Optimizing Small To Medium Enterprises Performance With Technological Innovations: Strategies Learned In The New Normal

John Joseph T. Tabang
Rizal Technological University

Small to Medium Enterprises (SBs) make up 95% of global for-profit organizations and provide over 50% of jobs, especially for individuals with lower educational qualifications. During the pandemic, 75% of SBs faced closure, but those that survived used five key technological innovations to stay competitive. This study investigates the use of these innovations among SBs in Metro Manila and their relationship to business performance in the new normal of 2024. A survey based on the Implementation-Process Assessment Questionnaire (IPAQ) was distributed to 150 small businesses. The results revealed that 31% of respondents have operated for 1-5 years, and 43% have 2-5 employees. The majority (46%) conduct business both online and onsite, with 37% providing services. Businesses that used more technology showed a small positive relationship (0.22) with performance. The implementation of multiple technologies improved performance by 46%, supporting SMEs in expanding both physically and digitally, and enhancing product offerings with third-party technology integration.

Keywords: technological innovation, small to medium enterprise, business performance

INTRODUCTION

Small to Medium Enterprises (SMEs) are crucial contributors to the global economy, providing employment opportunities and contributing significantly to national progress. In 2024, SMEs account for over 55% of job creation globally, particularly benefiting individuals with lower educational qualifications. In developing countries, they contribute around 45% of GDP. However, the COVID-19 pandemic severely impacted SMEs, revealing vulnerabilities in risk management and digital preparedness. As of 2023, approximately 30% of SMEs in the U.S. that closed during the pandemic have either reopened or evolved into new ventures, while Europe, Africa, and Asia have seen slower recoveries, with many struggling to adapt to post-pandemic realities (WBI, 2021).

Businesses that managed to survive the pandemic did so by integrating a minimum of five technological innovations: data analytics, formed strategic partnerships, shifted to remote operations, enhanced digital security, and integration of technology at every value access point (HBR, 2021). The Pew research center indicates that in 2025, SMEs will face another New normal, one that makes the use of Artificial Intelligence as "normalized." The key lessons learned from thriving businesses during the pandemic and moving toward 2025 offer valuable strategies for SMEs that are still rebuilding (Pew Research , 2024). In Metro Manila, many SMEs have yet to fully adopt these innovations, creating a research gap in understanding the role of technology in their sustainability under the New Normal (DTI, 2023).

Rationale

To support economic recovery and growth by the end of 2024, SMEs must leverage technology to scale and compete with larger enterprises. By doing so, they can strengthen their ability to innovate, contribute to local job creation, and drive national progress. The researcher, having experienced challenges during the pandemic, aims to identify practical, technology-driven business strategies that can empower SMEs to succeed in the post-pandemic economy.

Theoretical Framework

SMEs are privately owned enterprises with fewer employees and lower annual revenue compared to larger counterparts. They are predominantly in the professional and technical service industry, construction, real estate and rental, retail trade, and administrative support. In the Philippines, almost 90% of SMEs are e-commerce retail, with most transitioning online, telehealth services, and digital solutions providers. The internet is the most critical innovation that has changed the business landscape, particularly web 2.0, allowing SMEs to analyze customer needs and create shared value systems. However, TI for risk management and digitization is not common among SMEs, leading to closures during the COVID-19 pandemic (HBR, 2021) .

Technological Innovations (TI) include Technological Responsiveness (TR), User Safety (US), Technological Proactiveness (TP), Business Data Analysis (BDA), and Multiple Accessibility (MA). Businesses with two or more of these TI before COVID-19 were more likely to remain in business and grow. Machine learning advancements have further advanced BDA use and TP, and SMEs can use data to improve brand awareness and engagement.

In the Philippines, over 80% of SMEs have adopted some sort of technological innovation to improve processes, particularly customer experience. A survey by Epson Philippines found that 86% of respondents integrated TI into their processes, particularly in point of service. However, more work is still needed as some businesses do not necessarily translate to an online and remote counterpart (Epson, 2021).

Objective

This study aimed to investigate the role of technological innovations in helping SMEs in Metro Manila survive the pandemic and continue operating until 2025. Key questions included understanding the profiles of SMEs, their use of technologies like responsiveness, proactiveness, user safety, business data analysis, multiple accessibilities, and overall implementation, the relationship between business profile and technological innovations, and how business performance, measured by profitability, internal processes, customer service, and employee development, relates to technological innovation use.

