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Measuring the digital maturity of tourism businesses in Slovenia

OECD

Measuring the digital maturity of tourism businesses in Slovenia

The rapid advancement of digital technologies has underscored the need for robust, timely, and detailed tourism data to inform policy and business decisions. This paper provides a detailed review of selected international and national indicator sets, surveys, and self-assessment tools from the tourism sector and wider economy designed to measure the digital uptake of businesses. The analysis reveals that while existing indicators on digitalisation cover a range of digital tools and skills, key areas such as the assessment of digital strategy and culture are often missing. Furthermore, it highlights the need to tailor indicators to address the unique requirements and characteristics of tourism businesses and identifies a list of potential indicators to measure their digital maturity. The paper concludes by outlining a number of policy considerations to facilitate the evaluation and selection of indicators to measure the digital maturity of tourism businesses and identifies potential areas of future work.

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Keywords: tourism businesses, accommodation, Slovenia, monitoring, digital maturity

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The paper builds on previous work of the OECD Tourism Committee and its Working Party on Tourism Statistics, which highlights the need for timely and granular data to inform policymaking. The work is informed by desk research and inputs from the Statistical Office of the Republic of Slovenia (SURS) and takes into account work at international level, including work by the European Commission to develop an EU Tourism Dashboard, and Eurostat activities to measure the ICT Usage and E-commerce in enterprises. It also includes an analysis of work being undertaken by selected peer countries, to build knowledge and identify interesting approaches and good practices.

The paper was co-ordinated and drafted by Hannes Thees, Economist/Policy Analyst, under the supervision of Peter Haxton, Senior Policy Analyst (CFE) and Jane Stacey, Head of the Tourism Policy and Analysis Unit (CFE). Monserrat Fonbonnat, Assistant (CFE), provided administrative support.

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Table of contents

Acknowledgements	3
Executive summary	5
The need to measure digitalisation in tourism	6
Conceptual background	7
Levels for measuring digitalisation in tourism	7
Dimensions of digital maturity	8
A review of indicator sets to inform the measurement of digitalisation in tourism	10
Methodology	10
Key findings	11
Measuring the digital maturity of the accommodation sub-sector in Slovenia	14
Sub-sector analysis	14
Indicator mapping	16
Indicator definition	18
Policy considerations and potential areas of future work	25
Key challenges	25
Policy considerations	26
Potential areas of future work	27
References	28
Notes	29
Tables	
Table 1. International indicator sets on digitalisation	10
Table 2. Business demographics in the accommodation sector in Slovenia, 2023	15
Table 3. Digital Intensity by NACE Rev.2 activity in the accommodation sector, 2023	16
Table 4. Indicative list of indicators by digital maturity dimension of tourism businesses	20
Figures	
Figure 1. Levels and potential indicators to measure digitalisation	8
Figure 2. Model of digital maturity	9
Figure 3. Roadmap for policy-led indicator selection	14
Figure 4. NACE Rev. 2 Section I, Division 55	15
Figure 5. Combining data sources to assess digital maturity	19
Boxes	
Box 1. Assessment of digital maturity of Ireland's tourism businesses	13
Box 2. Digitalisation survey for SMEs in Spain	13

Executive summary

The rapid advancement of digital technologies has underscored the need for robust, timely, and detailed tourism data to inform policy and business decisions. Despite progress in managing tourism data, challenges persist, notably in the timeliness and sharing of data to support digital transformation efforts. Given the challenges faced by micro and small tourism businesses in particular, a deeper understanding of digitalisation and business uptake is needed.

Slovenia aims to enhance the digitalisation of businesses in the tourism sector, as set out in the *Strategy for the Digital Transformation of Slovenian Tourism 2022–2026* and the *Slovenian Tourism Strategy 2022–2028*. An important step in this process is to establish a baseline to monitor progress in digitalisation. This paper explores indicators to measure digital maturity or a tourism business's success in digital transformation, such as the availability of a digitalisation strategy, digital tools implemented, or workers skills, with a particular focus on the accommodation sub-sector.

The paper reviews existing national and international digitalisation indicator sets with a focus on identifying metrics that are applicable to tourism businesses and specifically pertinent to the accommodation sub-sector in Slovenia. Digital maturity was chosen as the conceptual framework for assessing the digitalisation of tourism businesses as it captures the complexity of digitalisation by covering various dimensions including *Strategy, Leadership, Products, Operations, Culture, People, Governance* and *Technology*. This multi-dimensional approach will detect opportunities and challenges beyond the mere technology implementation and inform policy makers in a holistic way.

The review identified commonly used surveys, such as the Eurostat ICT Usage and E-Commerce in Enterprises Survey. Given the limited breakdown for tourism sub-sectors through available statistics, the micro and small-sized nature of tourism enterprises and the role of digital tools in tourism, the review highlights the need to tailor indicators to specifically address the unique requirements and characteristics of tourism businesses. This is especially important for micro and small tourism enterprises, due to lack of data granularity by sub-sector and geographic level.

Based on this review, the paper identifies potential indicators to assess the digital maturity of tourism businesses in Slovenia, with a focus on accommodation businesses, where possible. Given the scarcity of indicators specifically tailored to accommodation businesses, it is proposed to capture digital maturity via the addition of tailored questions to existing surveys where possible, and supplementary surveys where necessary.

The paper identifies a number of steps to facilitate the evaluation and selection of indicators to measure the digital maturity of accommodation businesses in Slovenia, including: discussing the relevance and priority of indicators with businesses, industry associations and policy makers; defining selected indicators and the measurable unit clearly and in detail; elaborating potential methods to collect data; focussing on readily available digitalisation indicators and only develop a specific survey on the digital maturity of accommodation businesses if needed; explore and develop data systems/platforms that could combine different available data sources; and developing a comprehensive implementation plan for any indicator set.

The need to measure digitalisation in tourism

The rapid succession of digitalisation in recent years has highlighted the importance of having timely, granular and comparable tourism data available to inform policy and business decisions, transitioning towards a more sustainable, resilient, and digital tourism landscape. However, while significant advances have been made to improve tourism data management, the timeliness of, and ability to share, available data to meet the needs of decision makers remains a challenge, including on digital transformation which has received limited attention to date.

While digital applications promote business efficiency and streamline customer experiences, the uptake and use of digital tools varies across the tourism sector, with SMEs facing particular challenges in increasing their digital maturity, or the degree to which they succeed in digital transformation and implement digital tools, often due to size, resource constraints, and skills gaps. These challenges are compounded by concerns about data privacy, social media trends, and market dominance by suppliers, resulting in uncompetitive practices (OECD, 2023[1]; OECD, 2021[2]). These challenges need to be understood across the tourism sector to implement targeted policies, including a widening gap between technology-driven and globally connected tourism businesses and traditional micro and small enterprises. Understanding progress and challenges requires timely and granular indicators¹ on digitalisation.

