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A Conceptual Model for Developing Digital Maturity in Hospitality Micro and Small Enterprises

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Abstract: Against the backdrop of the fourth industrial revolution and the COVID-19 pandemic, digital transformation (DT) in the day-to-day operations of micro and small enterprises (MSEs) comes with challenges. Existing maturity models generally focus on advanced levels and are inappropriate for relatively immature companies (e.g., most hospitality MSEs). This study used online documents and in-depth interviews as data sources to develop a customized maturity model framework for hospitality MSEs. Through coding analysis, the research identified four key dimensions that constitute the digital maturity of hotels: strategy and organization, digital technology, digital capabilities, and integrated business. These enterprises have progressed in their digital maturity, moving from an IT-enabled transformation to adopting a brand-oriented approach. The selection of a digital transformation strategy depends on strategic alignment. The proposed model provides a comprehensive understanding of the maturity levels of these companies, thereby facilitating their successful integration into the ongoing modern industrial revolution.

Keywords: digital maturity; digital transformation; hospitality; MSEs

1. Introduction

In the era of the digital economy, digital transformation (DT) has emerged as the driving force behind hospitality industries' growth. Digital technology has brought disruptive changes that have reshaped tourists' behavior and expectations along with the competitive landscape of tourism and hospitality [1]. Hospitality enterprises are part of a dynamic, time-sensitive industry; they must react promptly and skillfully to continue operating in the face of challenges [2]. DT has become unavoidable for these enterprises following the COVID-19 pandemic. The acceleration of DT stands to promote the hospitality industry's resilience and sustainable development. While DT holds significant potential, many companies face substantial challenges in its implementation [3]. For instance, certain luxury hotels have yet to embrace digital transformation [4]. This challenge is particularly prevalent among small- and medium-sized enterprises, which often confront constraints in both digitalization levels and resources [5]. Therefore, organizations should conduct a comprehensive assessment of their digital maturity and determine viable strategies for transformation and enhancements.

Digital maturity reflects an organization's capacity to understand, use, and strategically adapt to digital technology. Associated research has offered businesses expert guidance on DT implementation [6]. Organizations can realize elegant, structured implementation by appraising their digital maturity and discerning gaps and opportunities for which action plans can be established [7]. Digital maturity audits typically cover dimensions such as leadership and culture, organization and talent, digital strategy and innovation, and technology infrastructure [8]. By identifying their degree of digital maturity, businesses can tailor DT-related approaches to specific objectives, capabilities, and limitations. DT is a

multifaceted process requiring distinct resources, measures, and qualities. Its prerequisites also differ by business type and industry [6].

The literature on digital maturity has primarily concentrated on the manufacturing sector [9,10] and large companies [8]. The digital maturity of "high-touch" service industries, such as hospitality enterprises, that face obstacles to DT, has not been researched as extensively as manufacturing and "low-touch" service companies. Hospitality possesses idiosyncratic features compared with other service industries, such as finance and logistics, in that hospitality enterprises' services are experience-oriented. By contrast, DT can improve the effectiveness of "low-touch" service. DT in "high-touch" service hospitality businesses is unusual, given the need to strike a balance between efficiency and the customer experience. The majority of hospitality enterprises are small and micro-level firms. These enterprises demonstrate a notable level of flexibility [11], which allows them to engage in rapid innovation [12] and evolution [13]. Moreover, these enterprises frequently serve as catalysts for social innovation, generating novel business models, technologies, and products. Nevertheless, studies on hospitality MSEs' DT and maturity are scarce.

Given these research gaps, this study is guided by two questions: (1) what dimensions are included in hospitality MSEs' digital maturity?; and (2) which DT stages do hospitality MSEs complete in pursuit of greater maturity? Limited research has focused on the DT of MSEs, especially in the service industry. The DT field is broad and does not have a linear path towards evolution [14]. This study explores the specificity of DT in hospitality MSEs via qualitative analysis. Findings reveal key areas of digital maturity for these MSEs and outline salient DT stages to map a path towards digital maturity. These results enrich the knowledge base on organizational transformation by clarifying how hospitality MSEs currently handle DT-related activities.

2. Literature Review

2.1. Digital Maturity

The concept of digital maturity emerged over time [15]. Chanias and Hess [16] defined it as the current state of a company's DT. The term "maturity" is used in this study to describe the degree of completeness in an organization's DT process. DT involves more than simply adopting new technologies [17]; it is also fluid and can reform an organization's technology, business models, culture, and workforce to achieve a desired state [7,18]. Because DT is ongoing [7], assessing digital maturity can provide management with a set of criteria to measure an enterprise's status and performance during the DT process [19].

Multidimensional models are often used to evaluate DT maturity, with the number of relevant dimensions and levels (Table 1). For instance, Teichert [20] conducted a systematic literature review on digital maturity and discovered numerous popular domains: digital culture, technology, operations and processes, digital strategy, organization, digital skills, innovation, cultural insights, experience, governance, vision, the digital ecosystem, leadership, compliance and safety, products and services, and business models. According to Chanias and Hess [16] and Remane et al. [21], the primary areas of digital maturity encompass digital organizational readiness and digital intensity. Wang et al. [22] consolidated these dimensions into two broad categories. The first, digital readiness, entails judging an organization's preparedness for DT based on facets such as strategy and organization, technology infrastructure, and capabilities. DT intensity refers to the degree of digitalization in business operations and management, measuring a company's strength in implementing digitalization. This frame enables organizations to determine which domains are essential for DT readiness. The classification also guides enterprises in systematically preparing for DT [7].

Table 1. Representative models for digital maturity.