METHODOLOGY

The study was conducted in the first half of 2024 and focused on SMEs owners in Metro Manila, including self-employed professionals, personal brands, sole proprietorships, partnerships of two, and organizations with fewer than 50 employees. The research employed a quantitative approach, using surveys and statistical analysis to explore existing theories. The study targeted SMEs in Metro Manila during the "new normal" period, starting in 2022 until the end of 2023.

The survey involved 150 respondents representing one SMEs, each representing one SMEs. Respondents were SMEs with 1 to 50 employees, offering goods or services locally or internationally, and operating through online, onsite, or hybrid models. The research instrument ensured participants' rights and was tested through a pilot survey.

Data collection was done online via Google Forms and social media. Descriptive statistics and weighted mean were used to analyze responses, with results presented in tables. The Likert scale was used to gauge agreement levels, and correlation techniques were applied to determine relationships between variables. Multiple regression analysis was conducted to identify potential predictive relationships between independent and dependent variables, helping to answer the study's specific research objectives.

RESULTS

Based from the survey and statistical analysis, the following are the results.

TABLE 1
BUSINESS PROFILES OF RESPONDENTS

Category	Variable	Frequency (F)	Percentage (%)
Years in Operation	Less than a year	24	16
	1-5 years	49	33
	6-10 years	43	29
	More than 10 years	34	22
Number of Employees	1 employee	42	28
	2-5 employees	65	43
	6-15 employees	36	24
	16-50 employees	7	5
Type of Business Platform	Onsite	48	32
	Online	33	22
	Both	69	46
Nature of Business	Goods	53	35
	Services	55	37
	Both	42	28

TABLE 2
TECHNOLOGICAL INNOVATIONS USED BY SMES IN METRO MANILA

Category	Variable	Weighted Mean	Interpretation
Technological Responsiveness	Finances	3.64	High
	Operations	3.74	High
	Skills and Techniques	3.71	High
	Customer Service	3.85	High
	Decision-Making	3.53	High
	Overall	**3.69**	**High**
Technological Proactiveness	Finances	3.33	Medium
	Operations	4.08	High
	Skill Development	3.71	High
	Customer Service	3.59	High
	Competitiveness	3.70	High
	Overall	**3.68**	**High**
User Safety	Financial Data Safety	3.66	High
	Operations/Store Safety	3.92	High
	Business Strategy Safety	3.57	High

	Customer Data Safety	3.61	High
	Stakeholder Physical Safety	4.21	Very High
	Overall	**3.79**	**High**
Business Data Analysis	Financial Data Analysis	3.32	Medium
	Input and Output Analysis	3.49	High
	Market Changes Analysis	3.38	Medium
	Customer Behavior Analysis	3.37	Medium
	Business Data Gathering	3.42	High
	Overall	**3.39**	**Medium**
Multiple Accessibility	Access to Payment Systems	4.40	Very High
	Access to Operations	3.69	High
	Access to Skill Development	3.54	High
	Customer Engagement Accessibility	3.82	High
	Business Information Accessibility	4.20	High
	Overall	**3.93**	**High**
Overall Technological Innovation	Technological Responsiveness	3.69	High
	Business Data Analytics	3.39	Medium
	User Safety	3.79	High
	Technological Proactiveness	3.68	High
	Multiple Accessibility	3.93	High
	Overall	**3.69**	**High**

TABLE 3
RELATIONSHIP BETWEEN PROFILE AND TECHNOLOGICAL INNOVATION

Profile Variables	Correlation Coefficient	Significance Value (Sig.)
Number of Years in Operation	r = 0.02	0.85
Number of Employees	r = 0.08	0.42
Type of Business Platform	r = 0.11	0.30
Nature of Business	r = 0.22	0.03

TABLE 4
OVERALL WEIGHTED MEAN OF RESPONDENT BUSINESSES' PERFORMANCE

Business Performance Indicator	Weighted Mean	Descriptive Rating	Verbal Interpretation
Profits Our technologies improve our revenue.	3.95	Agree	High
Profits Our technologies reduce our spending.	3.29	Neither Agree nor Disagree	Moderate
Process Our technologies improve our processes.	4.16	Agree	High
Process Our technologies reduce time to serve/produce.	4.01	Agree	High
Development Our technologies improve our skills.	4.03	Agree	High
Development Our technologies reduce our wastes/errors.	3.85	Agree	High
Customer Service Our technologies improve our customer service.	4.04	Agree	High

