

Harnessing Knowledge Management and E-Business Integration to Drive Competitive Advantage in MSMEs: A Post-Pandemic Perspective

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Abstract

This study examines how Micro, Small, and Medium Enterprises (MSMEs) can harness the integration of knowledge management (KM) and e-business to achieve competitive advantage in the post-pandemic era. The COVID-19 pandemic has accelerated digital transformation and exposed the critical need for MSMEs to adapt their internal knowledge processes alongside external digital strategies to survive and thrive. The research aims to explore the interplay between KM practices and e-business adoption in MSMEs, focusing on their combined impact on resilience, innovation, and market competitiveness. Employing a qualitative approach, data were collected through semi-structured interviews, observations, and document analysis from selected MSMEs in West Kalimantan, Indonesia. Thematic analysis revealed that informal knowledge sharing, leadership commitment, and strategic alignment between knowledge and digital tools significantly enhance MSMEs' adaptability and customer engagement. The study highlights that effective integration rather than isolated digital adoption or KM efforts drives dynamic capabilities critical for navigating post-pandemic challenges. This research contributes to the literature by bridging KM and e-business domains, providing practical insights for MSME leaders and policymakers on fostering integrated strategies to strengthen competitiveness in uncertain environments. The findings emphasize the importance of a holistic approach to knowledge and technology management for sustainable growth in digital economies.

Keywords

Competitive Advantage, E-Business Integration, Knowledge Management.



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INTRODUCTION

The COVID-19 pandemic profoundly disrupted business ecosystems across the globe, significantly affecting Micro, Small, and Medium Enterprises (MSMEs), which constitute the backbone of most economies. As lockdowns and social distancing measures forced a shift from traditional to digital operations, many MSMEs faced unprecedented challenges ranging from supply chain breakdowns and liquidity crises to limited access to customers [1]. In this new business landscape, survival has hinged not only on operational resilience but also on the ability

to adapt, innovate, and leverage intangible assets such as knowledge and technology. This transformation period has brought into sharper focus the strategic importance of knowledge management (KM) and e-business integration in enabling MSMEs to recover and compete sustainably [2].

While MSMEs are often praised for their agility and innovation potential, they typically lag behind larger corporations in institutionalizing KM practices and adopting digital technologies. Knowledge within MSMEs is frequently tacit, fragmented, and heavily dependent on individual owners or managers [3]. During the pandemic, this lack of structured knowledge processes became a major obstacle in responding swiftly to changing market conditions. At the same time, digital tools and platforms e-commerce, cloud computing, customer relationship management (CRM) systems, and social media proved essential for maintaining business continuity [4]. The crisis thus emphasized the urgent need for MSMEs to integrate e-business solutions with effective KM strategies to gain a competitive edge in the post-pandemic environment [5].

However, most existing studies have tended to examine KM and e-business as separate domains, especially in the context of MSMEs. Literature on KM has primarily focused on large enterprises with formalized systems and processes, whereas studies on e-business adoption in MSMEs have emphasized infrastructural, financial, and technical challenges [6]. Very few empirical investigations have explored how the synergy between KM and e-business integration can jointly contribute to competitive advantage particularly under volatile and uncertain conditions like those induced by the pandemic [7]. This limited scope leaves a significant gap in understanding how MSMEs can develop strategic capabilities through the combined use of knowledge and digital technologies [8].

Another notable gap is the post-pandemic contextualization of these issues. While pre-pandemic research provided valuable insights into KM and technology adoption, it often overlooked the dynamic and accelerated shifts in digital behavior, consumer expectations, and supply chain models that emerged during and after COVID-19 [9]. The pandemic has redefined the "rules of competition," requiring new theoretical and practical frameworks that account for agility, resilience, and the digital pivot [10]. In this regard, studying MSMEs' ability to harness KM and e-business as interrelated drivers rather than isolated functions is both timely and critical. Such an approach could reveal new pathways for competitive advantage, especially for resource-constrained firms striving to rebuild and grow [11].