There are international digitalisation indicator sets² available that provide basic but limited insights on a few digitalisation indicators, such as the EU Digital Economy and Society Index (DESI) or the OECD Going Digital Toolkit. Out of these, tourism relevant indicators are extracted and summarised, as has been done for the EU Tourism Dashboard or the World Economic Forum (WEF) Travel and Tourism Development Index. The indicator sets presented are an important step towards evidence-based decision-making but lack granularity (e.g. geographically, sectoral, or by use of technology) and are rarely tailored to specific policy issues in tourism. Many of these frameworks use the Eurostat ICT Usage and E-commerce in Enterprises Survey, which offers comparison between EU countries but misses in-depth and holistic approaches in measuring digitalisation. Recognising this gap, countries are undertaking work to measure digitalisation, including Ireland and Spain.

Analysing digitalisation in Slovenian tourism and identifying indicators aligns with the Strategy for the Digital Transformation of Slovenian Tourism 2022–2026 and the Slovenian Tourism Strategy 2022–2028. These strategies focus on positioning Slovenia as a "green boutique destination" and emphasise digital transformation as a core element to enhance the sector's value, enable data-driven decisions, and connect communication and sales channels. Strategic goals include increasing outreach, developing databases, optimising costs, promoting online platforms, digitalising management, enhancing digital skills, and using digital tools for decarbonisation. Tourism businesses and their workers' competencies are a key pillar in this undertaking.

Slovenia has already made good progress in strengthening the evidence-base in tourism, for example by planning to measure the residents' satisfaction with tourism as part of the 'Green Scheme of Slovenian Tourism', the development of the interactive tool Tourism Daily, or the Tourism Impact Model for the Tourism 4.0 initiative. Slovenian Tourism Board is also working on the creation of a unique data hub where local, national, and international tourism-relevant data will be collected and processed, to enable and ease data-driven decision-making. The new National Intelligence Hub will focus on accelerating green and digital transition and upgrading the Green Scheme of Slovenian Tourism.

Against the background of the Slovenian strategies' ambitious goals and initiatives, digitalisation indicators are required to assess the situation of businesses, to set a baseline and to develop appropriate policies and monitor their impact. This comes with challenges, such as the small scale of many tourism businesses³ (including accommodation providers⁴), which makes it difficult to capture their digital maturity, or the fast pace of emerging technologies. In addition, digitalisation in tourism includes many different stakeholders, technologies and levels. As for other areas, developing indicators to measure the digitalisation of tourism, including the digital maturity of tourism businesses, should be undertaken with an understanding of policy priorities (policy-led), the needs and challenges of the sector (practice-related), and taking into consideration available data.

The following sections explore the conceptual background of digitalisation and digital maturity in tourism and review relevant indicator sets that inform the selection of indicators. The paper then examines the necessary steps to select potential indicators on digital maturity and concludes by presenting selected policy considerations and potential areas of future work to inform the development and implementation of indicators to measure the digital maturity of businesses in Slovenia.

Conceptual background

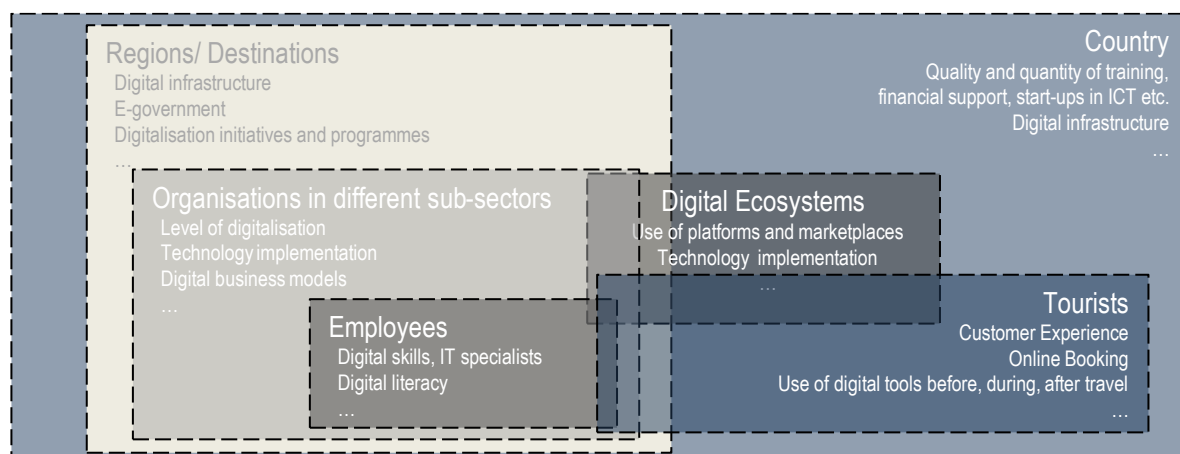
The digital transformation of the tourism sector is currently a priority policy issue in many countries and a focus of attention in many national tourism strategies. In Slovenia, for example, the *Strategy for the Digital Transformation of Slovenian Tourism 2022–2026* includes a range of actions to empower tourism stakeholders, improve knowledge and digital competencies of employees, and ensure a higher quality of life for locals. However, to understand the success of digitalisation strategies, it is necessary to understand what to measure and the indicators required to do so. For example, when determining what needs to be measured, it is important to keep in mind the different stakeholders and levels.

Levels for measuring digitalisation in tourism

As part of the process to determine what needs to be measured and selecting the appropriate indicators, it is important to keep in mind the different stakeholders and levels to be monitored (Figure 1). For example, measuring digitalisation could include indicators at the *national* level and *regional* level (e.g. quality of digital infrastructure, number of digitalisation projects), *enterprise/organisational* level (e.g. technological tools implemented, digital training provided, challenges and priorities), *employee* level (e.g. digital skills, knowledge on specific tools), *tourist* level (e.g. tourists' affinity to book online and use digital tools while travelling, overall customer experience), or at the broader *ecosystem* level (e.g. digital interactions and use of platforms).

The choice of level and thus indicators depend on the policy priority or question to be addressed. If a country or specific destination aims to strengthen the digital infrastructure to enable the business environment, indicators such as broadband availability are essential, while other initiatives may focus on improving the digital skills of the employees and therefore require an assessment of these. Additional concretisation evolves through reviewing possible indicators in different tourism sub-sectors.

Figure 1. Levels and potential indicators to measure digitalisation



Source: OECD elaboration.