Customer Service Our technologies reduce customer loss.	3.18	Neither Agree nor Disagree	Moderate
Profits Our technologies improve our overall profitability.	4.31	Strongly Agree	Very High
Process Our technologies reduce idle time.	3.86	Agree	High
Overall Weighted Mean	3.87	Agree	High

TABLE 5
MULTIPLE REGRESSION ANALYSIS BETWEEN TECHNOLOGICAL INNOVATION AND BUSINESS PERFORMANCE

Variable	B	95% CI	β	t-stat	p-value
T. Responsiveness	0.29	0.07 to 0.34	0.29	2.64	0.01
T. Proactiveness	0.10	-0.06 to 0.13	0.10	1.23	0.22
User Safety	-0.26	-0.46 to -0.32	-0.26	-2.59	0.01
Business Data Analytics	0.26	0.03 to 0.32	0.26	2.29	0.02
Multiple Accessibility	0.32	0.11 to 0.29	0.32	3.04	0.003

ANALYSIS

Business Profiles of Respondents

The study reveals that 33% of small businesses in Metro Manila have been operating for 1-5 years, indicating a significant number of relatively young companies. However, 29% of businesses have operated for 6-10 years, many of which have successfully adapted to the "new normal" post-pandemic through technological innovation and business model adjustments. Most businesses employ between 2-5 people (43%), while 28% operate as sole proprietorships with only one employee. This reflects broader trends in automation and digital tools, which have allowed small businesses to streamline operations without needing large teams (Saura et al., 2019).

The majority of respondents (46%) operate both online and onsite, adopting a hybrid business model. This trend aligns with research noting that hybrid platforms became particularly common in 2022 as businesses sought flexibility in navigating both physical and digital markets. The data shows an almost even split between service providers (37%) and goods providers (35%) (Pereira et al., 2022; Carcido-Damasig & Damasig, 2022).

Technological Innovations Used by SMEs in Metro Manila

The respondents exhibit a high level of technological responsiveness, especially in customer service (3.85), which indicates a strong focus on adapting to the fast-changing needs of consumers in a post-pandemic environment. The lowest responsiveness is in decision-making (3.53), suggesting that while businesses may utilize technology to keep up with customer trends and operations, they could improve in integrating these tools into more strategic decisions (Fores, 2019).. Technological proactiveness is most pronounced in operations (4.08), showing that businesses are willing to adopt and develop specialized technologies to improve their operational efficiency. However, financial proactiveness lags behind (3.33), indicating that small businesses may find it more difficult or less necessary to create customized financial tools due to limited resources or expertise (Sahi et al., 2019)..

User safety technologies are well-integrated, with stakeholder physical safety scoring the highest (4.21). Financial data and business strategy safety scored slightly lower but still show high levels of integration, indicating a general prioritization of safety in technological practices (Bongiovanni, 2020).

The overall level of technological innovation in business data analysis is only moderate (3.39), with the highest focus on input and output analysis (3.49). Small businesses tend to focus more on immediate

operational data rather than leveraging it for deeper insights into finances and customer trends, possibly due to a lack of training or resources (Jin & Kim, 2019.

Multiple accessibility is high in accessing multiple payment systems (4.40) and maintaining business information accessibility (4.20), reflecting the growing use of digital tools like mobile payment systems and online business directories. Overall, the overall implementation of technological innovation among small businesses in Metro Manila is high (3.69), with room for growth in business data analytics, which remains moderately utilized (Akpan et al., 2022).

Relationship Between Profile and Technological Innovation

The study reveals a small but significant positive relationship between the nature of a business and the level of technological innovation. As businesses diversify from focusing solely on goods or services to offering a combination, they tend to integrate more types of technological innovations. This finding is supported by Cammayo (2021), which notes that businesses expanding their offerings to include both products and services are more likely to use technology to enhance their market reach and value propositions (van de Ven et al., 2022)..