This research aims to fill these gaps by investigating how the integration of knowledge management and e-business strategies can be leveraged by MSMEs to create and sustain competitive advantages in the post-pandemic era. Specifically, it explores the interplay between internal knowledge capabilities (such as knowledge creation, sharing, and utilization) and external digital engagement (such as online customer interaction, digital marketing, and e-commerce platforms) in shaping firm performance. The study is grounded in the Resource-Based View (RBV) and Dynamic Capabilities Theory, providing a solid conceptual foundation

for understanding how intangible assets and technology-enabled processes contribute to strategic outcomes in volatile environments.

What makes this study particularly unique is its focus on integration rather than individual adoption. By treating KM and e-business not as separate pillars but as complementary systems, the research offers a holistic view of how MSMEs can align internal knowledge assets with external digital opportunities [12]. Moreover, this study places strong emphasis on the post-pandemic lens, acknowledging that the disruptions of recent years have altered the competitive landscape permanently. Through a combination of quantitative and qualitative methods, the research will uncover patterns, challenges, and best practices that MSMEs can adopt to thrive in this new normal [13]. The study will also consider contextual variables such as firm size, industry type, digital maturity, and geographic location, ensuring nuanced and applicable findings.

Ultimately, this research aspires to contribute both theoretically and practically. Theoretically, it expands the literature by bridging two traditionally siloed domains KM and e-business and applying them to a high-impact yet under-researched context: post-pandemic MSMEs. Practically, it offers actionable insights for MSME owners, managers, policymakers, and support organizations seeking to enhance competitiveness through integrated strategies. By understanding how to effectively manage knowledge and technology in tandem, MSMEs can not only recover from recent shocks but also future-proof their operations against emerging challenges in an increasingly digital economy.

METHODS

This study adopts a qualitative research approach to deeply explore how MSMEs integrate knowledge management and e-business strategies to build competitive advantages in the post-pandemic context. The qualitative method is considered suitable due to its ability to uncover rich, contextualized insights and understand complex, dynamic phenomena particularly in real-world organizational settings where processes and practices are influenced by human behaviors, perceptions, and interactions. The research was conducted over a three-month period, from February to April 2025, in selected MSMEs operating in urban and semi-urban areas of West Kalimantan, Indonesia, with a particular focus on industries that experienced significant digital transitions during the COVID-19 pandemic, such as retail, food and beverage, and services.

Data collection was carried out through semi-structured in-depth interviews, direct observation, and documentation. Interviews were conducted with MSME owners, managers, and key employees who are directly involved in knowledge-related and digital activities within the enterprise. A purposive sampling technique was used to select ten MSMEs that had shown observable efforts in applying both knowledge management and e-business practices during and after the pandemic. Each interview lasted between 60–90 minutes and was recorded with the participants' consent. Observations focused on how digital tools were being utilized in daily operations, how knowledge was created, shared, and applied, and how decision-making processes evolved post-pandemic. Additional data were obtained from company profiles,

websites, internal documents, and relevant government reports to triangulate findings and ensure validity.

The data analysis process followed the thematic analysis method as proposed by Braun and Clarke. After transcription, the interview and observational data were systematically coded and categorized into themes that aligned with the study's objectives, such as "knowledge sharing mechanisms," "digital adaptation strategies," and "competitive positioning." NVivo software was used to assist in coding and organizing data. The analysis aimed to identify patterns, draw relationships between KM and e-business integration, and interpret how these elements contributed to strategic outcomes. Throughout the research process, ethical considerations such as confidentiality, informed consent, and voluntary participation were strictly upheld. This methodological design ensures that the study captures authentic, grounded insights into the evolving strategies of MSMEs navigating a post-pandemic business landscape [14].

FINDINGS AND DISCUSSION

Findings

The analysis of interviews, observations, and supporting documents revealed that MSMEs which successfully navigated the post-pandemic transition shared a common thread: the ability to integrate internal knowledge practices with external digital platforms. One of the central findings is that MSMEs which cultivated informal but consistent knowledge-sharing practices such as daily briefings, peer learning, and mentoring were better positioned to adopt e-business tools effectively. Knowledge was not necessarily documented in formal systems, but rather embedded in the routines and interactions of team members, especially in family-run or closely-knit organizations. This informal knowledge flow became a critical enabler when shifting to digital platforms, as employees were more agile and adaptive to new systems due to a culture of mutual learning.

