

Digital Resource Readiness in Micro Online Education Consultancies: A Synthesis of Data Visibility and Knowledge Management Perspectives

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Abstract

Micro online education consultancies increasingly depend on digital platforms, private messaging tools, cloud documents and remote service workflows to coordinate client-facing work. Although these tools allow small firms to operate without physical offices, many consultancies do not possess the internal digital resource readiness needed to manage service information consistently. Client records may be scattered across platform back ends, spreadsheets and chat histories, while advisers often depend on personal notes rather than a shared and updated knowledge base. This paper synthesizes recent and foundational perspectives on digital readiness, data visibility, business intelligence dashboards, customer information management, knowledge management and staff learning routines in small digital service firms. The paper has two research objectives. First, it synthesizes key data visibility and knowledge management challenges faced by micro-online education consultancies. Second, it identifies practical digital resource readiness pathways that can support operational consistency and evidence-informed decision-making without requiring complex enterprise systems. The synthesis suggests that resource readiness in micro consultancies depends on three manageable capabilities: basic dashboard visibility, shared knowledge repositories and regular learning routines. The paper contributes to applied discussions of small-firm digital transformation by shifting attention from external online visibility to the internal resource infrastructure that enables reliable service coordination.

Keywords: Digital Resource Readiness, Data Visibility, Knowledge Management, Micro Consultancies, Education Services

Introduction

Digital platforms have changed how small education-service firms reach and support prospective students. Micro online education consultancies can now deliver study-abroad guidance, course matching, document preparation and post-application support through

video platforms, messaging systems, cloud documents and electronic payment channels. This form of digital service delivery gives small firms an operational advantage: they can serve geographically dispersed clients without maintaining physical branches or large administrative teams. However, the same lean structure that makes these firms flexible also exposes an internal management problem. When service interactions, client records and staff knowledge are distributed across several low-cost tools, the firm may appear digitally active while remaining internally underprepared.

This distinction is important because digital transformation in small firms is not simply a matter of adopting more tools. Recent SME research shows that smaller firms often adopt digital technologies unevenly because of limited resources, managerial capacity, staff skills and organisational readiness (Clemente-Almendros et al., 2024; Pingali et al., 2023; Restrepo-Morales et al., 2024). Micro consultancies face an even sharper version of this problem. A small team may use workplace chat for internal coordination, private messaging for client communication and spreadsheets for tracking applications, payments and service progress. These tools are affordable and familiar, but they do not automatically create data visibility or shared knowledge. Without deliberate resource routines, the firm may struggle to see client status, staff workload, pending service tasks or recurring information gaps.

The problem is especially relevant for online education consultancies because their services are information-intensive. Advisers must respond to questions about eligibility, programme requirements, tuition fees, deadlines, visa procedures, accommodation and document preparation. These answers need to be accurate, updated and consistent across staff members. If advisers rely mainly on personal notes, previous chat records or memory, service quality becomes dependent on individual experience. This can create variation in responses, slow down onboarding and make it difficult for the firm to learn from repeated client questions. Knowledge management research in SMEs has long shown that smaller firms often manage knowledge informally, but recent reviews also indicate that shared repositories, collaboration routines and codified knowledge can improve learning, process quality and responsiveness under resource constraints (Durst et al., 2023; Escobar-Castillo & Velandia-Pacheco, 2023; Yeboah, 2023).

Existing discussions of digitalisation in small service firms often emphasise market access, online presence, customer engagement and digital channel adoption. These topics are useful, but they do not fully explain whether a micro consultancy has the internal resources required to coordinate service work after clients enter its digital channels. A firm can have strong online visibility and still lack basic data visibility. It can also communicate actively with clients while lacking a central knowledge base for staff reference. This paper therefore focuses on internal digital resource readiness rather than external digital promotion.

The paper pursues the following research objectives:

- To synthesize key data visibility and knowledge management challenges faced by micro online education consultancies.
- To identify practical digital resource readiness pathways that can support operational consistency and evidence-informed decision-making in small digital service firms.

The contribution is applied rather than theory-building. By drawing together recent SME digital transformation, dashboard, CRM, knowledge management and workplace learning literature, the paper offers a practical synthesis for micro consultancies that need manageable internal resource infrastructure rather than costly enterprise-level systems.