Author(s)	Key Dimensions	Maturity Levels	Context
[23]	Digital intensity; digital transformation management intensity	Beginners, conservatives, fashionistas, and digirati	
[24]	Input, processing, output, and underlying infrastructure		Industry-level digitization index
[14]	Customer experience, product innovation, strategy, organization, process digitization, collaboration, IT, culture and expertise, and transformation management	Five stages	
[21]	DT impact, DT readiness		Traditional industries
[25]	Process, monitoring and control, technology, and organization		Manufacturing companies
[26]	Strategy, products/services, technology, people/culture, management, and processes		Small- and medium-sized enterprises (SME)
[22]	Digital readiness (strategy and organization, infrastructure), DT intensity (business processes and management digitalization, integrated business)	Five levels	
[27]	Organization, strategy, management, data analytics, data management, technology management, and support		Manufacturing
[28]	Organization and technology, digital ecosystem, data and metrics, competition, and marketing	Five phases	Airline industry
[6]	Strategy, market, operations, culture, and technology	Three levels	Retail industry
[19]	Smart operations, smart products and services, smart facilities, people, strategy and organization, and sustainability		Sustainable organizations

Researchers have employed various methods to evaluate enterprises' DT. Techniques have included case analysis, hierarchical clustering analysis, survey questionnaires, expert assessment, the balanced scorecard approach, and interviews. Most studies feature quantitative analysis, such as by evaluating digital maturity in manufacturing, using the Industry 4.0 maturity model, or devising models for DT in large enterprises. Qualitative methods are more appropriate for studying the DT process in small- and medium-sized enterprises because the protocol is not always clear. Stich et al. [29] performed a case study on 30 companies and found several obstacles among MSEs (e.g., inconsistent understanding of digitalization, unclear positioning, and the lack of a development roadmap for DT). The absence of a scientific methodology can impede organizations' DT. Exploring DT-related theory and approaches to evaluate enterprise digitalization is crucial for promoting digital practices in traditional MSEs.

2.2. Digital Transformation in Hospitality

The hospitality sector was one of the earliest to undergo digitization. Digital technology has changed hospitality consumers' actions and expectations, ultimately disrupting the industry's competitive landscape [30]. Digital disruption also threatens hospitality businesses' survival [31–33]. DT competitors may replace industry businesses that fail to adapt to shifting customer behavior, competitive patterns, or data availability [34].

Hospitality research has long focused on the use of information and communications technology [30,35]. Studies on digital technology in hospitality normally cover two topics:

(1) digital technology implementation and (2) tourists' behavior. Interest in enterprises' DT strategies also appears to be growing. For example, Busulwa, Pickering, and Mao [34] proposed 16 dynamic capabilities necessary for DT. From an organizational readiness standpoint, Lam and Law [4] evaluated the sales and marketing teams of some luxury hotels in Asia. The authors discovered that these establishments were ill-prepared for the digital age, in terms of not only technology but also processes, personnel, culture, and mindset.

Investigations of hospitality enterprises' DT remain scarce, leaving many issues unresolved. First, this research stream is at a point of theoretical contemplation; there is much room for exploration. Foci could include the features, maturity levels, and other core aspects of DT within hospitality businesses. Second, scholars have yet to address the context of hospitality MSEs. Most organizations in the far-reaching hospitality sector are micro- and small-sized businesses. These MSEs' survival and digital advancement are key to the social value creation that accompanies DT and high-quality hospitality industry development. However, these enterprises are chiefly situated in rural areas around large metropolises, economically underdeveloped western regions, and crisis-prone districts. Many MSEs have limited resources and lag behind larger firms in terms of DT. More research is needed, therefore, on these organizations [36].

3. Methodology

This study explored the connotations of DT in hospitality MSEs. Guided by digital maturity frameworks that highlight readiness and intensity, the aim was to clarify the dimensions and developmental stages of digital maturity. Findings deliver "a comprehensive understanding of the topic" [37] (p. 39). Qualitative methods were deemed suitable, given the nature of the research objectives. Grounded theory is a method of continuously abstracting and generalizing theories from raw empirical data [38]. It maintains a close connection with the fresh original data while also reflecting the level of abstraction in theory, making it an effective research strategy and analytical procedure. Grounded theory is a research approach that focuses on studying abstract problems and their processes, with an emphasis on social process analysis [38]. The essence of measuring the digital maturity of MSEs is to assess the complex relationships and processes involved in digital transformation. Therefore, the utilization of grounded theory is highly appropriate for conducting comprehensive research in this domain.

This research study examines MSEs within the hospitality sector—a collection of independently owned and operated establishments with constrained resources and personnel. They encompass lodging options such as holiday inns, bed and breakfasts (B&Bs), guesthouses, boutique hotels, hostels, and similar accommodations with fewer than 50 rooms.

3.1. Data Collection

In-depth interviews were held to gather primary data from hospitality MSE owners, industry association personnel, and industry consultants. Secondary data (e.g., from industry reports, news articles, and online analytical articles) were also referenced to facilitate data collection; this step ensured data triangulation and enhanced the validity of analysis.

The first stage of data processing involved document analysis. This method helps researchers construct meaning, develop understanding, and gain insight into questions of interest. It also generates data and a contextual background for study participants [39]. This approach is beneficial in its efficiency, coverage, accuracy, non-invasiveness, and non-reactivity [40]. All content related to the research questions, such as text, images, figures, and articles [41], can be regarded as data. Purposive sampling was employed to select information-rich documents in order to achieve data saturation [42]. Two sets of Mandarin keywords, specifically "digital transformation" (e.g., digitalization and digital transformation) and "hospitality MSEs" (e.g., holiday inns, B&Bs, guesthouses, boutique hotels, and hostels), were utilized to search for pertinent documents on various websites (e.g., online news articles, government reports, and industry reports). Subsequently, the

downloaded documents underwent meticulous examination to identify and eliminate duplicates, irrelevant information (e.g., advertisements), assess the depth of content, and evaluate topic relevance. Eventually, in May 2022, 14 documents comprising 44,000 words pertinent to the research topic, were selected. Document analysis uncovered the background of DT among hospitality MSEs. Critical DT dimensions were also identified, serving to guide subsequent in-depth interviews.