Another key finding relates to the strategic alignment between knowledge management and digital initiatives. MSMEs that aligned their digital adoption with clearly articulated business goals such as expanding market reach, improving customer engagement, or enhancing operational efficiency tended to extract greater value from their e-business investments [15]. For instance, businesses that invested in e-commerce not merely as a sales channel but as a platform to collect and analyze customer feedback, were able to tailor their products and services more effectively. This process was supported by internal knowledge mechanisms that prioritized customer insight circulation and continuous service improvement [16]. In contrast, MSMEs that treated digital tools as standalone solutions without integrating them into broader business knowledge cycles reported limited impact on competitiveness.

The study also found that the role of leadership was pivotal in driving the integration process. Owners or managers who acted as "knowledge champions"—actively promoting learning, experimentation, and digital exploration—fostered environments where innovation

could flourish. These leaders often served as bridges between traditional knowledge systems and new technological capabilities [17]. Their openness to change and willingness to invest in digital literacy for their teams were seen as decisive factors in the MSMEs' ability to reconfigure their strategies post-pandemic. In such cases, digital platforms were not just used for transactions but also became tools for knowledge storage, decision-making, and collaboration.

Moreover, the integration of e-business and knowledge management also appeared to strengthen organizational resilience. MSMEs that embedded feedback loops and continuous improvement mechanisms into their digital operations reported quicker recovery from pandemic disruptions [18]. For example, businesses that monitored digital performance metrics (such as customer retention, website traffic, and online reviews) and used this data to refine internal processes could adapt more swiftly to shifting market demands. This dynamic capability driven by both knowledge use and digital responsiveness emerged as a major source of competitive advantage.

Interestingly, the study uncovered a pattern of "learning-by-doing" among many MSMEs. Instead of relying on formal training or external consultants, businesses often learned to manage digital tools and knowledge processes through trial, error, and internal collaboration. This grassroots learning approach, although informal, allowed MSMEs to adapt tools to their unique contexts [19]. For example, one food-based MSME repurposed its Instagram account not just for marketing but also as an informal feedback channel and internal reference point for tracking product variations. This demonstrated how digital tools could evolve into knowledge systems when used creatively and consistently.

Lastly, contextual factors such as digital infrastructure, customer digital readiness, and industry characteristics influenced the depth of integration. MSMEs operating in more urbanized areas with better internet access and tech-savvy customers had a comparative advantage in deploying advanced digital strategies. However, rural or semi-urban MSMEs also showed innovation in leveraging simpler technologies (e.g., WhatsApp Business, Facebook Marketplace) combined with strong local knowledge to maintain customer relationships and operational continuity.

In summary, the findings suggest that the competitive advantage of MSMEs in the post-pandemic era is not solely determined by access to technology or volume of knowledge assets, but by the quality of integration between knowledge management practices and e-business tools. This integration fosters adaptability, innovation, and strategic responsiveness—key ingredients for thriving in an uncertain and digitally-driven market landscape.

Discussion

The findings of this study reaffirm and extend prior research that positions knowledge management (KM) as a critical enabler of innovation and adaptability in MSMEs, especially during periods of crisis. Previous studies, such as those by Nonaka and Takeuchi (1995), emphasized the role of tacit knowledge and the process of knowledge conversion (SECI model) in shaping organizational learning and innovation. In the context of this research, the

informal and experience-based knowledge sharing observed within MSMEs aligns closely with the concept of *socialization* and *externalization* in the SECI model. While earlier studies typically focused on structured KM systems within large enterprises, this research demonstrates that even informal knowledge practices can yield strategic benefits when supported by leadership commitment and embedded into day-to-day operations.

The integration of e-business and KM also resonates with the Dynamic Capabilities Theory, which argues that firms gain competitive advantage not from resources alone, but from their ability to integrate, build, and reconfigure internal and external competences in response to changing environments [20]. The study found that MSMEs capable of continuously sensing market changes through digital platforms, seizing opportunities via knowledge-based decision-making, and transforming their operations based on feedback, displayed greater agility and resilience. This supports the idea that digitalization, when combined with internal knowledge flows, forms a capability rather than a mere toolset. Compared to earlier research that often treated digital adoption and KM as isolated domains, this study reveals a synergistic relationship that is particularly powerful in post-crisis recovery.