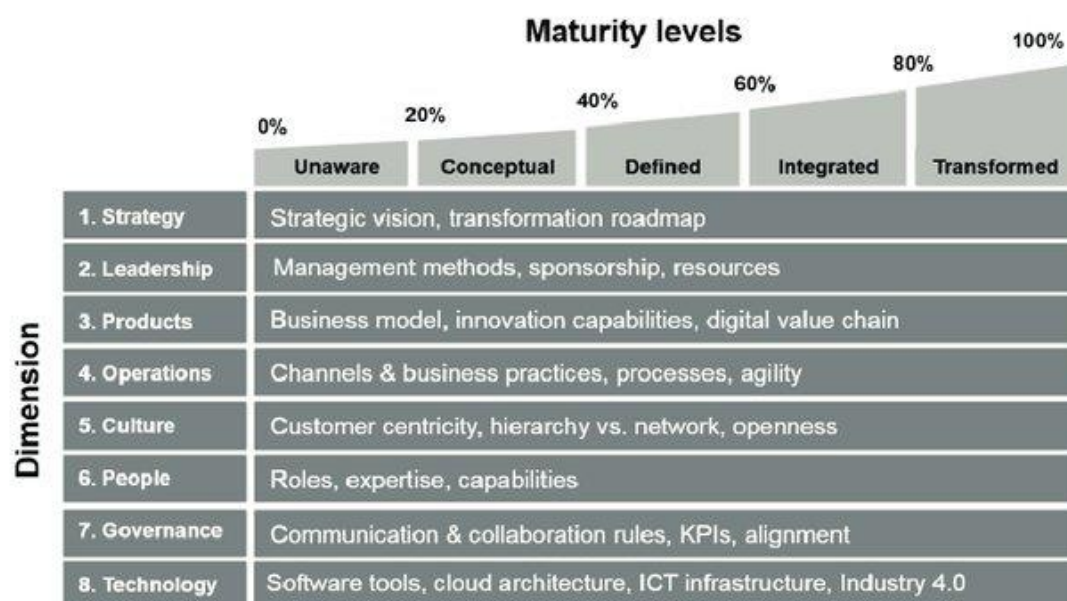
At the request of Slovenia, this work will focus on the level of organisations (i.e. businesses) but also take into account linkages to neighbouring levels, as they are highly relevant to understanding the complexity of digitalisation in tourism. That's also why indicators in the broader context of digitalisation are taken into consideration, including household access to the internet, digital skill levels or infrastructure coverage.

Dimensions of digital maturity

As outlined in the previous section, digital maturity is the measure of how organisations advance in their digital transformation. In addition to the level and with a focus on organisations, Digital Maturity Models are vital for guiding organisations through their digital transformation by assessing various dimensions of business operations. Digital maturity can also be illustrated as a composite indicator⁵ of an organisation's success in digital transformation, marking the progress of enterprises that are agile, experimental, risk-tolerant, collaborative, and learning-oriented. These models are particularly focused on technology, strategy, and operational processes. Despite their practical applications, maturity models have been criticised for a lack of theoretical foundation and reliability in real-world applications, which calls for further research.

Maturity models provide an orientation as they incorporate a multidimensional approach to assess an organisation's digital maturity, stressing also the alignment of digital strategies with the broader business goals. Key dimensions of digital maturity typically include *Strategy, Leadership, Products, Operations, Culture, People, Governance* and *Technology* (Figure 2). As there is no broadly agreed model, other authors or institutions also integrate dimensions such as customers or innovation (Haryanti, Rakhmawati and Subriadi, 2023^[1]) (Thordsen and Bick, 2023^[2]) (Thordsen, Murawski and Bick, 2020^[3]). The evolutionary stages in Digital Maturity Models range from *Unaware*, where digital integration is minimal or non-existent, advancing through to *Conceptual* or *Defined* towards *Integrated* and *Transformed*, where digital practices are leading-edge and fully integrated throughout the organisation. These stages guide businesses in systematically enhancing their digital capabilities.

Figure 2. Model of digital maturity



Source: (von Leipzig et al., 2017^[4])

A review of indicator sets to inform the measurement of digitalisation in tourism

To select relevant indicators to measure the digital maturity of tourism businesses, it is necessary to first consider existing indicator sets designed to measure digitalisation more broadly. This section summarises the methodology for reviewing recent and current indicator sets on digitalisation, identifying examples of non-tourism specific indicators that may be relevant to measure the digital maturity of tourism businesses (Table 1).

As this review focusses on the most relevant indicator sets, additional work might be under way or can be consulted for wider context, including the [World Bank Digital Business Indicators](#), surveys of the [International Telecommunication Union](#) or [LORDIMAS](#) for government-specific digitalisation.

Table 1. International indicator sets on digitalisation

International indicator sets	
Whole economy	Tourism-specific
• DESI – Digital Economy and Society Index (EU)	• WEF Travel and Tourism Development Index (TTDI)
• UN – SDG Indicators	• EU – Tourism Dashboard
• Eurostat – Digital Intensity Index (DII)	• Eurostat paper on "Indicators on sustainability of tourism" - Working Group on Tourism Statistics, TOUR WG
• G20 Toolkit for Measuring the Digital Economy	• UN Tourism – Toolkit of Indicators for Projects (TIPs)
• OECD Going Digital Toolkit	• Tourbit – DIGITAL READINESS INDEX (DRI)
CISCO – Digital Readiness Index	
IMD – World Digital Competitiveness Ranking 2023	
DiGiX: The Digitization Index	
OECD ICT Access and Usage	
Eurostat, ICT Usage and E-commerce in Enterprises	
Eurostat, Individuals' level of digital skills	
National indicator sets	
Whole economy	Tourism-specific
• Canada: Survey of Digital Technology and Internet Use	• Digitalisation survey for SMEs in Spain: SEGITTUR
• Digitalisation Index Germany	• Digital Maturity of Businesses, Fáilte Ireland
• Development of a Composite Indicator for Business Digital Intensity in Australia	

Source: OECD elaboration.

Methodology

A comprehensive analysis was carried out with the most relevant indicator sets in Table 1, and the relevant pillars and indicators within an indicator set. It is, therefore, not a full assessment of all indicators within an indicator set. The analysis provides indicator-specific insights based on the following criteria:

- **Data collection:** When reviewing the indicator sets, a range of forms regarding the data collection was included. In this regard, the review covered the reuse of *available indicators*, *original surveys*⁶, *conceptual studies*, *self-assessment tools* and *mixed forms*.
- **Digital maturity dimension:** Identifying the main dimension an indicator refers to, helps to ensure that all dimensions in the indicator selection process are covered. According to the conceptual background, the dimensions include *Strategy*, *Leadership*, *Products*, *Operations*, *Culture*, *People*, *Governance* and *Technology*. In addition, this analysis added the dimension *Context* to reflect the embeddedness of tourism businesses in a regional and national setting, which then includes current policies, R&D developments or digital infrastructure.
- **Suitability:** The analysis assesses the suitability of the indicators to measure the digital maturity of tourism businesses, with a particular focus on the accommodation sub-sector wherever possible, which will make it easier in the next step to select indicators and discuss a possible transfer to tourism. This includes the categorisation of indicators into groups that provide insights for the whole economy or tourism and accommodation specific breakdowns.