The findings suggest that while certain aspects of business profiles, such as the nature of the business, show a significant relationship with technological innovation, other factors like the number of years in operation, number of employees, and type of business platform do not. This implies that the nature of business—particularly the blending of goods and services—plays a more crucial role in driving technological adoption (Pereira et al., 2022).. Therefore, the null hypothesis, which posited no relationship between business profiles and technological innovation, is rejected.

Technological Use and Business Performance

The technologies used by respondent businesses have a high perceived impact on revenue improvement (mean = 3.95) and overall profitability (mean = 4.31). The latter is rated as "very high" and strongly agreed upon, reflecting a significant positive impact on financial performance. However, the reduction in spending is viewed more moderately (mean = 3.29), suggesting that while technologies enhance revenue, their effect on reducing costs is less pronounced. This aligns with Camba (2020) and Canare & Francisco (2019), which highlight the effectiveness of technology in boosting profits, though cost reduction may require more targeted strategies.

Technological innovations are perceived to significantly improve processes (mean = 4.16) and reduce time to serve or produce (mean = 4.01), both rated as "high." These indicators reflect efficient operational enhancements, reducing idle time (mean = 3.86) and errors/wastes (mean = 3.85). These findings underscore the role of technology in supporting employee growth and reducing inefficiencies, consistent with previous research on technology's role in professional development.

Analysis Between Technological Innovation and Business Performance

Overall performance is generally agreed upon that technology positively impacts business performance, though specific areas like cost reduction and customer retention require further focus. The R-squared value of 0.46 indicates that technological innovation collectively explains 46% of the variation in business performance, reflecting a moderate but significant influence.

CONCLUSION

The study highlights that improving business performance in the new normal requires integrating technological innovations. Businesses can increase productivity, customer satisfaction, and sustainability by integrating technology into their operations successfully. According to the research, preserving competitiveness and resilience in the face of a changing market will require a focus on technology integration, sustainability, and strategic alliances (Santos, 2022; Hu & Kee, 2022).

Further investigation into these dynamics is necessary in the future, particularly in varying regional contexts, in order to provide a more thorough understanding of the effects of technology on the performance

of small businesses. Examining these variables will aid in improving tactics and guarantee that small businesses are prepared to handle the opportunities and difficulties presented by the post-pandemic period (Camba, 2020; Milzam et al., 2020).

DISCUSSION

The study offers valuable information about how small businesses are adapting to the new normal by utilizing technology advancements and fine-tuning their business plans. Key findings show that companies are integrating technology more and more to improve productivity, optimize workflows, and adapt to shifting market conditions. Important elements of this transformation include technologies that allow for real-time updates, automate the use of data for strategy and risk management, and enhance service delivery (Santos, 2022; Hu & Kee, 2022).

There is also a noticeable trend toward operational efficiency and sustainability. To reduce costs and lessen their impact on the environment, businesses are implementing green practices and renewable energy solutions, like solar power and e-bikes. This change is in line with the industry's larger shift toward moral and sustainable business practices (Camba, 2020; Milzam et al., 2020). Furthermore, the shift from a model that only offers onsite services to one that combines an online and physical presence highlights how critical it is to adjust to shifts in consumer behavior and technological advancements (Santos, 2022).

For a business to grow, strategic alliances and digital marketing—which includes targeted advertising and affiliate marketing—are becoming more and more important. According to the study, companies must increase their market reach and diversify their sources of revenue by forming strategic alliances and having a strong online presence (Hu & Kee, 2022). Long-term success and resilience also depend on incorporating scalable technologies and emphasizing ongoing staff development (Sawarni et al., 2020).

RECOMMENDATION

A methodical approach to integrating technological innovations into all facets of a small business's operations is necessary to optimize value, enhance workflows, generate prospects, and lower risks. The study's conclusions lead to the following recommendations:

Evaluate Every Business Function by using a framework such as SIPOC (Suppliers, Inputs, Processes, Outputs, Customers) for suppliers of goods and a similar method for service providers, thoroughly examine each step in your business process. Determine the areas in which technology can improve customer satisfaction, accuracy, and efficiency. For example, Customer Relationship Management (CRM) tools can enhance customer interactions and loyalty, and Inventory Management Software can expedite stock control and reduce overstocking (Hu & Kee, 2022).

