3.2. Sampling and data collection

The sample analysed consists of 102 subcontracting companies operating in the manufacturing sector. The selection criteria include i) small or medium-sized enterprises, ii) belonging to the manufacturing sector, and iii) having access to various information and communication technologies (ICT).

3.3. Data analysis

The primary aim of this study is to examine the impact of digital technologies on the performance of subcontracting manufacturing firms. According to Fink and Seev (2009), the use of linear regression is particularly well-suited for this analysis. In order to draw reliable conclusions, the collected data requires a thorough analysis through a series of statistical tests.

- **Reliability test:** The internal consistency of the questionnaire is assessed using Cronbach's α coefficient. which is defined by the following formula:

$$\alpha = \frac{N.\bar{c}}{\bar{v} + (N-1).\bar{c}}$$

- Nthe number of items; $\bar{c}$ the average variance of item scores, and $\bar{v}$ the total variance of scores.

-**Association test:** The strength of the association between categorical variables is assessed using Cramér's V coefficient, defined by:

$$V = \sqrt{\frac{\chi^2}{n.\min(r-1, c-1)}}$$

- χ2 the chi-square statistic; n the total sample size; r the number of categories in one variable; c the number of categories in the other variable.

4. Results

4.1. Univariate analysis

The table 1 presents the distribution of participating companies based on their turnover.

Table N°1: Distribution of the sample by turnover

	Frequency	Percentage	Valid %	Cumulative%
< 30 million DZD	25.7	25.7	25.7	26
30 - 350 million DZD	69.0	43.4	43.4	46
> 350 million DZD	100.0	31.0	31.0	30
Total	102	100	100	

Source: Compilation by the authors from the outputs of SPSS. Note: according to the European Commission Classification: Recommendation 2003/361/EC of 6 May 2003.

The sample of subcontracting manufacturing companies reveals a diversity of economic sizes. Specifically, 25.7% of these companies report a turnover of less than 30 million DA, indicating a predominance of microenterprises within the sample. The majority of companies (43.4%) fall within an intermediate range, between 30 and 350 million DA, suggesting that these companies are predominantly small in size. Finally, a significant portion of 31% exceeds a turnover of 350 million DA, highlighting the presence of medium-sized enterprises within this group.

The reliability analysis, assessed using Cronbach's alpha coefficient (0.83), indicates that the questionnaire employed in this study demonstrates adequate internal consistency for measuring the relevant variables. This value suggests that the instrument is reliable and capable of producing consistent and reproducible results. Therefore, it can be concluded that the data collection tool provides a high level of quality for the study's objectives.

The possible intervals on the Likert scale for the frequency of digital technology usage are defined by a total range of 4 points, from 1 to 5. The average range, calculated on this scale, is 0.8, which allows for the measurement of the intensity of digital technology usage among the subcontracting companies in the sample. The general trend of the sample members is obtained as follows:

Table N°2: Mean interval and scale

	[4.2 – 5[	[3.4 - 4.2[	[2.6 - 3.4[	[1.8 - 2.6[	[1 - 1.8[
Scale	Very often	Often	Sometimes	Rarely	Never