Digital Resource Readiness in Micro Online Education Consultancies: Evidence from Prior Studies

Digital resource readiness refers here to a small firm's preparedness to collect, organise, share and use operational information in ways that support reliable service delivery. In micro online education consultancies, this readiness is not limited to advanced software adoption. It includes the ability to maintain visible client-status records, monitor workload, update programme information, share staff knowledge and translate repeated service experiences into learning routines. This paper synthesizes prior studies related to SME digital transformation, business intelligence, dashboard use, CRM and customer information integration, knowledge management in SMEs, workplace learning, digital international education and digital service operations.

Approach to Evidence Selection

The evidence used in this paper was selected through a focused narrative approach rather than a systematic review protocol. The purpose was to identify recent and relevant studies that explain the resource conditions faced by small digital service firms, with emphasis on work published between 2022 and 2026. Foundational studies were included only where they supported established concepts such as organisational knowledge creation, knowledge management and digital business strategy (Bharadwaj et al., 2013; Vial, 2019). Six evidence streams guided the selection: SME digital readiness and digital transformation, dashboard and business intelligence use, CRM and customer information management, knowledge management in SMEs, workplace learning and staff routines, and digital international education or education-agent services. This approach is suitable for an applied synthesis because the aim is not to exhaustively map a field, but to integrate evidence that clarifies how micro online education consultancies can build practical internal resource readiness.

Table 1 summarizes the evidence sources that guide the synthesis. The table is not presented as a systematic literature review protocol. Instead, it consolidates relevant streams of recent and foundational literature that help explain why micro consultancies require low-cost digital resource infrastructure.

Table 1

Evidence Sources

Topic	Supporting Evidence Source	Method / Orientation	Key Findings
SME digital readiness	Pingali et al. (2023); Clemente-Almendros et al. (2024); Restrepo-Morales et al. (2024)	Multi-method scale development; representative SME survey; fuzzy logic analysis	Digital readiness in SMEs is shaped by sensemaking, agility, implementation capacity, firm size, managerial capability, resources and staff readiness.
Technological transformation in SMEs	Silva de Mattos et al. (2024); Arranz et al. (2023); Jewapatarakul and Ueasangkomsate (2024)	Systematic literature review; large-scale empirical analysis; PLS-SEM	SMEs need technology assimilation, organisational readiness, knowledge acquisition and internal capabilities to benefit from digital transformation.
Business intelligence and dashboards	Ragazou et al. (2023); Hjelle et al. (2024); Rieg (2025)	Bibliometric review; dashboard visualisation experiment; dashboard-use framework	BI and dashboard use support decision-making by improving information format, currency, completeness, perceived usefulness and decision quality.
CRM and client information management	Chatterjee et al. (2022); Ivens et al. (2024); Saad et al. (2023)	SEM; configurational analysis; systematic review and stakeholder interviews	CRM-related capabilities help firms structure customer information, coordinate operational processes and improve service management outcomes.
Knowledge management in SMEs	Durst et al. (2023); Escobar-Castillo and Velandia-Pacheco (2023); Yeboah (2023)	Follow-up literature review; SME-focused literature review; systematic review	SMEs often manage knowledge informally, but shared repositories and knowledge-sharing processes can support learning, consistency and innovation.
Workplace learning and staff routines	Watkins and Marsick (2023); Civelek et al. (2023); OECD (2021, 2024)	Conceptual review; empirical RBV study; policy reports	Staff learning, digital skills and informal workplace learning routines are important for small firms that

Topic	Supporting Source	Evidence	Method / Orientation	Key Findings
Digital international education and agent services	Chang and (2022); Chen and Altbach (2022); Nikula et al. (2023)	Gomes (2023); Reisberg (2022); et	Conceptual commentary; qualitative interview study; sector commentary; edited research volume	cannot rely on large training systems. International education services increasingly depend on digital interaction, intermediaries and information-intensive guidance, which heightens the need for reliable service information.
Digital service operations	Wirtz et al. (2023); Costa et al. (2023); Vial (2019)		Conceptual service research; qualitative synthesis; review	Digital service firms require governance, data responsibility, customer-service digitalisation and internal process adaptation.