Technology Integration for Process Improvement and Risk Management or to Incorporate technologies that deal with particular operational issues. By offering useful insights, automated data analytics tools can enhance strategy and risk management. Cybersecurity tools that protect against online attacks and guarantee the security of corporate operations include two-factor authentication (Santos, 2022). To improve flexibility and lower operational risks, take into account implementing scalable technologies that support both online and offline transactions.

Develop Your Staff and Use Innovation to Create Opportunities by taking advantage of new technologies to open up business opportunities. Creating bespoke tools or apps can boost sales and enhance operational procedures. Invest in ongoing training for staff members to improve their ability to use new technologies and adjust to shifting work environments. Employee effectiveness and adaptability will increase with this strategy, which will ultimately support long-term company growth (Sawarni et al., 2020; Camba, 2020).

Increase Technological Integration Across Business Models where in businesses should assess their technological requirements across both platforms as they move from strictly onsite to hybrid business models, which combine online and physical presence. According to the study, there has been a noticeable rise in hybrid business models, which suggests that companies ought to concentrate on incorporating

technologies that facilitate both digital and offline operations. One way to enhance operational efficiency and customer experience is by implementing Point-of-Sale (POS) systems that are compatible with online sales platforms (Santos, 2022).

Utilize Data Analytics to Make Strategic Decisions where in according to the study, data analytics significantly improves business performance. Using Business Data Analytics (BDA) tools to better understand market trends, customer behavior, and operational performance should be a top priority for small businesses. Businesses can optimize resource allocation, make well-informed strategic decisions, and improve overall performance by utilizing data analytics. Better risk management and more successful business plans may result from this (Hu & Kee, 2022).

Adopt Sustainable and Ethical Business Practices becuase the study found that respondents were becoming more and more inclined to use sustainable and ethical business practices. Eco-friendly practices and technologies can help small businesses appeal to more environmentally conscious customers while also lessening their impact on the environment. This can entail making investments in green technologies, cutting waste, and utilizing renewable energy sources. These procedures can improve the company's reputation and result in long-term cost savings (Santos, 2022; Camba, 2020).

REFERENCES

Aboramadan, M., Albashiti, B., Alharazin, H., & Zaidoune, S. (2020). Organizational culture, innovation and performance: a study from a non-western context. *Journal of Management Development*.

Akpan, I.J., Soopramanien, D., & Kwak, D.H. (2021). Cutting-edge technologies for small business and innovation in the era of COVID-19 global health pandemic. *Journal of Small Business & Entrepreneurship*, *33*(6), 607–617.

Akpan, I.J., Udoh, E.A.P., & Adebisi, B. (2022). Small business awareness and adoption of state-of-the-art technologies in emerging and developing markets, and lessons from the COVID-19 pandemic. *Journal of Small Business & Entrepreneurship*, *34*(2), 123–140.

Akgün, A.I., & Karataş, A.M. (2020). Investigating the relationship between working capital management and business performance: Evidence from the 2008 financial crisis of EU-28. *International Journal of Managerial Finance.*

Al Hardware, A., Tavana, M., Gillis, D., & Rezania, D. (2021). A systematic review of organizational factors impacting cloud-based technology adoption using Technology-organization-environment framework. *Internetof Things*, *15*, 100407.

Al-Jabri, I.M., & Sohail, M.S. (2012). Mobile banking adoption: Application of diffusion of innovation theory. *Journal of electronic commerce research*, *13*(4), 379–391.

Arzyabi, N.G. (2021). How do Information Technology and Knowledge Management Affect SMEs Responsiveness to the Coronavirus Crisis? *Бизнес-информатика*, *15*(2), 75–90.

Baker, J. (2012). The technology–organization–environment framework. *Information Systems Theory*, pp.231–245.

Baker, T.H., & Judge, K. (2020). How to help small businesses survive COVID-19. *Columbia Law and Economics Working Paper*, (620).

Bhatia, M.S. (2021). Green process innovation and operational performance: The role of proactive environment strategy, technological capabilities, and organizational learning. *Business Strategy and the Environment*, *30*(7), 2845–2857.

Bongiovanni, I. (2020). User Safety and Security Experience: Innovation Through Design-Inspired Methods in Airports. In *The Coupling of Safety and Security*, pp. 53–61. Springer, Cham.