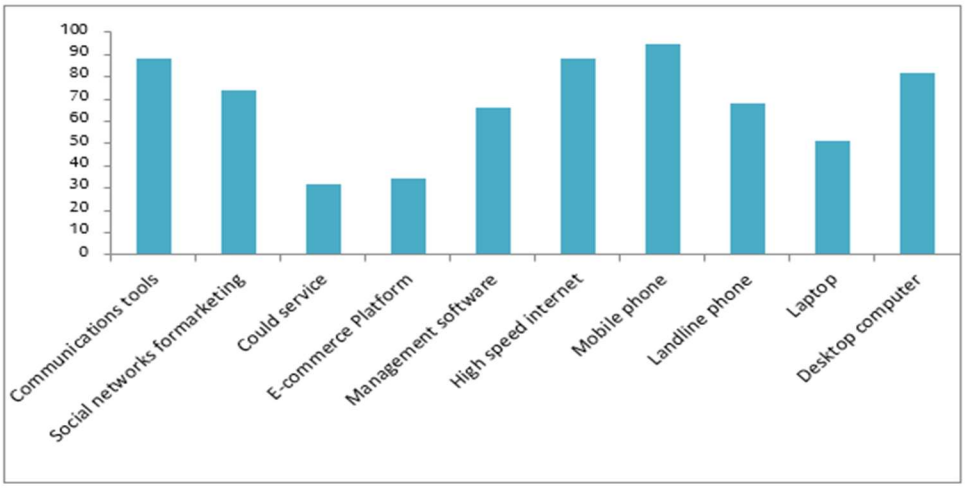
Source: Authors' compilation

The analysis of the frequency of digital technology adoption within manufacturing companies reveals notable disparities. Among the digital tools, desktop computers dominate, with 78% of companies using them. Mobile phones and internet access are also widely adopted, with 90% and 88% of companies using them frequently, respectively.

In contrast, management software is employed by 64% of companies, indicating more moderate adoption. Other tools, such as laptops and cloud services, show less homogeneous usage, with varying frequencies of use. E-commerce platforms and landline phones experience low adoption, with 44% and 43% of companies never using them, respectively.

Furthermore, social media, used as marketing and communication tools, displays intermediate adoption levels, with respective averages of 4.02 and 3.84, suggesting moderate adoption across companies.

Fig N°1: **Distribution of ICT Usage in Manufacturing Companies**



Source: Authors' compilation.

The assessment of staff competency in the use of ICT is presented in table 3:

Table N°3: Mean interval and scale

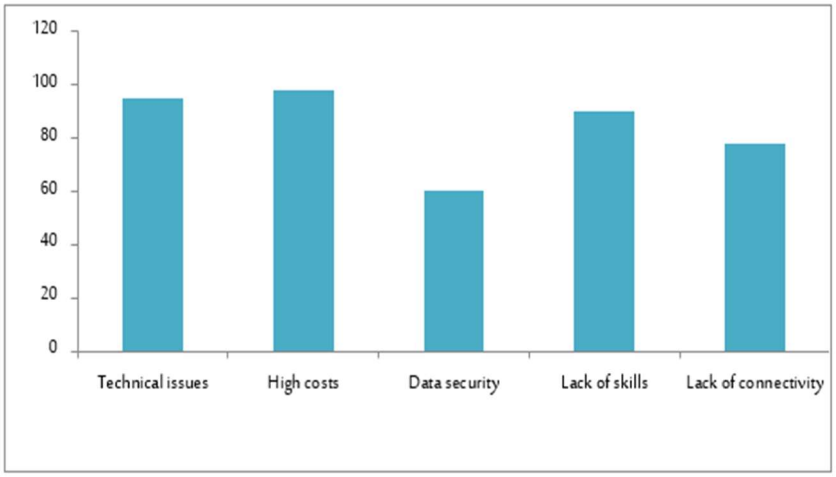
	[4.2 – 5[	[3.4 - 4.2[	[2.6 - 3.4[	[1.8 - 2.6[	[1 - 1.8[
Scale	Very High	High	Moderate	Low	Very low

Source: Authors' compilation.

The assessment of employees' digital competencies (Table 3) reveals a high level of proficiency in fundamental tools. A majority demonstrate strong competence in desktop computers (50%), laptops (52%), mobile phones (60%), and high-speed internet (61%). However, proficiency in specialised technologies, such as e-commerce platforms (55%) and cloud services (67% reporting low competence), is considerably weaker. The overall trend indicates solid mastery of basic tools but highlights the need for additional training in advanced digital technologies.

The contribution of digital technology to performance improvement is substantial, particularly in key areas. Operational efficiency has seen a "strong" improvement in 86% of responses. Both internal communication and external communication with clients and suppliers recorded a "very strong" impact, with 92% of responses. Similarly, service and product quality have improved, while decision-making was reported to have a "very strong" impact in 78% of responses.