The evidence in Table 1 points to a common argument: small firms do not benefit from digital tools merely because those tools are available. They need organisational routines that allow information to be seen, shared and used. For micro online education consultancies, this means that resource readiness should be understood as a practical operating capability. It is less about adopting a complete enterprise system and more about creating minimum viable information infrastructure: a dashboard for visibility, a knowledge base for consistency and learning routines for continuous updating.

Thematic Synthesis

Digital Transformation and Resource Constraints in Small Service Firms

The first theme concerns the uneven nature of digital transformation in small service firms. Digital technologies give SMEs access to new markets and more flexible operating models, but resource constraints often limit their ability to implement these technologies systematically. Pingali et al. (2023) define digital readiness in emerging-market SMEs through technological sensemaking, agility and implementation, showing that readiness requires more than awareness of digital tools. Clemente-Almendros et al. (2024) similarly find that managerial background, firm size and accumulated knowledge influence SME digital transformation. Restrepo-Morales et al. (2024) identify financial limits, high investment costs, staff resistance, shortages of qualified personnel and weak digital culture as barriers to SME digitalisation.

These findings are directly relevant to micro online education consultancies. Such firms commonly use accessible tools because they are affordable and easy to deploy. Messaging apps, shared drives and spreadsheets may be sufficient in the early stage, but they can become fragile when client numbers, programme options and staff responsibilities increase. The issue is not that these tools are unsuitable. Rather, the problem is that they are often used without an integrated resource logic. Platform records may show audience or enquiry activity, spreadsheets may record payments or application stages, and chat histories may

contain important client-specific details. Yet these sources may not connect into a single operational view.

Recent SME studies also caution against assuming that digital transformation follows the same pathway in large and small firms. Silva de Mattos et al. (2024) show that technological transformation in SMEs involves both technology assimilation and business model adaptation, while Arranz et al. (2023) argue that SME digitalisation depends heavily on internal capabilities. Jewapatarakul and Ueasangkomsate (2024) further show that digital organisational culture, knowledge acquisition and organisational readiness shape transformation outcomes. This issue is sharpened in international education services, where digital interaction increasingly complements or replaces physical engagement with students and families (Chang & Gomes, 2022). For micro consultancies, these insights imply that internal readiness must be built through small routines that fit lean teams. Digital resource readiness therefore begins when staff can locate the right data, update the right information and use shared knowledge in daily service work.

Data Visibility and Dashboard Limitations

The second theme concerns data visibility. In micro consultancies, managers often need to know the current status of multiple clients, the distribution of adviser workload, common service delays and recurring questions. However, these indicators may be distributed across digital platforms, spreadsheets and chat records. When data remain fragmented, decision-making becomes dependent on memory, informal check-ins or occasional manual reviews. This creates a gap between digital activity and managerial visibility.

Business intelligence and dashboard research helps clarify this problem. Ragazou et al. (2023) show that BI can support SMEs by organising important data for management decision-making and competitive improvement. Hjelle et al. (2024), in an experimental study of dashboard visualisations, find that information format, currency and completeness influence decision quality through reduced task complexity and higher information satisfaction. Rieg (2025) also places information quality and decision quality at the centre of digital dashboard use. These studies indicate that the value of a dashboard is not simply visual appeal; its value lies in turning scattered data into usable information.

For micro online education consultancies, dashboard readiness does not need to begin with advanced analytics. A basic weekly dashboard may be enough to show active clients, pending documents, delayed responses, upcoming deadlines, staff workload and common service questions. Such a dashboard can help managers identify whether service pressure is concentrated in one adviser, one destination pathway, one stage of application or one period of the academic calendar. It can also help the team notice patterns that would otherwise remain hidden in chat histories and spreadsheets.

The practical risk is overbuilding. Small firms may postpone dashboard development because they imagine that dashboards require expensive systems, data engineers or complex software. The literature suggests a more modest interpretation. If dashboard value depends on information quality, timeliness and decision relevance, then micro consultancies can begin with disciplined data selection rather than technical complexity. The key is to define a small

number of operational indicators that staff will actually update and managers will actually use. In this sense, data visibility is a readiness routine before it is a technology project.