Finally, the analysis assesses the overall challenges and opportunities associated with an indicator set, including remarks on granularity, novelty or breakdown of indicators.

Key findings

From analysing existing indicator sets and national initiatives, the following learnings emerge:

- **Dimensions covered:** The indicator sets are usually structured around pillars that encapsulate thematically coherent indicators. Although these sets rarely focus directly digital maturity, the pillars often reflect the dimensions of digital maturity. The most commonly addressed dimensions include *Operations* (with a significant focus on e-commerce and internal processes), *Technology* (encompassing specific technology usage, cloud computing, blockchain, AI, and data analytics, see also Eurostat survey), and *People* (focusing on digital skills and training for employees). Additionally, indicators on *Context*, such as broadband and mobile coverage, are prominently featured in these sets. Issues around *Strategy*, *Governance*, *Leadership* and *Culture* are rarely represented but entail important components for digital maturity. For example, R&D indicators are only included in the G20 Toolkit for Measuring the Digital Economy and the IMD World Digital Competitiveness Ranking, even though they provide crucial insights into innovation and technological progress and are an important prerequisite for digital maturity.
- **Data collection:** Indicator sets frequently utilise data from established surveys such as the OECD ICT Usage, the **Eurostat ICT Usage and E-commerce in Enterprises**, or the Telecommunication Union. These surveys inform composite indices and visualisations and allowing comparability. In addition, they provide detailed methodologies, while private-driven initiatives partially lack this information. The landscape is also shaped by self-assessment tools designed to measure digital maturity, including the recent EU co-funded project on Fostering the Digitalisation of Tourism SMEs (Tourbit) and the [Maturity Assessment from the European Digital Innovation Hubs Network](#). The potential of these tools to aggregate data for national indicators remains unclear. Nonetheless, self-assessments are tailored to address tourism-related issues and could be integrated when supplementing surveys.
- **Breakdowns:** Indicators are predominantly focused on enterprises with ten or more employees and self-employed, with less frequent breakdowns for smaller business sizes, e.g. micro enterprises, sub-national levels or sectors like Accommodation and Food Services. While the **Eurostat ICT Usage and E-commerce in Enterprises** (on optional basis) or the Canadian survey include micro enterprises in general, their publishing appears to be limited. The Eurostat surveys

and therewith the EU Tourism Dashboard principally allows a detailed sub-national and sector breakdown, although this depends on data availability across the various items.

- **National approaches:** Only a few countries conduct specific surveys, although they provide the opportunity to delve deeper—for instance, the [ICT survey in Canada](#) also includes questions on barriers to implementing various technologies. Although not tourism-specific, indicator sets such as [Digitalisation in the Norwegian Municipalities](#) and the [Digitalisation Index for Swedish Municipalities and Regions](#) could also provide valuable insights into the context due to their well-constructed questions and assessments from a local perspective. The available national surveys are often based on or at least comparable to the existing **international** surveys.
- **Indicators in general:** A well-defined, precise indicator (SMART — specific, measurable, accurate, regular, and time-bound) is key to meeting the goal of a particular framework (e.g. measuring digital maturity or digitalisation's contribution to sustainability). Especially when indicator sets are not frequently reviewed, indicators may fail to include the latest technological trends. For example, a couple of indicator sets still include 3G Coverage, while 5G is already becoming a standard. Besides infrastructure-related indicators and context-specific indicators on the development of the wider economy, some indicators fail to directly assess the relevant business dimensions.
- **Digitalisation for sustainability:** Currently a gap in digitalisation indicators, the 2025 update of the Eurostat ICT Usage and E-commerce in Enterprises survey includes questions on how enterprises use ICT to promote sustainability. The questions aim to identify whether ICT solutions are used to reduce energy consumption through mechanisms such as smart thermostats and automated energy efficiency systems. It also explores whether enterprises are using ICT to reduce the use of materials or increase the use of recycled materials, with examples including computer-aided design to optimise material use and automated waste sorting to improve recyclability.
- **Tourism-specific indicators:** Due to its cross-sector characteristics, tourism businesses are seldom covered by the available indicator sets in their complexity. Tourism business-specific surveys provide more comprehensive insights. For instance, Ireland (Box 1) and Spain (Box 2) measure the digitalisation of tourism businesses across the sector through in-depth and tailored surveys, which are highly relevant for accommodation providers, for example by including various tourism-specific sales channels. Also well-tailored to tourism businesses is Tourbit, which serves as a self-assessment tool for tourism businesses with questions about strategies, technology used and cultural aspects. Worth mentioning is also the [Annual Survey of Service Industries: Accommodation Services \(ACCO\) in Canada](#) which reflects sector-specific and timely insights.

When reviewing indicator sets and original surveys, it's important to recognise both the opportunities and challenges they present. On the one hand, international indicator sets in particular, provide significant benefits due to their comparability across different countries. In addition, they are frequently updated to reflect current trends (e.g. indicators on AI, Eurostat ICT Survey 2025). On the other hand, they are seldom distilled into a clear index or framework that focusses on specific aspects such as digital maturity or intensity which divides enterprises into 4 groups based on the usage of ICT monitored in a specific year (Eurostat Digital Intensity Index). Due to the fact that the questionnaire changes on a yearly basis it is difficult to monitor changes over the years. Given their aim to provide comparability, international indicator sets are rarely tailored to address the unique needs of specific sectors, like tourism. The generalised nature of these indicators often means they fail to capture regional or sector-specific nuances, making it difficult to derive in-depth insights that are critical for tailored policymaking.

Box 1. Assessment of digital maturity of Ireland's tourism businesses

As part of Fáilte Ireland's *"Digital that Delivers"* programme to advance the digital maturity of up to 720 tourism businesses over a period of six years, tourism businesses undergo a comprehensive digital maturity review prior to entering the programme.

The process begins with businesses completing a digital maturity survey, which informs the development of a bespoke digital roadmap for each. The roadmap is based on a broader framework that evaluates businesses' digital maturity across five key pillars: Leadership/Governance (including business strategy and KPIs), Customer Experience (including booking experience, digital marketing or website experience), Operational Capability (including sales reporting and managing bookings), Technology (including booking system, website, web analytics and CRM systems), and People (including skills, resources and culture).