Fig N°2: Obstacles to ICT adoption for subcontracting manufacturing companies



Source: Authors' compilation.

Overall, the mean impact of ICT estimated to be nearly 5, indicating a broadly positive effect across these aspects. However, ICT adoption remains limited due to high costs, technical issues, and internal skill shortages. Additionally, data security and non-connectivity with clients and suppliers pose challenges, though these are less critical.

4.2. Bivariate analysis

We analyse the relationship between revenue and the annual budget allocated to ICT under the null hypothesis.

Table N°4: relationship between revenue and the annual budget allocated to ICT

	Total	>20%	11 - 20%	5 - 10%	< 5%
< 30 million DZD	31	1	6	12	12
30 - 350 million DZD	40	0	12	21	7
> 350 million DZD	31	3	12	10	6
Total	102	4	30	43	25

Source: Compilation by the authors from the outputs of SPSS.

The analysis of ICT budget allocation among manufacturing subcontracting companies reveals consistent spending patterns across different revenue categories. Firms with an annual turnover below 20 million DZD typically dedicate between 5% and 10% of their budget to ICT. Similarly, companies generating between 20 and 250 million DZD allocate a comparable share, though some invest up to 20%, with none exceeding this threshold. For businesses with revenues above 250 million DZD, the majority maintain an allocation of 5% to 10%, while a notable share spends between 11% and 20%. Only a small fraction of these larger firms surpass the 20% mark in ICT expenditure.

Table N°5: Chi-Square test

	Value	ddl	Exact Significance[(a)]	Exact Significance[(a)]	Asymptotic Significance[(b)]
Fisher	15,465	6		0.007	
Pearson	16,826*	6	0.008	0.006	
Linear association	6,122	1	0.015	0.015	0.008

Source: Authors' compilation from the outputs of SPSS *: 3 cells (25%) have an expected count less than 5%.

The minimum expected count is 1.28. The standardised statistic is 2.4.[(a)]: Two-tailed; [(b)] one-tailed.

Statistical tests indicate a significant relationship between ICT budget allocation and company revenue. Both the Pearson and Fisher tests confirm this association, as their results fall within the threshold of statistical significance. Consequently, the hypothesis suggesting a link between revenue and ICT expenditure is supported.

Table 6 presents the test results concerning the operational efficiency of ICT, testing the null hypothesis that ICT has not significantly improved operational efficiency.

Table N°6: Chi-Square test for operational efficiency and ICT

	Value	ddl	Prob.
Pearson	289,82*	138	0.000
Linear association	46,89	1	0.000

Source: Authors' compilation from the outputs of SPSS. * Idem

The p-value of 0 is less than the 5% significance threshold, indicating that we reject the null hypothesis. There is therefore a statistically significant association between operational efficiency and ICT.

Table N°7: Cramér's *V* test for operational efficiency and ICT

	Value	Prob.
Phi	1.412	0.000
Cramer's V	0.945	0.000

Source: Authors' compilation from the outputs of SPSS.

The Cramér's V value of 0.945 indicates a nearly perfect association between ICT use and operational efficiency, with a statistically significant p-value of 0.000. Similarly, these tests are applied to the null hypothesis: "ICT has not significantly contributed to the improvement of product and service quality."

The p-value of 0.00 is less than the significance level of 5%, indicating that we reject the null hypothesis. Thus, ICT has significantly contributed to the improvement of product and service quality in manufacturing companies in Algeria.

Table N°8: Cramér's *V* test for product and service quality and ICT

	Value	Prob.
Phi	1.387	0.000
Cramer's V	0.861	0.000

Source: Authors' compilation from the outputs of SPSS.

The Cramér's V value is 0.861, indicating a very strong association between the use of ICT and product and service quality. The p-value of 0.000 confirms that this association is statistically significant.

4.3. Econometrics modelling

This regression model 1 (Table 9) demonstrates that advancements in information and communication technologies (ICT) significantly enhance performance, with statistically significant coefficients confirming this positive impact.