Knowledge Management and Information Consistency

The third theme concerns knowledge management and information consistency. Education consulting is a knowledge-heavy service. Advisers must provide updated answers about entry requirements, tuition fees, application timelines, document checklists, visa procedures and institutional policies. International education research shows that education agents and related intermediaries play an important role in helping students navigate admission pathways, institutional choices and procedural uncertainty (Altbach & Reisberg, 2022; Chen, 2023; Nikula et al., 2023). Some of this knowledge is explicit and can be recorded in standard documents. Some is tacit and develops through repeated client conversations, application experience and staff judgement. Micro consultancies face difficulty because both types of knowledge are often stored informally in individual notes, past messages or personal memory. Knowledge management literature provides a useful lens for this issue. Foundational work by Nonaka (1994) explains that organisational knowledge is created through interaction between tacit and explicit knowledge. Davenport and Prusak (1998) similarly emphasise that knowledge must be captured, transferred and used rather than merely possessed. Recent SME-specific reviews show why these ideas matter for smaller firms. Durst et al. (2023) provide a broad follow-up review of KM in SMEs and show that research has increasingly examined KM enablers, learning, networks and technology. Escobar-Castillo and Velandia-Pacheco (2023) note that SMEs often carry out KM practices in a more informal and less planned manner than larger firms. Yeboah (2023) also argues that knowledge-sharing processes should align with organisational resources and objectives.

In micro online education consultancies, weak KM appears in everyday service details. One adviser may use an outdated tuition figure, another may remember a different application deadline, and a new staff member may need to search old chat records before answering a common question. These issues do not necessarily reflect carelessness. They often reflect the absence of a central and maintained knowledge base. Without a shared repository, the firm cannot easily standardise answers, update staff or onboard new advisers.

A central knowledge base does not need to be complex. It can begin as a structured cloud folder or workspace containing programme sheets, fee tables, visa notes, document checklists, frequently asked questions and internal service scripts. The important point is not the platform chosen, but the governance routine: who updates the file, when updates are reviewed, how staff are notified and how obsolete information is removed. When these routines are in place, knowledge management supports information reliability and service coordination. For micro consultancies, KM readiness is therefore a protection against overdependence on individual staff memory.

Low-Cost Readiness Pathways for Micro Consultancies

The fourth theme concerns practical readiness pathways. The literature on SME digital transformation repeatedly shows that small firms face resource and capability limits (Clemente-Almendros et al., 2024; Restrepo-Morales et al., 2024; Silva de Mattos et al., 2024). Therefore, recommendations for micro consultancies should not assume immediate

adoption of advanced CRM, enterprise resource planning or automated analytics systems. A more suitable approach is minimum viable digital resource infrastructure.

The first pathway is a one-page weekly dashboard. This dashboard can include a small set of operational indicators: active client cases, pending tasks, upcoming deadlines, overdue follow-ups, adviser workload and frequently repeated client questions. The purpose is not to produce sophisticated analytics but to make the service situation visible. A weekly dashboard also creates a rhythm for evidence-informed discussion.

The second pathway is a shared knowledge repository. This repository should contain standard programme information, fees, application procedures, visa notes, FAQ responses and document checklists. To remain useful, it needs a named owner and a monthly update routine. Micro firms often avoid documentation because staff feel busy, but the cost of repeated explanation and inconsistent answers can be higher than the cost of maintaining a simple reference system.

The third pathway is a simple client status tracker. This can be a spreadsheet or lightweight CRM board that records each client's stage, required documents, adviser owner, next action and deadline. Chatterjee et al. (2022) and Ivens et al. (2024) show that CRM-related capabilities depend not only on technology but also on organisational and user-level factors. For micro consultancies, a tracker becomes useful when it reduces search time and clarifies responsibility.

The fourth pathway is a short learning routine. Watkins and Marsick (2023) argue that workplace learning in complex environments increasingly depends on decentralised and adaptive learning. OECD work on SME skills also highlights the importance of informal learning in smaller firms. A weekly 30-minute meeting can allow advisers to review difficult questions, update the knowledge base and identify where dashboard indicators reveal service pressure. This routine translates daily experience into organisational learning.

Together, these pathways form a practical readiness approach. They do not require a formal conceptual framework, expensive technology or large administrative capacity. Instead, they help micro consultancies connect data visibility, shared knowledge and staff learning into ordinary service routines.