This framework serves as an orientation for the digitalisation of the businesses but on a wider level it also helps to evaluate the policy measures taken. The roadmap is tailored to their specific digital proficiency and unique needs, outlining clear workstreams to facilitate digital transformation. The aim is to equip businesses with the necessary tools, strategies and digital technologies to enhance their online presence, optimise booking systems, improve customer engagement, and drive online sales. Repeat assessments on completion of the programme allow progress to be monitored, including the tangible impact on the industry, ensuring continuous advancement towards digital transformation. People visit places for things to see and do, so by enabling attractions and activity providers to perform better online, the programme supports the delivery of Fáilte Ireland's regional dispersal ambitions.

Source: [Fáilte Ireland | Digital that Delivers](#)

Box 2. Digitalisation survey for SMEs in Spain

The *"Digitalisation Report on Spanish Small and Micro-Tourism Enterprises"* reflects a pioneering study led by the Secretary of State for Tourism through SEGITTUR (State Company for the Management of Tourism Innovation and Technologies). This comprehensive analysis is built on various rounds of consulting experts and businesses in developing the framework and finally surveyed over 2.500 businesses from key sub-sectors in Spain's tourism industry, including accommodation travel agencies, activities providers, restaurants and transportation services. The study aimed to understand the sector's current digital status, and monitor its progress, highlighting the essential role of digital adaptation for the sustainability and competitiveness of tourism businesses.

The Maturity Model developed and implemented in Spain, serves as an advanced framework to assess the digital transformation levels of businesses. It assesses how products are positioned and distributed in the market and also reflecting the use of different sales channels. Further, the model examines the digitisation and integration of core business processes such as marketing, planning, and personnel management to enhance operational efficiency, which finally leads to recommendations for businesses to enhance digitalisation. The survey found that the accommodation sub-sector has a basic level of digital maturity (29% compared to 34% for travel agencies), while the luxury accommodation segment (5-star or 4-star superior) has a medium level of digital maturity.

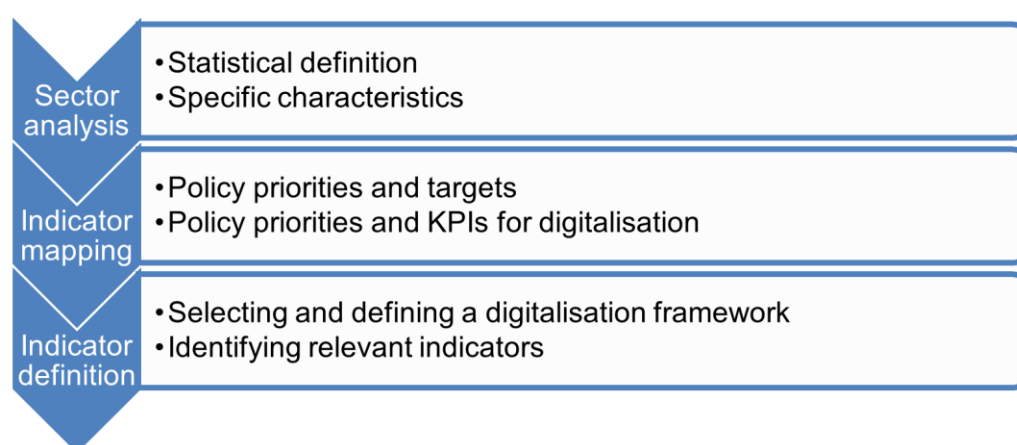
Source: [Digitalisation | SEGITTUR](#)

Measuring the digital maturity of the accommodation sub-sector in Slovenia

This paper aims to identify potential indicators to assess the digital maturity of tourism businesses in Slovenia, where possible with a focus on accommodation businesses. The steps below (Figure 3) provide an extended roadmap to identify and select relevant indicators in the future, and follow a policy-led approach to indicator selection, i.e. reflecting the characteristics of the sector and its policy priorities in the field of digitalisation before identifying relevant indicators that address the dimensions of digital maturity.

Challenges and quality criteria, as mentioned above, need to be considered. These include a coherent selection process, data availability, data quality, relevance for policy makers, consistency, coherence and suitability with the digital maturity framework.

Figure 3. Roadmap for policy-led indicator selection



Source: OECD elaboration.

Sub-sector analysis

Statistical definition

The [International Recommendations for Tourism Statistics](#) (IRTS 2008) provides a comprehensive methodological framework of global relevance for collection and compilation of tourism statistics. IRTS builds on the Central Product Classification (CPC) which includes the Accommodation subclass under 63100, corresponding to [ISIC Rev.4](#) 5510. In a European context, Eurostat is the leading statistical institution that provides a breakdown of tourism sub-sectors, based on the statistical classification of economic activities in the European Community (NACE). Although tourism is difficult to capture due to its manifold sub-sectors, the NACE classification at least includes Travel agency, tour operator and other reservation service and related activities (N79), and Accommodation (I55) and Food Services (I56) – section I Accommodation and Food Service Activities. As this paper aims to explore the measurement of digital maturity of accommodation businesses, where possible, the following sections focus on Tourist Accommodation Establishments according to Section I.55 (NACE Rev. 2) (Figure 4):

Figure 4. NACE Rev. 2 Section I, Division 55

n.e.c. : not elsewhere classified				* part of
Division	Group	Class		ISIC Rev. 4
SECTION I — ACCOMMODATION AND FOOD SERVICE ACTIVITIES				
55			Accommodation	
	55.1		Hotels and similar accommodation	
		55.10	Hotels and similar accommodation	5510*
	55.2		Holiday and other short-stay accommodation	
		55.20	Holiday and other short-stay accommodation	5510*
	55.3		Camping grounds, recreational vehicle parks and trailer parks	
		55.30	Camping grounds, recreational vehicle parks and trailer parks	5520
	55.9		Other accommodation	
		55.90	Other accommodation	5590

Source: (Eurostat, 2008^[5])

The [NACE Rev. 2](#)⁷ documentation further defines the Accommodation Division as follows:

- “This division includes the provision of short-stay accommodation for visitors and other travellers. Also included is the provision of longer term accommodation for students, workers and similar individuals. Some units may provide only accommodation while others provide a combination of accommodation, meals and/or recreational facilities.”
- “This division excludes activities related to the provision of long-term primary residences in facilities such as apartments typically leased on a monthly or annual basis classified in Real Estate”

When operating in Europe, it is recommended to adhere to the NACE system. However, the [North American Industry Classification System](#) (NAICS 1.0, section 721 on Accommodation services) and the [Australia New Zealand Statistical Industry Classification](#) (ANZSIC Rev. 2, section H 44 on Accommodation) have defined the accommodation sector in a similar way including hotel, motels, resorts, short-term rentals and others. Therefore, it can be assumed that the statistical definitions capture the sector well.