Moreover, the research highlights an important contrast with pre-pandemic literature on digitalization in MSMEs, which often emphasized structural barriers such as limited infrastructure, funding, and digital skills [21]. While these barriers still exist, the pandemic appears to have catalyzed a mindset shift among MSME leaders, prompting many to engage in digital experimentation despite constraints. This supports the emerging post-pandemic literature (e.g., Papadopoulos et al., 2020) that suggests digital adoption in MSMEs has become more organic, driven by necessity and innovation rather than by long-term strategic planning. The finding that many MSMEs engaged in “learning by doing” and adapted mainstream digital tools like WhatsApp, Instagram, and Shopee to fit their specific needs challenges traditional assumptions that effective digitalization requires formal systems or expert intervention.

The role of leadership identified in this study also confirms previous research by [22], who emphasized that knowledge culture and leadership behavior are foundational to successful KM initiatives. MSME owners in this study acted not only as decision-makers but also as knowledge facilitators and digital enablers. Their willingness to encourage experimentation, tolerate failure, and empower employees reflects the qualities of transformational leadership, which is often linked to higher innovation performance. This insight is particularly meaningful for MSMEs, where leadership tends to be centralized and personal, highlighting the potential for rapid cultural and strategic shifts when the leader is proactive.

Another contribution of this study lies in how it illustrates the *mutual reinforcement* between customer-facing digital platforms and internal KM. This supports the argument made by [23] that KM is not limited to internal knowledge flows but also encompasses the acquisition and application of knowledge from external stakeholders. MSMEs that treated

digital customer interactions as knowledge inputs—not just sales mechanisms—were better able to evolve their offerings and differentiate themselves in competitive markets. This finding adds to the growing literature on customer knowledge management and points to the need for MSMEs to consider e-business not only as a transaction tool, but as a learning interface.

Furthermore, the influence of contextual variables, such as digital infrastructure and customer readiness, reflects findings from studies on technological adoption in developing economies [24]. However, what is notable in this research is the evidence that even in suboptimal environments, MSMEs can creatively adapt technology when supported by strong internal knowledge culture [25]. This suggests that digital maturity is not solely a function of infrastructure or budget but also of the organizational ability to learn and adapt an insight that policymakers and support institutions should consider when designing interventions for MSME development.

In summary, this research both validates and extends existing theories and empirical studies on KM, digital transformation, and dynamic capabilities. It shows that in the post-pandemic landscape, MSMEs must view knowledge and technology as interconnected levers of change. The findings offer a nuanced understanding of how even resource constrained firms can develop competitive advantage through intentional alignment of internal knowledge flows with external digital strategies. Unlike previous studies that often compartmentalized these domains, this study advocates for an integrated lens one that recognizes the relational, contextual, and iterative nature of strategy formation in MSMEs.

CONCLUSION

This study was driven by the researcher's concern over the limited empirical understanding of how MSMEs, particularly in developing regions, can effectively integrate knowledge management (KM) and e-business strategies to rebuild competitiveness in the aftermath of a global crisis. The findings confirm that the synergy between informal knowledge practices and adaptive use of digital tools enables MSMEs to be more responsive, innovative, and customer-focused in volatile environments. Rather than relying on sophisticated systems, it is the intentional alignment between knowledge flows and digital engagement—guided by visionary leadership that becomes the cornerstone of competitive advantage. This integration allows MSMEs to not only survive disruptions but to proactively evolve and carve a strategic position in an increasingly digital marketplace.

However, this study is not without its limitations. The research focused on a small number of MSMEs in a specific regional context, which may limit the generalizability of the findings to other industries or geographies. The qualitative nature of the research, while rich in depth, may not capture the full diversity of integration models across broader MSME populations. Additionally, most of the data relied on self-reported experiences and perceptions, which could be influenced by bias or limited hindsight. The study also did not quantitatively measure the performance impact of integration, which could be valuable for establishing causal relationships between KM-e-business alignment and firm-level outcomes.