Camba, A.L. (2020). Estimating the nature of the relationship of entrepreneurship and business confidence on youth unemployment in the Philippines. The *Journal of Asian Finance, Economics and Business*, *7*(8), 533–542.

Cammayo, E.U. (2021). Correlation Between Marketing Strategies and Financial Performance of Micro Small Medium Enterprises in Isabela, Philippines. *Turkish Journal of Computer and Mathematics Education* (TURNCOAT), *12*(10), 4211–4222.

Carcido-Damasig, L., & Damasig, F.A. (2022). *The Impact of TRAIN Law on Small and Medium Enterprises (SMEs)*. Available at SSRN 4124793.
Cherian, J., Gaikar, V., Paul, R., & Pech, R. (2021). Corporate culture and its impact on employees' attitude, performance, productivity, and behavior: An investigative analysis from selected organizations of the United Arab Emirates (UAE). *Journal of Open Innovation: Technology, Market, and Complexity*, *7*(1), 45.
Christa, U., & Kristinae, V. (2021). The effect of product innovation on business performance during COVID 19 pandemic. *Uncertain Supply Chain Management*, *9*(1), 151–158.
Domingo, A.V. (2022). Starting a Small Business amidst COVID-19: The Entrepreneurial Journey of Entrepreneurship Students in Nueva Ecija, Philippines. *Open Journal of Social Sciences*, *10*(6), 196–212.
Dua, A., Ellingrud, K., Mahajan, D., & Silberg, J. (2020). Which small businesses are most vulnerable to COVID-19—and when. *McKinsey & Company*.
Department of Trade and Industry. (2020). *2020 SME STATISTICS*. Retrieved from https://www.dti.gov.ph/resources/msme-statistics/
DTI. (2021). *DTI Digital Strategies*. Retrieved from https://www.dti.gov.ph/archives/news-archives/digital-strategies/
El Maghamez, I.K., Attah-Boakye, R., Adams, K., & Agyemang, J. (2022). The diffusion of innovation theory and the effects of IFRS adoption by multinational corporations on capital market performance: A cross-country analysis. *Thunderbird International Business Review*, *64*(1), 81–108.
EPSON Philippines. (2021). The Adoption and Inhibition of Robotics Technology in the Philippines. *Journal of Computational Innovations andEngineering Applications*, *6*(1), 1–9.
Garcia, F.T., ten Caten, C.S., de Campos, E.A.R., Callegaro, A.M., & de Jesus Pacheco, D.A. (2022). Mortality Risk Factors in Micro and Small Businesses: Systematic Literature Review and Research Agenda. *Sustainability*, *14*(5), 2725.
Ghaleb, E.A., Dominic, P.D.D., Fati, S.M., Muneer, A., & Ali, R.F. (2021). The assessment of big data adoption readiness with a technology–organization–environment framework: A perspective towards healthcare employees. *Sustainability*, *13*(15), 8379.
Ghauri, P., Grønhaug, K., & Strange, R. (2020). *Research methods in business studies*. Cambridge University Press.
Giunipero, L.C., Denslow, D., & Rynarzewska, A.I. (2022). Small business survival and COVID-19-An exploratory analysis of carriers. *Research in Transportation Economics*, *93*, 101087.
Harvard Business Review. (2021). The impact of COVID-19 on small businesses' performance and innovation. *Global Business Review*, 09721509211039145.
Harveit. (2012). The Impact of E-assessments system on the success of the implementation process. *International Journal of Modern Education and Computer Science*, *4*(11), 76.
Hernández-Sánchez, B.R., Cardella, G.M., & Sánchez-García, J.C. (2020). Psychological factors that lessen the impact of covid-19 on the self-employment intention of business administration and economics' students from latin america. *International Journal of Environmental Research and Public Health*, *17*(15), 5293.
Hervas-Oliver, J.L., Parrilli, M.D., & Sempere-Ripoll, F. (2021). SME modes of innovation in European catching-up countries: The impact of STI and DUI drivers on technological innovation. *Technological Forecasting and Social Change*, *173*, 121167.
Hu, M.K., & Kee, D.M.H. (2022). SMEs and business sustainability: Achieving sustainable business growth in the new normal. *Research Anthology on Business Continuity and Navigating Times of Crisis*, pp. 1036–1056. IGI Global.
Inayat, W., & Jahanzeb Khan, M. (2021). A study of job satisfaction and its effect on the performance of employees working in private sector organizations, Peshawar. *Education Research International*.
International Council for Small Businesses. (2021). *ICSB Plan to Save Small Businesses*. Retrieved from https://icsb.org/news_articles/

Ivanova, N., Popelo, O., Avhustyn, R., Rusak, O., & Proshchalykina, A. (2022). Marketing strategy of the small business adaptation to quarantine limitations in the sphere of trade entrepreneurship. *IJCSNS International Journal of Computer Science and Network Security*, *22*(1), 149–160.