Specific characteristics

As the statistical definition demonstrates, the accommodation sector is very broad and includes a number of different types of establishments, each with its own specific characteristics. In general, the accommodation sector is characterised by its small-scale structure, seasonality or location dependency. In this context, business activity, occupancy rates and prices change frequently and pose a challenge for statistical analysis. Table 2 illustrates the business demography of the accommodation sector by size of enterprises in Slovenia, while the digital intensity of accommodation businesses in Slovenia is indicated in Table 3.

Table 2. Business demographics in the accommodation sector in Slovenia, 2023

	Size classes by employees and self-employed persons					
	Total	0-9 persons	10-19 persons	20-49 persons	50-249 persons	250 persons and more
Number of enterprises	6416	6273	60	47	29	7
Net turnover (1000 EUR)	1139070	360221	99905	140188	217860	320897
Number of employees	10454	2143	811	1484	2401	3617

Source: Statistical Office of the Republic of Slovenia 2024. Provisional data.

Table 3. Digital Intensity by NACE Rev.2 activity in the accommodation sector, 2023

Indicators	EU 27	Slovenia
Enterprises with very low digital intensity index (DII version 3)	21.1	29.2
Enterprises with low digital intensity index (DII version 3)	32.3	37.4
Enterprises with high digital intensity index (DII version 3)	34.2	26.4
Enterprises with very high digital intensity index (DII version 3)	12.3	7.0
Enterprises with at least basic level of digital intensity (DII Version 3)	78.9	70.8

Source: Eurostat 2024. 10 and more employees.

Current trends in the sector can be taken into account as well when selecting indicators. For example, the COVID-19 pandemic has accelerated the automation and implementation of contactless services in the hotel industry, including an increase in the online sales (Eurostat, COVID-19 Impact on ICT usage) or the recent Artificial Intelligence developments that finally request new indicators for statistical analysis. Emerging technologies in the travel ecosystem include Blockchain Technology, Metaverse, Identification, Neurotourism, Artificial Intelligence (AI) or Internet of Things (IoT), but also accelerated digital trends in tourism with increased demand for contactless communication, virtual experiences, e-commerce and online transactions, visitor tracking and management processes.

Unlike specific tools such as websites or social media, outsourcing can present a challenge for analysis. Micro and small tourism businesses may not invest heavily in ICT infrastructure, but they often utilise booking platforms (e.g. booking.com, HRS) and/or cloud services (e.g. cloudbeds, SiteMinder) to deliver an improved service to customers. Many businesses may not recognise these tools as ICT investment, even if they indirectly rely on these digital services. Understanding the significance of this issue would require a survey with a comprehensive list of tools and services that are familiar to the tourism businesses.

Indicator mapping

Policy priorities and targets in tourism

Indicators are actionable if their link to the strategy and the data demand are clear. Therefore, indicator mapping describes the process of linking specific indicators to objectives or desired outcomes to track progress. The clearer a strategy is in this regard, the easier it is to assign indicators or KPIs. As strategies may overlap, it is important to capture current policy priorities of the tourism sector more widely and to identify initiatives underway in the specific sector – in this case, tourism and more specifically accommodation businesses.

In the case of Slovenia, the *Slovenian Tourism Strategy 2022–2028* is strategically focusing on developing and marketing sustainable boutique tourism of higher quality based on Slovenian nature and cultural identity, which is a generator of higher value. The strategy is aimed at a balanced growth scenario with the "something more and much better" principle, which envisages a moderate increase in capacity and quantitative indicators and concentrates on higher quality and added value, with an emphasis on restructuring measures. The accommodation sector is, for example, mentioned with regard to improvements in the quality, promotion of sales, support for product development or the reduction of the carbon footprint, while the digital transformation is seen as a cross-cutting activity for tourism.

Analysing the use of technology in tourism and identifying potential indicators for digitalisation in Slovenia aligns with the *Strategy for the Digital Transformation of Slovenian Tourism 2022–2026* and the *Slovenian Tourism Strategy 2022–2028*. The latter mentions “*Digital transformation of Slovenian tourism*” as one of three key horizontal strategic policies that should push forward the vision of Slovenia as “*a green boutique destination, with a smaller footprint and greater value for all*”.

The vision of the digitalisation strategy is to become a ‘*role model for smart destinations that strengthens and encourages the development of sustainable, boutique, personalized and innovative experiences*.’ This includes actions to empower all stakeholders in Slovenian tourism for data-supported decision-making, increase added value, competitiveness and resilience of tourism, promote sustainable transformation, personalise guest experiences, improve knowledge and digital competencies of employees and ensure higher quality of life for locals. Five highest-priority strategic initiatives complement the strategy:

- National Intelligence Hub
- Slovenian Tourism Marketplace
- Reorganisation of Slovenian Tourist Board
- Tourism Digital Competence Voucher
- Smart business solutions

The activities of the digitalisation strategy are further backed up by targets, including:

- 20% of Tourism workforce conclude an educational program in the field of digital transformation in tourism;
- 25% of Tourism enterprises and 75% leading destinations are included in the index of digital transformation of Slovenian tourism;
- 500 Tourism suppliers are included in the Slovenian tourist marketplace.

The primary strategic goal of both strategies is to: achieve tangible benefits for the tourism industry and, in particular, its value-added through digital transformation; create the conditions for data-supported decision-making; support direct links between communication and sales channels, and; establish smart tourist destinations. Objectives thus include, increased outreach, development of databases, optimisation of costs, promoting online booking and sales platforms, digitalising management processes, improving the digital skills and competencies of professionals, but also using digital tools to support the decarbonisation process.