We then examine the relationship between the percentage of the annual budget allocated to ICT by manufacturing subcontracting firms and performance, testing the null hypothesis that the ICT budget percentage does not significantly affect performance.

Table N°9: Model 1 estimation

	Coefficient	t-statistic
C	1.377	8.140**
ICT	0.152	7.202**

Source: Compilation by the authors from the outputs of SPSS. ** Significant at 5%.

The coefficient for the percentage of the annual budget allocated in model 2 to ICT is 0.152, indicating that a one percentage-point increase in this budget correlates with an average performance increase of 0.152 units. This significant positive relationship suggests that higher investment in Information and Communication Technologies (ICT) in manufacturing subcontractor firms leads to measurable improvements in performance across various aspects.

Table N°10: Model 2 estimation

	Coefficient	t-statistic
C	3.386	18.466**
ICT	0.152	3.562**

Source: Compilation by the authors from the outputs of SPSS. ** Significant at 5%.

5. Discussion

The adoption of Information and Communication Technologies (ICT) by subcontracted manufacturing companies in Algeria involves distinct challenges, benefits, and barriers. A study conducted with 102 companies, combined with linear regression analysis, provides a deeper understanding of the relationship between ICT usage and business performance.

The challenges associated with ICT adoption primarily stem from insufficient mastery of digital tools. Contributing factors include inadequate training, insufficient technological infrastructure, and high implementation costs (Khemili & Belloumi, 2018). Additionally, strict regulations and security concerns, particularly within certain sectors, present further obstacles to ICT adoption (Chin et al., 2016).

On the other hand, the advantages of ICT usage are demonstrated by the survey results. The adoption of these technologies enhances business performance, especially in terms of production and service delivery. These findings align with existing literature, highlighting the ability of ICT to improve operational efficiency, reduce production costs, and enhance product and service quality (Higon, 2012). Specifically, an increase in annual ICT budgets correlates with improvements in business performance, suggesting that investments in digital technologies lead to significant productivity gains and enhanced competitiveness (Higon, 2012).

However, certain sectors experience underutilisation of ICT, often due to industry-specific characteristics. Sectors subject to strict regulations or those with security concerns are often reluctant to adopt more advanced technologies (Hertog, 2010). Furthermore, established business practices and organisational habits may hinder ICT adoption and technological innovation (Tornatzky & Klein, 1982).

Finally, significant disparities exist in ICT adoption across sectors. While the surveyed companies widely use basic ICT, the adoption of more complex technologies varies considerably, influenced by sector-specific characteristics and the individual needs of businesses. Research indicates that to maximise the benefits of ICT, adoption strategies must be tailored to the particularities of each sector. Companies in less regulated industries tend to adopt new technologies more quickly than those in highly regulated sectors.

6. Conclusion

The findings of this study underscore the critical role of digital technology adoption in improving the performance of subcontracting manufacturing companies in Algeria. While fundamental digital tools are widely used, disparities persist in the adoption of advanced technologies, largely due to limited technical expertise, sector-specific constraints, and uneven investment in ICT. Moreover, statistical analysis confirms a significant relationship between company revenue and ICT budget allocation, suggesting that financial capacity influences technological integration.

To address these challenges, a multifaceted approach is necessary. First, targeted training programmes should be developed to enhance employees' digital competencies, particularly in specialised tools such as cloud computing and e-commerce platforms. Second, financial and institutional support mechanisms should be reinforced to facilitate ICT investment, especially for small and medium-sized enterprises. Additionally, fostering a culture of technological innovation through partnerships between industry stakeholders, research institutions, and policymakers could accelerate digital transformation.

Ultimately, a strategic and coordinated effort is essential to bridge the digital gap and enable Algerian subcontracting firms to fully leverage technology for competitiveness and long-term growth.