Khan, S.A.R., Ponce, P., Tanveer, M., Aguirre-Padilla, N., Mahmood, H., & Shah, S.A.A. (2021). Technological innovation and circular economy practices: Business strategies to mitigate the effects of COVID-19. *Sustainability*, *13*(15), 8479.

Kiran, R., & Bose, S.C. (2020). Stimulating business incubation performance: Role of networking, university linkage and facilities. *Technology Analysis & Strategic Management*, *32*(12), 1407–1421.

Li, J., Saide, S., Ismail, M.N., & Indrajit, R.E. (2021). Exploring IT/IS proactive and knowledge transfer on enterprise digital business transformation (EDBT): A technology-knowledge perspective. *Journal of Enterprise Information Management*.

Li, A., Zhao, P., He, H., & Axhausen, K.W. (2020). Understanding the variations of micro-mobility behavior before and during COVID-19 pandemic period. *Arbeitsberichte Verkehrs-und Raumplanung*, 1547.

Macatumbas-Corpuz, B.L., & Bool, N.C. (2022). Sustainability of Barangay Micro Business Enterprises (BMBEs) in Laoag City, Ilocos Norte, Philippines: The Role of Resource-Based View. In C*ontextual Strategic Entrepreneurship*, pp. 71–92. Springer, Cham.

Mandviwalla, M., & Flanagan, R. (2021). Small business digital transformation in the context of the pandemic. *European Journal of Information Systems*, *30*(4), 359–375.

Matias, J.B., & Hernandez, A.A. (2021). Cloud computing adoption intention by MSMEs in the Philippines. *Global Business Review*, *22*(3), 612–633.

Milzam, M., Mahardika, A., & Amalia, R. (2020). Coronavirus pandemic impact on sales revenue of Micro Small and Medium Enterprises (MSMEs) in Pekalongan city, Indonesia. *Journal of Vocational Studies on Applied Research*, *2*(1), 7–10.

Mori, N., & Mlambiti, R. (2020). Determinants of customers' adoption of mobile banking in Tanzania: Further evidence from a diffusion of innovation theory. *Journal of Entrepreneurship, Management and Innovation*, *16*(2), 203–230.

Ncebakazi, T. (2022, March). Human errors: A cybersecurity concern and the weakest link to small businesses. In *Proceedings of the 17th International Conference on Information Warfare and Security*, 395.

Nupus, H., & Ichwanudin, W. (2021). Business network accessibility, customer relationship management and value co-creation on family business performance. *Research Horizon*, *1*(4), 126–135.

Opazo-Basáez, M., Vendrell-Herrero, F., & Bustinza, O.F. (2021). Digital service innovation: A paradigm shift in technological innovation. *Journal of Service Management*.

Pamela, A., Fabe, H., & Zarcilla-Genecela, E. (2021). The Philippines' Cybersecurity Strategy: Strengthening partnerships to enhance cybersecurity capability. In *Routledge Companion to Global Cyber-Security Strategy*, pp. 315–324, Routledge.

Pereira, C.S., Veloso, B., Durão, N., & Moreira, F. (2022). The influence of technological innovations on international business strategy before and during COVID-19 pandemic. *Procedia Computer Science*, *196*, 44–51.

PNA. (2021). *Technology boosting PH SMEs' competitiveness*. Retrieved from https://www.pna.gov.ph/articles/1046522

Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., & Koole, M. (2021). Balancing technology, pedagogy and the new normal: Post-pandemic challenges for higher education. *Postdigital Science and Education*, *3*(3), 715–742.

Reyes, L.G. (2022). Philippine private sector response, strategies, and state-business relations toward economic recovery and growth post-COVID-19. *Business and Politics*, *24*(1), 18–35.