In-depth interviews were exploratory. The interviews in this study included open-ended questions (e.g., "What strategies/actions have you taken to digitize your business?", "What are the most critical aspects of DT?", and "What is the future direction for your DT?"), which can prompt unanticipated statements [43]. Exploratory questions, such as "Could you provide an example?", could inspire participants to provide detailed answers. Data saturation occurred in this study once no new content emerged during the last few interviews. All interviews were conducted between November 2022 and January 2023, using a combination of purposive and convenience sampling. The sample consisted of 28 MSE owners or managers and 7 industry association managers and consultants. To obtain a comprehensive understanding of hospitality MSEs' DT, the 28 owners were chosen from firms whose DT had performed either very poorly or very well. Respondents' basic information is summarized in Appendix A. All interviews were conducted in Chinese, the native language of both the interviewer and interviewees. The conversations lasted more than 30 min, with the longest being 89 min, and interview data were recorded digitally with participants' consent. Data were transcribed verbatim upon interview completion.

3.2. Data Analysis

Two researchers read the interview transcripts and secondary data without taking notes. The framework of digital readiness and DT intensity was applied to investigate the connotative dimensions and development process of digital maturity in hospitality MSEs. Data were analyzed in NVivo 12 using the three-stage coding procedure from grounded theory. First, open coding was performed to map the original data; information was coded word by word and sentence by sentence. The data were continuously compared and reorganized in this step via conceptualization and categorization. Next, axial coding was employed to extract core categories and discover their associations and differences between the established concepts and classifications. Table 2 lists the results of axial and open coding. Selective coding then incorporated these findings, especially core categories and their relationships, into theoretical conclusions. Figure 1 depicts the outcomes of selective coding. A third researcher was involved throughout the study process and reviewed the data analysis procedure to refine identified themes and minimize the effects of researchers' personal biases when examining this phenomenon [37].
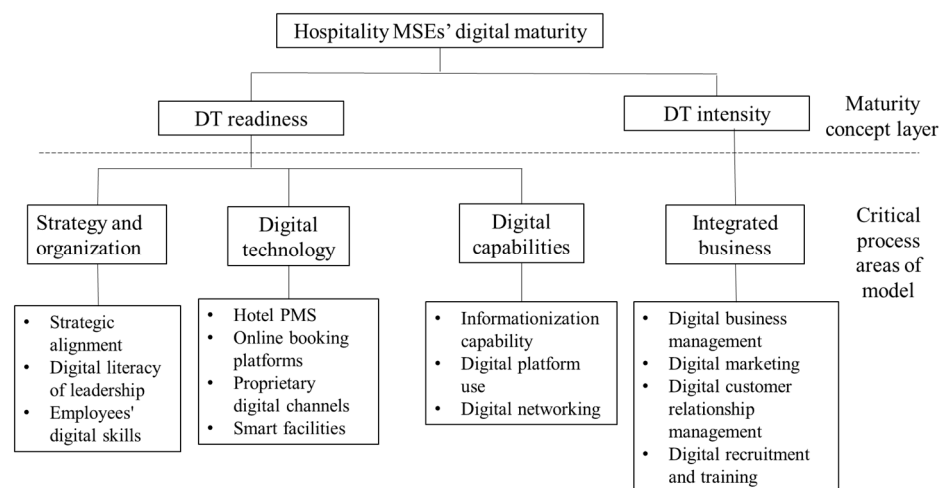

Figure 1. Conceptual Model of Digital Maturity in Hospitality MSEs.

Table 2. Results of Axial and Open Coding.

Main Category	Sub-Categories	Codes
Strategy and organization	Digital literacy of leadership	Awareness of DT
		Knowledge and skills in digital technology
	Employees' digital skills	Knowledge and skills in digital technology
	Strategic alignment	Business digital strategic alignment
Digital technology	Hospitality property management system (PMS)	Software-as-a-service (SaaS) solution
	Online booking platform	Online booking platforms
	Social media and content platform	Social media
		Short video platforms
		Online community platforms
		Influencer community platforms
	Proprietary digital channels	Official websites
		Mobile applications/lightweight applications
	Smart facilities	Smart locks
		Smart home devices
		Artificial intelligence drawing technology
Digital capabilities	Informationization capability	Informationization capability
	Digital platform use	Platform order management capability
		Platform rule adaptation capability
		Platform marketing capability
	Digital networking	Digital partner selection capability
		Digital network integration and utilization capability
Integrated business	Digital business management	Reservation management
		Room inventory management
		Financial management
		Data analysis
	Digital marketing	Booking platform-based marketing
		Content-based marketing
		Brand marketing
	Digital customer relationship management	Customer feedback management
		Own traffic community management
	Digital recruitment and training	Emerging media-based recruitment
		Online learning and training

4. Dimensions of Digital Maturity

Hospitality MSEs' DT maturity featured four key dimensions: strategy and organization, digital technology, digital capabilities, and integrated business. The first three measure an MSE's readiness for digitalization, while the last conveys an MSE's strength of digitalization.

4.1. Strategy and Organization

Strategy and organization are critical in DT, which is a complicated process requiring support in the form of company readiness. Hospitality MSEs rarely develop comprehensive digital strategy and are instead greatly influenced by the **digital literacy of leadership**. MSE owners can be seen as navigators having greater impacts than the leaders of larger enterprises. Digital literacy includes awareness of DT as well as knowledge and skills related to digital technology. An owner's ability to steer the business towards DT is similarly essential. Being cognizant of DT enables owners to respond to trends, even without being able to forecast them, thus protecting enterprises from becoming outdated. **Employees' digital skills** constitute another part of the DT foundation: workers must execute numerous aspects of DT. Owners' and leaders' digital literacy, along with employees' digital skills, is an integral micro-foundation of DT in hospitality MSEs.