7. List of references

1. Aral, S., Brynjolfsson, E., & Wu, L. (2012). Three-way complementarities: Performance pay, human resource analytics, and information technology. Management Science, 58(5), 913-931. https://doi.org/10.1287/mnsc.1120.1440
2. Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013). Digital business strategy: Toward a next generation of insights. MIS Quarterly, 37(2), 471-482.
3. Brynjolfsson, E., & Hitt, L. M. (1996). Productivity, business profitability, and consumer surplus: Three different measures of information technology value. MIS Quarterly, 20(2), 121-142. https://doi.org/10.2307/249475
4. Chin, W. W., Thatcher, J. B., Wright, R. T., & Steel, D. (2016). Controlling for common method variance in PLS analysis: The measured latent marker variable approach. New Perspectives in Partial Least Squares and Related Methods, 231-239.
5. Dedrick, J., Gurbaxani, V., & Kraemer, K. L. (2003). Information technology and productivity: A review of the literature. Journal of Information Technology, 18(3), 157-177. https://doi.org/10.1057/palgrave.jit.2000039
6. Frank, A. G., Dalenogare, L. S., & Ayub, N. D. (2019). Industry 4.0 technologies: Impact on manufacturing performance. Journal of Manufacturing Technology Management, 30(8), 1381-1402.https://doi.org/10.1108/JMTM-09-2018-0324.

7. Fink, L., & Seev, N. (2009). Exploring the Perceived Business Value of the Flexibility Enabled by Information Technology Infrastructure. Information & Management, 46(2), 90-99.
8. Ghobakhloo, M., Sabouri, M. S., Hong, T. S., & Zulkifli, N. (2011). Information technology adoption in small and medium-sized enterprises; An appraisal of two decades literature. Interdisciplinary Journal of Research in Business, 1(7), 53-80.
9. Hertog, P. D. (2010). Managing service innovation: Firm-level dynamic capabilities and policy options. Innovation and Sectoral Dynamics, 2010.
10. Hitt, L. M., & Brynjolfsson, E. (2007). The IT productivity gap: A new look. Business Economics, 42(1), 14-22.
11. Higon, D. A. (2012). The impact of ICT on innovation activities: Evidence for UK SMEs. International Small Business Journal, 30(6), 684-699.
12. Khemili, H., & Belloumi, M. (2018). Investigating the impact of ICT on environmental quality in MENA countries. Environmental Science and Pollution Research, 25(26), 25869-25880. https://doi.org/10.1007/s11356-017-0825-1.
13. Kohli, R., & Grover, V. (2008). Business value of IT: An essay on expanding research directions to keep up with the times. Journal of the Association for Information Systems, 9(1), 23-39.
14. Li, L., Chen, Z., & Zhang, C. (2018). The impact of digital technology on firm performance: Evidence from Chinese manufacturing firms. Technological Forecasting and Social Change, 130, 208-218.https://doi.org/10.1016/j.techfore.2017.11.019
15. Liu, Y., & Yang, X. (2023). The impact of digital transformation on the performance of manufacturing firms in the post-pandemic era: Evidence from China. Technological Forecasting and Social Change, 186, 122138.https://doi.org/10.1016/j.techfore.2022.122138.
16. Marquardt, D. W. (1970). Generalized inverses, ridge regression, biased linear estimation, and nonlinear estimation. Technometrics, 12(3), 591-612.
17. Melville, N., Kraemer, K., & Gurbaxani, V. (2004). Information technology and organizational performance: An integrative model of IT business value. MIS Quarterly, 28(2), 283-322.
18. Pearson, K. (1896). Mathematical Contributions to the Theory of Evolution. III. Regression, Heredity, and Panmixia. Philosophical Transactions of the Royal Society of London. Series A, Containing Papers of a Mathematical or Physical Character, 187, 253-318.
19. Porter, M. E., & Millar, V. E. (1985). How information gives you competitive advantage. Harvard Business Review, 63(4), 149-160.
20. Porter, M. E. (2001). Strategy and the Internet. Harvard Business Review, 79(3), 63-78.