Study Implications

This synthesis has applied scholarly implications for research on small-firm digital transformation. It shows that micro online education consultancies should not be understood only through external digital presence or customer-facing communication. These firms also require internal resource readiness. Recent SME research has highlighted digital readiness, technological assimilation, organisational culture, knowledge acquisition and internal capabilities as important transformation conditions (Arranz et al., 2023; Jewapatarakul & Ueasangkomsate, 2024; Pingali et al., 2023). This paper extends that applied discussion into the micro online education consultancy context by proposing a size-sensitive view of digital readiness: micro consultancies require minimum viable resource infrastructure rather than enterprise-level digital systems.

The synthesis also suggests that the concept of digital readiness should be scaled to firm size. For larger firms, readiness may involve integrated systems, formal data governance and advanced analytics. For micro consultancies, readiness may begin with reliable spreadsheets, clear dashboard indicators, shared document repositories and disciplined staff routines. This size-sensitive view is important because advice designed for larger SMEs may be unrealistic for very small digital service firms. The relevant question is not whether a micro consultancy has adopted advanced technology, but whether it has created simple resource infrastructure that staff can maintain.

The managerial implications are direct. Managers of micro online education consultancies should first identify where information is currently scattered. They can then separate three categories of resource work: operational data, service knowledge and staff learning. Operational data should be converted into a small dashboard. Service knowledge should be codified in a central reference space. Staff learning should be organised through short, repeated routines. This approach allows small firms to improve consistency without making large technology investments.

A practical starting point is a minimum viable resource system consisting of five elements: a weekly dashboard, a client status tracker, a shared FAQ bank, a standard programme-and-fee sheet and an adviser onboarding checklist. These elements should be reviewed through a short weekly meeting and a monthly knowledge-base update. The goal is not to formalise every interaction. The goal is to reduce avoidable uncertainty, improve information reliability and make service coordination less dependent on individual memory.

Conclusion and Future Recommendations

Micro online education consultancies operate in a digital environment, but digital operation does not automatically create digital resource readiness. This paper has argued that internal readiness depends on the firm's ability to make service data visible, organise knowledge consistently and create learning routines that fit a lean team. The synthesis shows that resource bottlenecks in micro consultancies commonly appear as fragmented data, weak dashboard visibility, lack of a central knowledge base and informal staff learning.

The paper's central conclusion is that micro consultancies need minimum viable digital resource infrastructure before they need complex enterprise systems. A one-page dashboard, shared knowledge repository, client status tracker, standard information sheets and short learning meetings can help small teams improve operational consistency and evidence-informed decision-making. These tools are modest, but they address the practical conditions under which micro firms actually work: limited staff, limited budget, repeated client questions and high dependence on digital communication.

Future research can build on this synthesis in several ways. Case studies could examine how micro online education consultancies build dashboards and knowledge bases over time. Survey research could test whether data visibility, knowledge sharing and staff learning routines are associated with service consistency, service reliability and operational performance. Longitudinal studies could explore how resource readiness changes as firms grow from founder-led consultancies into larger digital service teams. Action-oriented

research could also evaluate low-cost readiness pathways in real firms, provided that the research design remains transparent about context and evidence strength.

Overall, digital resource readiness offers a practical lens for understanding the internal side of small digital service work. For micro online education consultancies, the challenge is not only to be visible online, but also to become internally prepared to deliver reliable, coordinated and evidence-informed service.

Theoretical and Contextual Contribution

This research contributes to existing knowledge by extending the discussion of SME digital readiness into the specific context of micro online education consultancies. Theoretically, it shows that digital readiness in very small service firms should not be understood only as technology adoption, but also as the development of minimum viable resource infrastructure that links data visibility, knowledge sharing and staff learning. This size-sensitive interpretation complements broader digital transformation literature by explaining how small firms can build operational readiness without relying on complex enterprise systems. Contextually, the paper highlights the information-intensive nature of online education consultancy work, where advisers must coordinate changing programme, fee, timeline and procedure information across fully digital service interactions. By positioning dashboards, shared knowledge repositories and learning routines as practical readiness mechanisms, the study clarifies how micro consultancies can strengthen service consistency and evidence-informed decision-making under limited resource conditions.

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