The DT of MSEs in the hospitality sector requires **strategic alignment**; that is, a company's IT strategies must match the business's mission, goals, and plans [44,45]. Aligning a company's business strategy and information architecture is paramount for DT [46]. Hospitality MSEs, especially, need to choose digital technologies that suit the products and services available. In other words, the positioning of company offerings should match the adopted DT tactics. A business consultant explained:

> *"Each product has a suitable digital marketing and promotion method, and marketing and promotion are dynamic and changing. . . . The strategies for high-end, mid-range, and low-end products are all different, and the product determines the marketing method."* (No. H4)

4.2. Digital Technology

Digital technology drives and supports enterprise DT. Digital technology is seldom MSEs' core business; they may not possess adequate research and development capacities or technological infrastructure. Today's market offers an array of established digital tools (e.g., platforms, software, and services) for subscription and immediate use without the need for extensive development. The threshold and cost of DT implementation is, thus, lower than ever before. Hospitality MSEs' digital technologies usually include those described below.

A **hotel management system** expedites MSEs' management of rooms, finances, catering, and customer information. Firms' work efficiency and service quality each improve as a result. Additionally, MSEs are main users of **online booking platforms** such as online travel agencies (OTAs), short-term rental sites, and travel community forums. These platforms have become vital marketing channels due to the rise of online booking. Visitor numbers and sales revenue are increasing in kind, as are hotel occupancy rates. **Social media and content platforms** such as short video platforms and influencer communities have also become important for tourists. Sites like TikTok and Little Red Book afford MSEs chances to showcase their diversified offerings. This type of marketing can target customers that align with a business's brand positioning to build a private audience.

Well-managed hospitality MSEs can even establish **proprietary digital channels** to reduce intermediary costs and enhance brand marketing. For instance, organizations may choose to outsource website or application development, favor lightweight applications, or use low-code services to create management systems at a reduced cost. The owner of a holiday inn commented:

> *"We have our own marketing channel matrix, including many self-media operating accounts and light application. Mainly because we have accumulated many customers, we have a strong foundation. And we have [formed alliances with] companies along a travel line in the northwest of Yunnan Province to promote together."* (No. 22)

Smart facilities enhance the guest experience by providing intelligent, convenient, and personalized services. Smart home devices for accommodation have helped MSEs be more flexible in completing upgrades compared with large hotels:

"We used intelligent furniture earlier than large hotels, such as smart curtains, automatic air conditioning, TV management, humidifier management... many tourists choose to stay in our inn because of our facilities." (No. 4)

In addition to smart locks that can help MSEs manage room status, other smart home facilities have become appealing. Yet, MSEs with retro or minimalist styles may not use these options. Drawing technology that uses artificial intelligence, which is developing rapidly, can also aid MSEs in designing unique products while lessening design costs.

4.3. Digital Capabilities

Although digital development has spawned numerous technologies and platform resources for hospitality MSEs, merely possessing these assets does not guarantee successful DT: enterprises must update their capability systems and reconfigure resources based on value creation within these systems [46]. This study's results show that hospitality MSEs' digital capabilities generally span informationization, digital platform use, and digital networking.

Informationization. The introduction of property management systems (PMSs) provided in a SaaS manner has reshaped hospitality MSEs' daily operations. Informationization enables these businesses to integrate PMS functions in everyday tasks, thereby lowering labor costs, boosting work efficiency, and heightening service quality. It essentially transforms traditional management concepts by taking a digital approach to transaction management. A homestay business owner led this transition by implementing digital management in every employee's work routine, saying: "Cleaning staff can smoothly access the PMS to maintain updated room status records and efficiently complete cleaning duties" (No. 17).

Digital platform use is vital for hospitality MSEs' DT, which heavily relies on services from external platforms. These MSEs' use of digital platforms to manage their marketing and business activities is of utmost importance. This ability encompasses platform-based order management, rule adaptation, and marketing.

MSEs' *platform order management capability* refers to organizations' capacity to manage orders via third-party digital platforms such as PMSs and online booking partners. Daily order management on these sites requires enterprises to co-ordinate with customers on products, cost, delivery, and payment. Some enterprises can adjust their prices to be competitive with those of other homestays on a given platform. For example, one homestay owner stated: "We refer to the competitors' room prices and see whether they have made any adjustments" (No. 3). However, handling orders on multiple platforms can cause errors. Sales and room management must, therefore, be integrated using PMSs to improve efficiency and service quality. One owner explained:

"We received many orders at the beginning. When two platforms handle orders simultaneously, it's easy to duplicate orders. After a few duplicates, my father complained. Then, the photographer we hired suggested using a cloud manager." (No. 15)

Platform rule adaptation capability reflects MSEs' ability to deftly respond to digital platforms' changing services and rules. For example, OTAs deploy a complex algorithm to assess each enterprise and allocate network traffic based on rankings. Some MSE owners who are proficient in OTA operations have identified content that affects their ranking:

"[The online booking platform] has red lines that cannot be crossed, such as rejecting orders or converting a booking made on the platform into an off-platform booking. In addition, timely responses are required, and negative reviews need to be responded to promptly. Also, the room images should be exquisite and showcase the unique features of the inn, which will make it easier for guests to click through." (No. 20)

Other MSEs struggled to adapt to platform rules: "We usually contact the guest on the [booking] platform and ask them to book privately, giving them some discounts, mainly to avoid negative reviews" (No. 16). This homestay's correspondingly low ranking on Ctrip has compromised its business. Social media and other emerging platforms have their own

regulations. If hospitality MSEs wish to primarily depend on a specific platform for their operations, they must conform to the site's rules.