Digitalisation of tourism in Slovenia is further supported by a cross-sectoral digitalisation strategy. The Digital Slovenia 2030 Strategy is Slovenia's comprehensive blueprint for its digital transformation by 2030, addressing the challenges of digitalisation and aligning with EU ambitions. The strategy places a strong emphasis on individual and environmental sustainability, guided by the principles of the European Declaration on Digital Rights. It covers diverse areas including infrastructure, the digital economy, public services, cybersecurity, and digital inclusivity, aiming to steer Slovenia towards a Smart Society 5.0. The strategy establishes clear, measurable targets across these sectors and mandates the formation of a Strategic Council and an inter-ministerial working group to oversee and coordinate its execution effectively. The Slovenia Digitalisation Strategy recommends indicators to measure progress in digitalisation such as below:

- Value added per employee
- The share of enterprises using artificial intelligence
- The share of enterprises purchasing cloud computing services
- The share of enterprises using Big Data (enterprises performing data analytics)

- The proportion of enterprises with 10 or more employees and self-employed persons reaching a high or very high level of digital maturity
- The proportion of SMEs reaching at least a basic level of digital maturity (digital compass)
- The proportion of enterprises providing training in the use of ICT
- The share of revenue generated by SMEs through sales via a website or electronic data interchange (EDI)
- The percentage of SMEs that generated at least 1% of their turnover from sales via a website or electronic data interchange (EDI)
- Gross domestic product per capita in purchasing power parity terms (EU average)

Indicator definition

Selecting and defining a digitalisation framework such as digital maturity

The next step aims to identify suitable indicators given the policy direction. The policy priorities in Slovenia, as outlined in the previous section, stress topics like smart tourism, digital customer experience, digitally skilled workforce, data-driven decision making and the usage of a couple of digital tools. It is important to select and define a digitalisation framework that sets the frame for the indicator selection. Well-known frameworks are digital intensity, digital readiness, digital maturity, digital adoption, digital capacity or level of digitalisation.

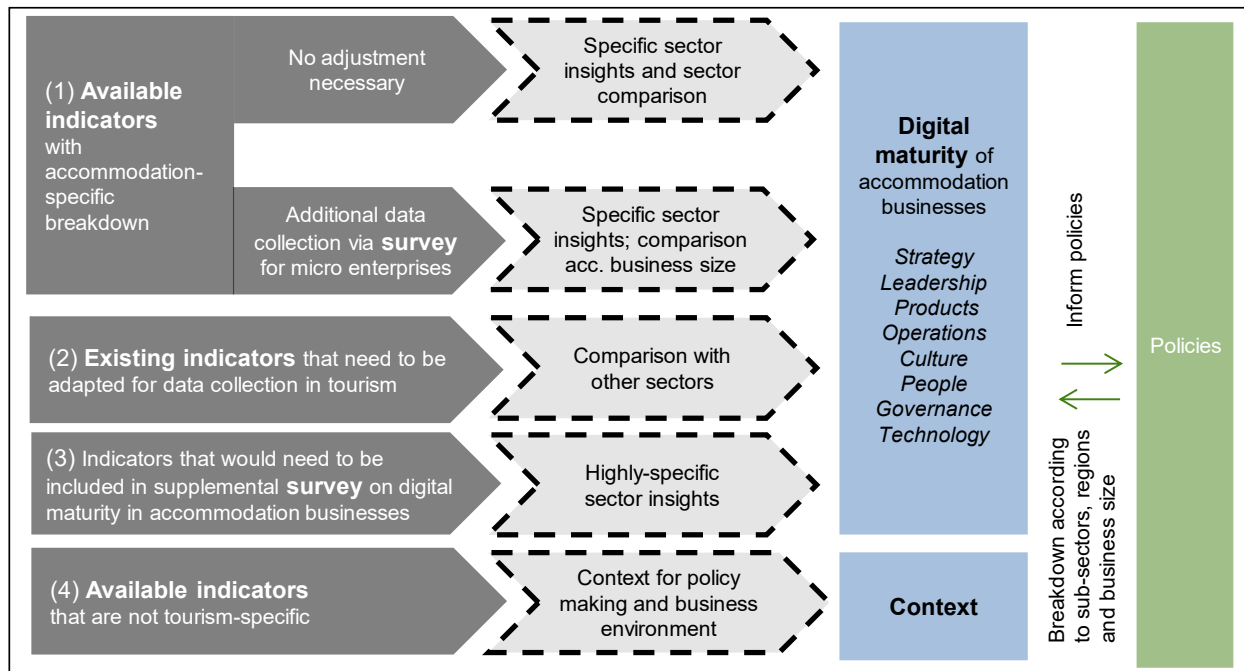
Against the background of the policy direction, the manifold trends and variables of digitalisation in tourism, a holistic framework like digital maturity helps to cover the relevant dimensions of digitalisation outlined above, including *Strategy, Leadership, Products, Operations, Culture, People, Governance* and *Technology*. Future work should define these dimensions according to sector-specific characteristics.

Identifying relevant indicators

The identification of relevant indicators follows the digital maturity model and is based on the previous review of existing indicator sets. Moving forward from relevant indicators to developing a tailored draft list of indicators requires additional steps, including prioritisation and structuring. Although the reviewed indicator sets don't assess digital maturity for tourism businesses directly, it is possible to cover the maturity dimension by combining various digitalisation indicators. This can be complemented by a national sector-specific survey that should also cover micro enterprises. Figure 5 illustrates the different data sources that could be combined to measure digital maturity:

1. Available indicators with accommodation-specific breakdown
2. Existing indicators that need to be adapted for data collection in tourism
3. Indicators that would need to be included in a supplemental survey on digital maturity in accommodation businesses
4. Available indicators that are not tourism-specific

Figure 5. Combining data sources to assess digital maturity



Source: OECD elaboration.

The indicative list of indicators shows options to cover the dimensions of digital maturity (Table 4). These are possible indicators that aim to capture the variety and complexity of digital maturity based on existing indicators. As indicators specifically tailored to accommodation businesses are scarce, the list provides a wider perspective encompassing tourism businesses more broadly. However, a potential core set of 20 indicators that are particularly relevant for accommodation businesses is highlighted in orange (appearing shaded in black and white).

Out of this indicative list of relevant indicators that uses various data sources, it would be necessary to identify a core set of relevant indicators that would address key policy priorities or questions to then establish a baseline to measure progress. This could lead to developing a composite index on digital maturity of businesses, which sets concrete thresholds, for example, according to the share of e-commerce turnovers.

Table 4. Indicative list of indicators by digital maturity dimension of tourism businesses