21. Raguseo, E. (2018). The role of ICT in the innovation of small and medium-sized enterprises: A review and research agenda. International Journal of Innovation Management, 22(2), 1850014.https://doi.org/10.1142/S1363919618500143.
22. Shapiro, S. S., & Wilk, M. B. (1965). An analysis of variance test for normality (complete samples). Biometrika, 52(3/4), 591-611.
23. Tambe, P. (2014). Big data, data science, and productivity: A review of the literature. Journal of Operations Management, 36(2), 75-92.https://doi.org/10.1016/j.jom.2014.05.001.
24. Tornatzky, L. G., & Klein, K. J. (1982). Innovation characteristics and innovation adoption-implementation: A meta-analysis of findings. IEEE Transactions on Engineering Management, (1), 28-45.
25. Wang, Y., &Hajli, N. (2022). Exploring the impact of ICT on supply chain management: A review and future research directions. International Journal of Production Research, 60(8), 2369-2392.https://doi.org/10.1080/00207543.2021.1937040.

8. Appendices

Table N° 11 : Validation tests

Test	Shapiro-Wilk test	Multicollinearity
Model 1	0.977	Annual ICT budget allocation: VIF = 2.1; Company Size: VIF = 1.9 Number of Employees: VIF = 2.0; ICT: VIF = 2.2
Model 2	0.623	Annual ICT budget allocation: VIF = 2.1; Company Size: VIF = 1.9 Number of Employees: VIF = 2.0; ICT: VIF = 2.6

Source: Compilation by the authors from the outputs of SPSS.

Table N° 11: List of subcontracting manufacturing companies for the questionnaire survey

Sarl Eurl AAM Métal
· EurlAissatech
· SarlMetalux
· EurlFermal
· SarlMecalim
· EurlSoudmetal
· SarlAgroindustrie Soumeya
· EurlPlastech
· Sarl Electro-Mec
· EurlTecnomat
· SarlMecatel
· Eurl El Baraka
· SarlTechnoplast
· EurlMecanindus
· Sarl Sideral
· EurlProdec
· SarlIndustech
· Eurl Metagroup
· SarlElectromet
· EurlTechnofer
· SarlPlastal
· EurlMecatrans
· Sarl Ferinox
· EurlPromet
· SarlMetaconcept
· EurlIndusfer
· EurlElectromax
· SarlSoudelec
· EurlTechnoelec
· SarlMecafer
· EurlIndustech
· SarlFerindus
· SarlTechnofer
· EurlMecatec
· SarlPlasmetal
· EurlElectroplast
· SarlSoudmax
· EurlTechnomet
· SarlMecaindus
· Sarl Fermat
· EurlProindus
· SarlTechnoelec
· SarlPlastinox
· EurlElectrosoud
· SarlSoudtech
· EurlTechnomat
· SarlMecaelec
· EurlIndusmax
· SarlFerplast
· EurlPromatec
· EurlMecaplast
· EurlElectroindus
· EurlMecaIndustrie
· SarlPlastFer
· EurlElectroMeca
· SarlSoudIndus
· EurlTechniFer
· SarlMecaSoud
· EurlProPlast
· SarlTechnoIndus
· EurlMecaTech
· EurlTechnoFab
· SarlMecaFab
· EurlIndusMeca
· SarlFerTech
· EurlProTech
· EurlMecaIndus
· SarlPlastTech
· EurlTechniMeca
· EurlIndusFab
· SarlFerFab
· EurlElectroTech
· EurlTechniPlast
· EurlTechnoMec
· EurlProMeca
· SarlTechnoMec
· EurlPrometal
· SarlTechnosoud
· SarlTechnomax
· EurlMecafab
· SarlPlastimet
· EurlElectrofer
· SarlSoudplast
· EurlTechnoindus
· SarlMecatech
· EurlIndusmetal
· SarlSoudinox
· EurlIndusplast
· SarlFermet
· EurlProfer
· EurlMecaplus
· SarlPlastindus
· SarlAlgiPlast
· EurlMetalfab
· EurlMecamat
· SarlPlastech
· EurlFerroplast
· SarlSoudFab
· EurlTechnico
· SarlMecaPlast
· SarlElectroMeca
· SarlFermax