Platform marketing capability captures the marketing abilities of hospitality MSEs that rely on online booking platforms, social media, and content platforms. The digital economy has improved hospitality enterprises' digital access: these organizations can now swiftly obtain competitors' product details and gain insight into market trends, thanks to customer reviews. Some OTAs (e.g., Ctrip) offer MSEs free or fee-based access to this analytical data. Hospitality MSEs can exploit this information to improve their offerings and better fulfill customers' needs:

> *"Ctrip provides a lot of data, and we do use this big data to make decisions. For example, they even provide us with a user profile, including which provinces your orders come from, and we will adjust accordingly based on this information."* (No. 3)

Hospitality MSEs principally use platform marketing to generate sales. The companies must also disseminate product and service information effectively. For instance, when using online booking platforms, MSEs should seek to elevate their search rankings by adhering to platform guidelines and improving service quality to encourage positive feedback. Reputation is a key indicator of service quality on these sites alongside visually appealing photographs. Comparatively, content platforms offer hospitality MSEs ample opportunities to exhibit their products. High-quality content (in terms of text, photos, and videos) is the cornerstone of platform marketing. However, "the cost of creating high-quality content continues to rise despite the decreasing distribution cost" (No. H4), posing challenges for MSEs.

Relying on social media and content platforms to acquire customers and manage them on public accounts is crucial for marketing. An enterprise's number of social media followers, comments, and content shares are direct reflections of its success in this respect. Hospitality MSEs need to routinely produce content or co-ordinate activities to maintain customer engagement and online community participation. Community marketing can foster repeat patronage and peer recommendations. One business owner said: "Our marketing heavily relies on customers; word of mouth is key. From our observations, [the number of] customer posts on Little Red Book [a popular social media app in China] exceed[s] that on other platforms" (No. 5). Keeping an enterprise's customer community active "requires significant time and effort" as well (No. H4).

Digital networking. Digital networking has become increasingly important in the modern digital environment [18]. The DT of hospitality MSEs is largely contingent on third-party platforms' digital technologies. These MSEs must adopt a network-centric perspective and co-create value with other digitally connected companies [47]. Digital network capabilities involve digital partner selection capability, digital network integration, and use.

Digital partner selection capability refers to hospitality MSEs' competence in identifying suitable platforms, service providers, and other partners when offering products and services. Choosing the right partners based on consumers' expectations and digital development trends is pivotal for MSEs' successful DT implementation. A holiday inn owner with a sound understanding of internet operations explained:

> *"Around seven or eight years ago, our customers mostly came through Ctrip and Meituan. . . . A WeChat Official Account was quite effective four or five years ago. If you performed well on a WeChat Official Account in 2015, you could generate almost half of the revenue. . . . [Now], the influence of TikTok is rising rapidly."* (No. 4)

The inn subsequently turned to TikTok for marketing and achieved higher conversion rates. Selecting an optimal digital platform from a sea of options is essential. As an industry consultant remarked:

> *"Every product has a unique marketing method. . . . Holiday inns, B&Bs, [and] homestays represent a non-standardized market. There is no conclusive way to saturate this niche market with a one-size-fits-all solution. You cannot summarize the hospitality MSE*

market with a unified model. . . . Choosing an individualized approach based on your own product is pivotal." (No. H3)

Digital network integration and utilization capability is critical for hospitality MSEs that rely on external platforms and stakeholders for DT. These enterprises must occupy the center of their network, engage in digital networking via partner selection, integrate resources such as partners and customers, and build a digital network framework that serves their interests. Marketing is the heart of DT in hospitality. As part of network partner selection, hospitality MSEs should combine several channels to develop their marketing mix. One business owner said:

"We have our own marketing matrix, comprising channels such as Today's Headlines, Meituan, Feizhu, Douban, TikTok, Little Red Book, WeChat Official Account, Phoenix Net, Baidu Baijia, and even Xuexi Qiangguo." (No. 15)

However, this owner prioritized crucial networks: "We focus on two platforms, one is TikTok, and the other is a WeChat Official Account" (No. 15); the remaining platforms acted as supports. Certain networks are particularly effective for different organizations. MSEs can then forge co-operative relationships with partners and assemble a unique hospitality ecosystem around their core business. This ecosystem promotes optimal resource sharing, collaborative efforts, service quality improvement, and effective marketing.

4.4. Integrated business

This section addresses DT intensity in the proposed maturity model. Hospitality MSEs' DT entails four aspects: digital business management, digital marketing, digital customer relationship management, and digital recruitment and training.

Digital business management includes *reservation management, room inventory management, financial management, and data analysis*. The technical services of hotel management systems continue to improve. Homestay enterprises are, thus, able to conduct cost-effective, efficient business management every day. One MSE owner commented:

"If we digitize our business—for example, with a good room management system—it can see the occupancy situation and arrange room assignments well. It can connect directly to various platforms, such as Ctrip, without having to operate room switches, and it has a clear statistical report, so there is no need for manual bookkeeping." (No. 15)

Digital business management enhances efficiency and lowers costs. Homestay businesses can also ascertain customers' needs and gather substantial operational data. This information facilitates further analysis and decision making, thereby enabling continuous optimization. Practices such as rapid or contactless check-in and online communication may elevate service quality and accommodation experiences. In essence, digital technology has transformed business management for hospitality MSEs.

Digital marketing is a primary aspect of hospitality MSEs' DT. Three digital marketing styles were identified in this study: booking platform marketing, content-based marketing, and brand marketing. ***Booking platform marketing*** involves established platforms (e.g., OTAs, short-term rental websites, and group-buying platforms among other business-to-consumer booking options). In addition to enhancing MSEs' search rankings via high-quality services, booking platform marketing requires companies to engage in platform-based promotional campaigns.