Rosales, M.A., Jo-ann, V.M., Palconit, M.G.B., Culaba, A.B., & Dadios, E.P. (2020, December). Artificial intelligence: the technology adoption and impact in the Philippines. In *2020 IEEE 12th International Conference on Humanoid, Nanotechnology, Information Technology, Communication and Control, Environment, and Management (HNICEM)*, 1–6. IEEE.

Sawarni, K.S., Narayanasamy, S., & Ayyalusamy, K. (2020). Working capital management, firm performance and nature of business: Empirical evidence from India. *International Journal of Productivity and Performance Management*.

Saarikko, T., Westergren, U.H., & Blomquist, T. (2020). Digital transformation: Five recommendations for the digitally conscious firm. *Business Horizons*, *63*(6), 825–839.

Saad, N.A., Elgazzar, S., & Mlaker Kac, S. (2022). Investigating the Impact of Resilience, Responsiveness, and Quality on Customer Loyalty of MSMEs: Empirical Evidence. *Sustainability*, *14*(9), 5011.

Santos, J.R., Tapia, J.F.D., Lamberte, A., Solis, C.A., Tan, R.R., Aviso, K.B., & Yu, K.D.S. (2022). Uncertainty Analysis of Business Interruption Losses in the Philippines Due to the COVID-19 Pandemic. *Economies*, *10*(8), 202.

Sawarni, K.S., Narayanasamy, S., & Ayyalusamy, K. (2020). Working capital management, firm performance and nature of business: Empirical evidence from India. *International Journal of Productivity and Performance Management.*

Selvik, J.T., Bansal, S., & Abrahamsen, E.B. (2021). On the use of criteria based on the SMART acronym to assess quality of performance indicators for safety management in process industries. *Journal of Loss Prevention in the Process Industries*, *70*, 104392.

Stjepić, A.M., Pejić Bach, M., & Bosilj Vukšić, V. (2021). Exploring risks in the adoption of business intelligence in SMEs using the TOE framework. *Journal of Risk and Financial Management*, *14*(2), 58.

Tan. (2021). A business-model approach on strategic flexibility of firms in a shifting value chain: The case of coffee processors in Amadeo and Silang, Cavite, Philippines. *Global Journal of Flexible Systems Management*, *22*(1), 17–28.

Tibon, M.V.P. (2022). Organizational Agility Among Selected SMEs in the Philippines during the Covid-19 Pandemic: Genesis and Implications. *Review of Integrative Business and Economics Research*, *11*, 253–259.

Yaoming, X., & Gulyaeva, E.F. (2021). Analysis of the significance of technological innovations in business management. *Entrepreneurâ€™s Guide*.

Widjaja, G. (2021). Understanding of HR Management Policies for Small Businesses Disturbed by the Pandemic Crisis: Small Business Literature Review Study. *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, *4*(4), 9866–9876.

Wiethoff, C., & Bittner, E.A. (2022). *Toward a hybrid intelligence system in customer service: Collaborative learning of human and AI.*

Wolniak, R. (2020). Main functions of operation management. *Production Engineering Archives*, *26*.

World Bank International. (2021). *What's happening in the missing Middle, lessons from Financing SMEs.* Retrieved from https://www.worldbank.org/en/topic/financialsector/publication/whats-happening-in-the-missing-middle-lessons-from-financing-smes

van de Ven, M.R., Lara Machado, P., Athanasopoulou, A., Aysolmaz, B., & Turetken, O. (2022). *Key Performance Indicators for Business Models: A Review of Literature*.

Vargo, S.L., Akaka, M.A., & Wieland, H. (2020). Rethinking the process of diffusion in innovation: A service-ecosystems and institutional perspective. *Journal of Business Research*, *116*, 526–534.

von Delft, S., & Zhao, Y. (2021). Business models in process industries: Emerging trends and future research. *Technovation*, *105*, 102195.

Victor, M., Pam, W.B., & Chinedu, O.C. (2022, April/June). Financial Accessibility and Growth of Small and Medium Scale Enterprises. *ADRRI Journal (Multidisciplinary)*, *31*(2)(8), 159–172.

Zhang, T., Gerlowski, D., & Acs, Z. (2022). Working from home: Small business performance and the COVID-19 pandemic. *Small business economics*, *58*(2), 611–636.