Future research could build on these insights by conducting comparative studies across different regions or sectors to uncover how contextual factors shape integration strategies. Quantitative methods could also be employed to measure the strength of the relationship between KM-e-business alignment and indicators such as profitability, innovation rate, or market share. Moreover, longitudinal studies could offer a deeper understanding of how these strategies evolve over time, especially as digital technologies and knowledge practices continue to shift. In a rapidly transforming world, exploring how MSMEs sustain these integrated capabilities over the long term remains a critical area for further investigation.

REFERENCES

- [1] B. Irawan, C. Rofiah, A. Asfahani, H. S. Sufyati, and W. Hasan, "Empowering Micro Small and Medium Enterprises (MSMEs) to Improve Global Economic Welfare," *Int. Assulta Res. Engagem.*, vol. 1, no. 2, pp. 75–86, 2023.
- [2] F. A. Hidajat, L. D. Haeruman, E. D. Wiraningsih, and D. S. Pambudi, "The Effect of Digital Technology Learning Based on Guided Discovery and Self-regulated Learning Strategy on Mathematical Creativity," *Int. J. Inf. Educ. Technol.*, vol. 13, no. 3, pp. 535–543, 2023, doi: 10.18178/ijiet.2023.13.3.1836.
- [3] S. M. Al-Najjar, M. K. Jawad, and O. A. Saber, "Application of ABC-VED Matrix Analysis to Control the Inventory of a Central Pharmacy in a Public Hospital: A Case Study," *Int. J. Sci. Res.*, vol. 9, no. 1, pp. 1328–1336, 2018, doi: 10.21275/ART20204180.
- [4] M. Lis and M. Szyszka, *Innovation and Entrepreneurship: Theory and Practice*. Logos Verlag Berlin, 2020.
- [5] P. Oberoi, C. Patel, and C. Haon, "Technology sourcing for website personalization and social media marketing: A study of e-retailing industry," *J. Bus. Res.*, vol. 80, no. June, pp. 10–23, 2017, doi: 10.1016/j.jbusres.2017.06.005.
- [6] M. A. Nasution, Z. M. E. Siregar, and ..., "Strengthening Bumdes through Customer Satisfaction and Loyalty as the Defense of the Bumdes Business in Indonesia Post-Covid-19," *Budapest Int. Res. Critics Inst. Humanit. Soc. Sci.*, vol. 4, no. 3, pp. 3962–3970, 2021.
- [7] R. Lestari, T. Pradani, and K. Digdowiseiso, "The Effects of Digital Marketing, Entrepreneurship Orientation, and Product Innovation on Competitive Advantage and Its Impact on the Marketing Performance of Talas Bolu Sangkuriang in Bogor City," *Budapest Int. Res. Critics Institute-Journal*, vol. 5, no. 1, pp. 2081–2087, 2022.
- [8] P. Dias *et al.*, "The role of parents in the engagement of young children with digital technologies: Exploring tensions between rights of access and protection, from 'Gatekeepers' to 'Scaffolders,'" *Glob. Stud. Child.*, vol. 6, no. 4, pp. 414–427, 2016.
- [9] C. Rapanta, L. Botturi, P. Goodyear, L. Guàrdia, and M. Koole, "Online