MSEs who employ ***content-based marketing*** use avenues such as social media, community forums, and short videos for promotional purposes. Much of hospitality MSEs' allure over standardized star-rated hotels is due to these enterprises' customized products and services. Although online booking platforms' product presentation is often structured, MSEs who use content-based media can display their items in more varied ways (e.g., with text, images, and videos). This personalized strategy aligns with the nuances of MSEs' products and services. New media, such as short videos and images, have also become popular with consumers and are the preferred booking mode for many young customers. An industry consultant stated that "while using platforms like OTAs and short-term rentals

for marketing has matured in the entire market, content marketing is slated to lead the larger market in the future" (No. H4).

With *brand marketing*, MSEs establish a brand using brand management to construct proprietary marketing channels and matrices by integrating digital network resources. The goals are to boost brand recognition, loyalty, and, ultimately, business sustainability. Many homestay enterprises that previously relied on platform marketing have shifted their focus to brand-building strategies in response to COVID-19. One informant said: "Before, we heavily relied on OTAs. But our marketing approach will change post-COVID-19, with a greater emphasis on developing our brand, identifying our target audience, and building our marketing community" (No. H1). Brand marketing stresses online resources and digital operations. By creating channels and a marketing mix based on brand image promotion and enhancement, hospitality MSEs become more competitive relative to outsourcing digital marketing to industry consultants and internet influencers. They are also better prepared to evaluate marketing trends and make informed decisions independently.

Digital customer relationship management. Hospitality MSEs have relatively simple customer bases that can be handled with auxiliary tools available on PMSs or online booking platforms. They do not necessarily need to purchase a specific system for customer relationship management; the focus is on attracting traffic and connecting with 'fans' on content platforms, who may represent potential customers. Normally, managers add customers via social media such as WeChat to encourage bookings and offer information about the hotel's location, weather, and other details. One informant stated: "As a housekeeper, I add guests on WeChat and send them the location of the hotel, local weather information, and other notices the day before check-in. If there are any problems during the stay, we communicate through WeChat" (No. 7). Consistently posting promotional content about a homestay on social media can also lead to repeat orders and customer referrals, as the same informant shared:

> *"I usually post content once every two weeks on WeChat Moments. . . I get more than 10,000 RMB in revenue per month from WeChat."* (No. 7)

Some MSEs cultivate loyal customer communities and expand into other business realms as a result. Several organizations that were forced to close during the pandemic resorted to selling local specialties and holding live sales in their online consumer spaces. Effective customer relationship management also requires companies to address feedback promptly. Hospitality MSEs can maintain their competitive edge by adapting to ever-changing markets and customer demands with a thorough understanding of individuals' needs and expectations. Expressing cordial hospitality helps MSEs forge strong guest relations and build formidable reputations online. One informant observed that "guests are more likely to leave positive ratings and feedback after interacting more with hosts" (No. 15). Positive endorsements can then inspire more reservations:

> *"We provide excellent service and offer affordable routes. Our customers are all satisfied, except for one negative review. We also had a guest who wrote a travel blog, which was unexpectedly exciting. Her blog was promoted to the top on Ctrip; thus, many people came to stay at our homestay."* (No. 1)

Digital recruitment and training. The digital revolution has revamped hospitality MSEs' training and recruitment practices. Ample online resources have rendered learning more accessible as technology service providers and platform enterprises develop free or paid professional training courses. Digital innovation has accelerated MSE workers' training frequency and diversified educational materials, thereby reinforcing staff competence. By contrast, in the past, when onboarding was the sole option, DT brought a wealth of training opportunities. Social media has also revolutionized enterprises' recruitment. MSEs in hospitality can attract candidates who are compatible with the company culture (e.g., by sharing a business mission and other attributes on social media). Using these platforms enables organizations to hire staff whose personalities are congruent with that of the company:

"Nowadays, it is difficult to find talent through apps like 58.com. However, if you show your business culture through platforms like TikTok, Weibo, and Little Red Book, while presenting the unique characteristics of your company, you will find that you can attract staff who are compatible with the corporate culture or temperament." (No. 4)

5. Digital Maturity Development Phases

Data analysis unveiled multiple DT stages for hospitality MSEs. Each stage has its own means of strategy and organization, digital technology, digital capabilities, and operations (Table 3). This stage-based classification clarifies how hospitality MSEs navigate the DT process and determine the degree to which they should engage in it [18].

The IT-enabled transformation phase represents a contemporary business paradigm for MSEs within hospitality. During this stage, hospitality MSEs can adopt a hotel PMS to manage diverse business processes (e.g., room-related tasks, ordering, finances, and catering) in an integrated, intelligent, and automated manner. This approach simplifies business procedures, boosts efficiency, and reduces costs. Hospitality MSE providers benefit from technological developments that expedite the informatization stage at a relatively low cost. Even homestays with limited financial resources can use the free version of a PMS for daily operations management. This stage is fundamental to DT within these MSEs.

Table 3. Digital Maturity Development Phases.

Phase	Digital Technology	Capability	Operations	Aims
IT-enabled transformation	Hotel PMS Smart locks	Informationization capability	Digital business management	Simplify business processes and improve efficiency
E-commerce-oriented DT	(above) + online booking platform; social media	(above) + platform order management; platform rule adaptation; platform marketing	(above) + booking platform marketing; customer feedback management; online learning and training; own traffic community management	(above) + platform-based market penetration
Content-oriented DT	(above) + content platform; smart home devices	(above) + platform marketing (content creation and traffic management)	(above) + content-based marketing; emerging media-based recruitment	(above) + channel diversification and improved dissemination
Brand-oriented DT	(above) + proprietary digital channels	(above) + digital partner selection; digital network integration and use	(above) + brand marketing	(above) + channel diversification and improved dissemination

E-commerce-oriented DT is similarly crucial for hospitality MSEs. It involves moving offline marketing channels to online platforms using booking systems in addition to strengthening order, marketing, and customer relations management. Word of mouth plays a substantial role in these online channels, as favorable customer reviews can raise MSEs' search rankings and encourage bookings. Hospitality MSEs, thus, seek to vigorously improve their service quality and work with customers to create valuable experiences. Effective customer relationship management is vital in this regard; enterprises can use social media to build customer relationships, thus generating more reservations and greater marketing channel resilience. For instance, some MSEs have transformed Airbnb customers

into social media connections to secure more bookings and minimize the impact of Airbnb's withdrawal from the Chinese market. E-commerce-oriented DT therefore affords MSEs richer market penetration, service optimization, and digital operations.

The content-oriented DT phase denotes a turning point in digitizing hospitality MSEs' operations. This stage is grounded in the operational concept of new media—an era driven by product and service features, which relies on emerging content platforms to attract customers through content creation and dissemination. Online booking platforms have pre-defined digital marketing and operation methods and rules. Content platforms offer MSEs more customized operational spaces by comparison. When using these sites, hospitality MSEs should aim to develop high-quality content, streamline their marketing channels, and enhance content distribution efficiency and accuracy. A platform's digital management and data analysis tools are also pivotal. Put simply, in this phase, hospitality MSEs must challenge conventional marketing and management models. Active transformation and innovation can help organizations realize DT and ensure sustainable development.

The brand-oriented DT phase facilitates hospitality MSEs' long-term development and profitability via several avenues: constructing a robust brand, forming a professional digital team, creating a diverse marketing matrix, and implementing a digital marketing strategy. During this stage, MSEs need to develop and operate a digital team while cultivating specialized and digitally proficient talent. MSEs' dependence on third-party service providers and internet celebrities for digital marketing is dwindling. Businesses must now devise their own digital management and marketing strategies. Using an established digital marketing matrix, MSEs can engage in brand marketing based on their product features and service positioning. Businesses must also promote integration and value co-creation in a digital network to maintain relationships and foster enduring co-operation with key clients. Brand-oriented DT generally presents a path towards hospitality MSEs' sustainable development. All four phases are summarized in Figure 2.

Hospitality MSEs undergo four stages of DT, with each phase incrementally increasing digital maturity. Interview data suggested that businesses should consider the alignment between their digital strategies and products. Strategic alignment reflects the match between a business strategy and a digital strategy [48,49]. Due to their small size and the industry's vast market, hospitality MSEs only need to identify target customers and product positioning to become profitable. One informant said: "If the enterprise is personalized enough, there is no need to aim for the top ranking among all enterprises. Being among the frontrunners in a particular niche is sufficient considering the size of the market" (No. 3).

Selecting a digital strategy is closely linked with product positioning. When product characteristics are not obvious and cannot draw traffic through content marketing, enterprises should focus on digital operations and management via online booking platforms. Meanwhile, for hospitality MSEs with average products and low prices, investing heavily in content marketing can result in unsustainable profitability losses. An industry consultant explained:

> *"Holiday MSEs themselves are non-standard accommodations. If I have an ordinary homestay client, to be honest, I might only work on their Ctrip optimization and training rather than recommending [that they engage in] content marketing. This is because the input–output ratio of high-priced new media is too low for low-priced homestays."* (No. H3)

Content marketing is preferred for upgrading mid- to high-end boutique MSEs with unique services. Hospitality MSEs can use content marketing platforms to display product characteristics, attract ideal clients, and generate their own traffic to promote content-based DT. High-end and boutique MSEs are often attuned to branding. Nurturing digital talent and networking are necessary for brand transformation. High-end MSEs that undergo branding development typically see favorable returns on investment and raise their competitiveness and resilience.
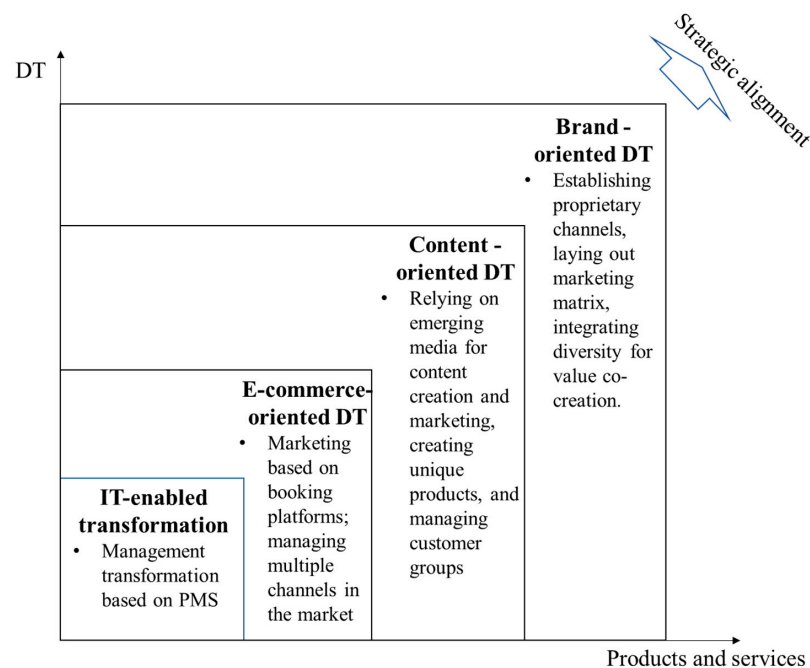
Figure 2. Digital Maturity Development Phases.

Overall, aligning digital strategies and product strategies is essential for sustainable profitability. However, all MSEs should pursue greater levels of digital maturity, as enterprises can only remain competitive by completing the upper DT stages.

6. Discussion and Conclusions

In the wake of COVID-19, DT has become an imperative for hospitality enterprises. Its swift implementation is integral for sustainable industry development. By establishing a maturity model of DT in hospitality MSEs, this study provides valuable insight into how these enterprises can move towards higher maturity to respond to and recover from the pandemic.