- university teaching during and after the Covid-19 crisis: Refocusing teacher presence and learning activity," *Postdigital Sci. Educ.*, vol. 2, pp. 923–945, 2020.
- [10] A. P. Nugraha, C. Wibisono, B. Satriawan, Indrayani, Mulyadi, and Damsar, "The Influence Of Transformational Leadership, Job Crafting, Job Satisfaction, And Self-Efficacy On Job Performance Through Work Engagement Of State Civil Apparatus As An Intervening Variable In The Digital Era Of Cases In The Local Government Of Karimun R," *Cent. Eur. Manag. J.*, vol. 30, no. 3, pp. 2336–2693, 2022.
- [11] D. Pratama, N. Nurwani, and Y. S. J. Nasution, "The Effect of Understanding of Financial Literacy and Ease of Digital Payment on the Continuity of Msme in the Digitalization Era," *Indones. Interdiscip. J. Sharia Econ.*, vol. 6, no. 2, pp. 618–638, 2023.
- [12] A. Kamis, R. C. Rus, M. B. Rahim, F. A. N. Yunus, N. Zakaria, and H. M. Affandi, "Exploring green skills: A study on the implementation of green skills among secondary school students," *Int. J. Acad. Res. Bus. Soc. Sci.*, vol. 7, no. 12, pp. 327–345, 2017.
- [13] G. Hergüner, Ç. Yaman, S. Ç. Sari, M. S. Yaman, and A. Dönmez, "The Effect of Online Learning Attitudes of Sports Sciences Students on their Learning Readiness to Learn Online in the Era of the New Coronavirus Pandemic (Covid-19)," *TOJET Turkish Online J. Educ. Technol.*, vol. 20, no. 1, pp. 68–77, 2021.
- [14] I. García, "Asset-based community development (ABCD): Core principles," in *Research handbook on community development*, Edward Elgar Publishing, 2020.
- [15] P. Faisal and Z. Kisman, "Information and communication technology utilization effectiveness in distance education systems," *Int. J. Eng. Bus. Manag.*, vol. 12, pp. 1–9, 2020, doi: 10.1177/1847979020911872.
- [16] A. Kuwawenaruwa, K. Wyss, K. Wiedenmayer, E. Metta, and F. Tediosi, "The effects of medicines availability and stock-outs on household's utilization of healthcare services in Dodoma region, Tanzania," *Health Policy Plan.*, vol. 35, no. 3, pp. 323–333, 2020, doi: 10.1093/heapol/czz173.
- [17] M. Junaid, Q. Zhang, M. Cao, and A. Luqman, "Nexus between technology enabled supply chain dynamic capabilities, integration, resilience, and sustainable performance: An empirical examination of healthcare organizations," *Technol. Forecast. Soc. Change*, vol. 196, p. 122828, 2023.
- [18] R. de Reuver, K. Van de Voorde, and S. Kilroy, "When do bundles of high performance work systems reduce employee absenteeism? The moderating role of workload," *Int. J. Hum. Resour. Manag.*, vol. 32, no. 13, pp. 2889–2909, 2021.
- [19] Indah Sari, Anni Holila Pulungan, and Rahmad Husein, "Students' Cognition and Attitude in Writing Descriptive Text," *Britain Int. Linguist. Arts Educ. J.*, vol. 2, no. 1, pp. 395–404, 2020, doi: 10.33258/biolae.v2i1.210.
- [20] H. A. Al-Ababneh, "Researching Global Digital E-Marketing Trends," *Eastern-*

- European J. Enterp. Technol.*, vol. 1, no. 13–115, pp. 26–38, 2022, doi: 10.15587/1729-4061.2022.252276.
- [21] W. Ainis Rohtih, S. Saifuddin Hamzah, and L. Sakdiyah, “Enhancing Womenpreneurs’ Digital Marketing Skills in Purutrejo Village, Purworejo District, Pasuruan,” *Engagem. J. Pengabd. Kpd. Masy.*, vol. 7, no. 2, pp. 534–550, 2023, doi: 10.29062/engagement.v7i2.1547.
- [22] U. S. P. R. Arachchige and K. L. T. Sathsara, “The impact of outbound training (OBT),” *Int. J. Sci. Technol. Res.*, vol. 9, no. 4, pp. 377–380, 2020.
- [23] S. Bukit, D. Ariastika, Y. Noviati, and Y. Lubis, “Snowball Throwing Learning Model in Growing Questioning Skills of Elementary School Students: A Review,” *J. Corner Educ. Linguist. Lit.*, vol. 2, no. 4, pp. 343–351, 2023, doi: <https://doi.org/10.54012/jcell.v2i4.145>.
- [24] J. O’Connor, S. Ludgate, Q.-V. Le, H. T. Le, and P. D. P. Huynh, “Lessons from the pandemic: Teacher educators’ use of digital technologies and pedagogies in Vietnam before, during and after the Covid-19 lockdown,” *Int. J. Educ. Dev.*, vol. 103, no. January, pp. 1–10, 2023, doi: 10.1016/j.ijedudev.2023.102942.
- [25] A. A. N. M. Akbar, G. H. Sulistyono, F. Megawati, and V. V. Nuralisaputri, “Conceptions on authentic assessment: What Indonesian EFL teachers conceive,” *EnJourMe (English J. Merdeka) Cult. Lang. Teach. English*, vol. 7, no. 1, 2022, doi: 10.26905/enjourme.v7i1.7018.