First, the four dimensions of digital maturity in hospitality MSEs include strategy and organization, digital technology, digital capabilities, and integrated business. The first three aspects imply enterprises' extent of digital readiness, while integrated business denotes DT intensity. These findings coincide with earlier work (e.g., [14,16,21,22]) that have highlighted digital organizational readiness and digital intensity as core domains of digital maturity. The results also reinforce existing research (e.g., [20]) identifying technology, digital strategy, organization, digital skills, leadership, products and services, and business models as key digital maturity domains.

However, the above findings diverge from studies in other industries (e.g., manufacturing, supply chain) (e.g., [5,50]). Different from large enterprises that prioritize internalizing IT during DT (e.g., [18,50]), this study showed that hospitality MSEs tend to externalize their IT capabilities. Building digital technology in-house requires considerable investment and resources, and it also carries risk. This study's results nonetheless suggest that the digital technology market is home to a range of mature tools, platforms, software, and services that enterprises can easily access and use without the need for independent development. These options lower the threshold and cost of DT. Consequently, hospitality MSEs should harness digital platforms and digital networking capabilities to achieve successful DT.

Second, this study unveiled four phases of digital maturity development: IT-enabled transformation, e-commerce-oriented DT, content-oriented DT, and brand-oriented DT. These findings align with prior studies (e.g., [51]) in which maturity gradually progressed from nothing, with each stage representing different aspects of digital maturity. The results are also consistent with those of [14], who separated the phases of digital maturity devel-

opment, promoting and supporting, creating and building, committing to transformation, and focusing on user-centered and elaborated processes. These conclusions enhance the sense of how strategy, organization, digital technology, digital capabilities, and operations each shape hospitality MSEs' digital maturity.

7. Contributions, Implications, and Limitations

This study contributes to the existing body of knowledge in several ways. First, we specified major dimensions of digital maturity in hospitality MSEs. These findings expand the view of essential facets of hospitality MSEs' digital maturity. Previous research (e.g., [5,18,50]) was primarily concerned with other industries such as manufacturing and supply chain, where large enterprises tend to prioritize internalizing IT during DT. The current work sheds light on how hospitality MSEs achieve digital maturity in their unique DT context.

Second, this study provides insight into hospitality MSEs' stages of digital maturity. The theory of strategic alignment implies that these businesses must align their DT approaches with product positioning. Different product and service offerings necessitate distinct digital strategies. These findings address the question of hospitality MSEs' desired digital maturity level [18]. Enterprises' DT is an important yet challenging aspect of industrial digitization. This research encapsulates the DT process for hospitality MSEs, compensating for literature that has tended to overlook this phenomenon in service industries and MSEs [38]. Findings extend the comprehension of DT in high-contact service industries and present practical guidance for hospitality businesses embarking on this journey.

This study also has practical implications for hospitality MSEs. First, hospitality MSEs must assess their digitalization level to inform future development. Their DT strategies need to align with their overall objectives and product positioning. MSEs should promote organizational readiness for digital changes by implementing appropriate structures, processes, and leadership support. Second, hospitality MSEs should invest in industry-relevant digital technologies; this task may entail adopting PMSs, online booking platforms, customer relationship management software, and other digital tools that streamline operations and enhance the customer experience. Third, organizations should possess requisite digital skills and capabilities. Implementing training programs, recruiting digital-savvy talent, and fostering a culture of continuous learning and innovation can meet this need.

Several limitations of this study warrant attention. First, the research was qualitative, and data for this study were subjective rather than objective. Future studies should employ quantitative methods to validate and supplement the findings. Second, this study spotlighted the Chinese context. Although the sample included hospitality MSEs from different regions, cross-cultural studies should be performed to further validate the results. Third, this study outlines the digital transformation maturity process for MSEs. However, some theoretical issues, such as the resource orchestration process of DT and the evolution of dynamic capabilities, remain unexplored. Future research should consider more theoretical perspectives to study DT of MSEs.

Author Contributions: Conceptualization, X.K. and T.Y.; formal analysis, X.K. and J.T.; funding acquisition, X.K.; investigation, X.K.; methodology, X.K. and T.Y.; supervision, T.Y.; writing—original draft, X.K.; writing—review and editing, X.K., T.Y., and J.T. All authors have read and agreed to the published version of the manuscript.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Data available upon request from the first author.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. Respondent Profile.

Number	Gender	Education	Position	Business Scale (Room Quantity)
1	female	Bachelor	Owner	8
2	female	Junior high school	Owner	15
3	female	Master	Owner	8
4	male	Bachelor	Owner	30
5	male	Bachelor	Owner	15
6	female	Bachelor	Owner	10
7	male	Bachelor	Manager	40
8	female	Bachelor	Owner	10
9	male	High school	Owner	15
10	male	Bachelor	Owner	30
11	female	Junior college	Owner	12
12	male	Bachelor	Owner	18
13	male	Bachelor	Owner	16
14	male	Junior college	Manager	20
15	female	Bachelor	Owner	15
16	female	Bachelor	Owner	16
17	male	High school	Owner	12
18	male	Bachelor	Owner	30
19	male	Bachelor	Owner	16
20	male	Bachelor	Manager	18
21	female	High school	Owner	15
22	male	Bachelor	Owner	22
23	male	Junior college	Manager	16
24	female	Bachelor	Owner	32
25	female	Junior college	Owner	28
26	female	Bachelor	Owner	27
27	female	Junior college	Manager	11
28	female	Bachelor	Manager	8
H1	male	Bachelor	Industry Association Manager	N/A
H2	female	Bachelor	Consultant	N/A
H3	male	Bachelor	Consultant	N/A
H4	male	Bachelor	Consultant	N/A
H5	female	Master	Industry Association Manager	N/A
H6	male	Bachelor	Consultant	N/A
H7	male	Bachelor	Consultant	N/A

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