Maturity dimension	Topics covered	Indicators	Indicator set	Data source
Context	Policies	Cc1 Number of programmes supporting the usage of tourism-related technologies and innovations in the tourism destination	UN Tourism – Toolkit of Indicators for Projects (TIPs)	3
		Cc2 Number of countries/destinations with Information, Communication and Technology masterplans/roadmaps	UN Tourism – Toolkit of Indicators for Projects (TIPs)	3
		Cc2 ICT investment as a share of GDP	OECD Going Digital Toolkit	4
		Cc3 Procedures to start a business	World Bank Doing Business	4
		Cc4 Ability of government to respond to and manage cyber security threats	CISCO Digital Readiness Index	4
		Cc5 Investment in telecommunication infrastructure	ITU World Telecommunication/ICT Indicators Database	4
		Cc6 Legal framework's adaptability to digital business models	WEF 2019	4
		Cc7 Government use of online services, covering e-information sharing, e-consultation, and e-decision-making.	UN 2020	4
	Research	Cc8 Research in machine learning	G20 Toolkit for Measuring the Digital Economy	4
		Cc9 R&D in information industries	G20 Toolkit for Measuring the Digital Economy	4
		Cc10 Direct government funding of business R&D and tax incentives for R&D	G20 Toolkit for Measuring the Digital Economy	4
		Cc11 Patents in ICT technologies, as a share of total IP5 patent families	OECD Going digital toolkit, CISCO digital Readiness	2
	Individuals	Cc12 ICT graduates	Eurostat, Individuals' level of digital skills	4
		Cc13 At least basic digital skills	Eurostat, Individuals' level of digital skills	4
		Cc14 Above basic digital skills	Eurostat, Individuals' level of digital skills	4
		Cc15 Share of Internet users experiencing abuse of personal information or privacy violations	OECD ICT Access and Usage	4
		Cc16 Share of Internet users not buying online due to payment security concerns	Eurostat, Individuals' level of digital skills	4
		Cc17 Educational assessment PISA – Math	PISA 2018 (OECD), CISCO Digital Readiness	4
		Cc18 Individuals' level of digital skills	Eurostat, Individuals' level of digital skills	4
		Cc19 Individuals' level of computer skills	Eurostat, Individuals' level of digital skills	4
		Cc20 Individuals' level of internet skills	Eurostat, Individuals' level of digital skills	4
	Infrastructure	Cc21 Internet speed at tourism destinations	JRC, Ookla, Tripadvisor	4
		Cc22 Overall 5G coverage	Eurostat, Households	4
		Cc23 Businesses with download speed at least 2/10/30/100/500/1000 Mbit/s	Eurostat, OECD ICT Access and Usage	4
Strategy	Strategic vision, transformation roadmap	S1 Accepted digitalisation Strategy	Tourbit survey; Canada: Survey of Digital Technology and Internet Use (SDTIU)	3
		S2 Plans to seek financing for ICT implementation.	Canada: Survey of Digital Technology and Internet Use (SDTIU)	3

Maturity dimension	Topics covered	Indicators	Indicator set	Data source
Leadership	Management methods, sponsorship, resources	L1 Share of investment in informatics and information structure	Tourbit survey; CISCO Digital Readiness Index	3
		L2 Level of investment in education and training	Tourbit survey	3
		L3 Method of management	Tourbit survey	3
		L4 Propensity to take risks	Tourbit survey	3
		L5 Factors influencing ICT integration decisions	Canada: Survey of Digital Technology and Internet Use (SDTIU)	3
		L6 Spending on cloud computing services	Canada: Survey of Digital Technology and Internet Use (SDTIU), Eurostat, ICT Enterprise Survey	3
Products	Business model, innovation capabilities, digital value chain	P1 Improved value proposition through digital technologies	Tourbit survey	3
		P2 Start-up firms (up to 2 years old) in information industries as a share P4 of all businesses	OECD Structural and Demographic Business Statistics (SDBS) Database.	2
		P3 Features offered on business's websites.	Canada: Survey of Digital Technology and Internet Use (SDTIU), Eurostat, ICT Enterprise Survey	2
Operations	E-commerce	O1 How products are positioned and distributed in the market, using different channels and pricing strategies.	Digitalisation survey for SMEs in Spain: SEGITTUR	3
		O2 e-Commerce turnover	Eurostat, ICT Enterprise Survey, Canada: Survey of Digital Technology and Internet Use (SDTIU) and others	1
		O3 Selling online cross-border	Eurostat, ICT Enterprise Survey, Canada: Survey of Digital Technology and Internet Use (SDTIU)	1
		O4 Obstacles for Web Sales by size class of enterprise	Eurostat, ICT Enterprise Survey	1
		O5 E-commerce Purchases by size class of enterprise	Eurostat, ICT Enterprise Survey	1
		O6 Management of bookings across different sales channels, including automation and integration considerations.	Digitalisation survey for SMEs in Spain: SEGITTUR	3
		O6 Digital channels (Digital sales channels are direct and indirect. Direct: a website, your own online store. Indirect: online sales platforms, online travel market places. (Booking.com, Expedia, Amadeus, Airbnb, Bed Banks...)).	Tourbit survey	3
		O7 E-commerce features on websites or apps.	Canada: Survey of Digital Technology and Internet Use (SDTIU), Eurostat, ICT Enterprise Survey	2
		O8 Online payment options accepted.	Canada: Survey of Digital Technology and Internet Use (SDTIU)	3
		O9 Percentage of sales from various regions.	Canada: Survey of Digital Technology and Internet Use (SDTIU)	3
		O10 Tools used to enhance e-commerce ability internationally.	Canada: Survey of Digital Technology and Internet Use (SDTIU)	2
		O11 Challenges in conducting sales over the Internet.	Canada: Survey of Digital Technology and Internet Use (SDTIU)	2
		O12 Reasons for not conducting sales or receiving orders online.	Canada: Survey of Digital Technology and Internet Use (SDTIU)	2
	Marketing and customer relations	M1 Types of paid online advertising used.	Canada: Survey of Digital Technology and Internet Use (SDTIU)	2
		M2 Spending on online advertising	Canada: Survey of Digital Technology and Internet Use (SDTIU)	3

Maturity dimension	Topics covered	Indicators	Indicator set	Data source
	Internal activities and operations	M3 Social Media Use by size class of enterprise	Eurostat, ICT Enterprise Survey, OECD ICT Access and Usage, Tourbit	1
		M4 Social Media Use by type, internet advertising and size class of enterprise	Eurostat, ICT Enterprise Survey *From 2025 no longer by type	1
		M5 Mobile business to improve customer experience, information support to customers to enable them to manage their experience remotely.	Tourbit survey	3
		M6 Automated systems used for receiving orders online.	Canada: Survey of Digital Technology and Internet Use (SDTIU)	3
		M7 Customers acquisition with digital technologies	Tourbit survey	3
		M8 Collection of information on customers or clients.	Canada: Survey of Digital Technology and Internet Use (SDTIU)	3
		M9 The execution of business processes such as marketing, planning, and personnel management, and their digitization and integration.	Digitalisation survey for SMEs in Spain: SEGITTUR	3
		M10 Degree of agility	Tourbit survey	3
		M11 Enterprises, which conducted remote meetings via the internet	Eurostat, ICT Enterprise Survey	1
		M12 Use of online crowdfunding.	Canada: Survey of Digital Technology and Internet Use (SDTIU)	3
		M13 Electronic information sharing	Eurostat, ICT Enterprise Survey	1
		M14 Provide to the persons employed remote access to the enterprise's e-mail system, documents or applications	Eurostat, ICT Enterprise Survey	1
		M15 Effects of digitalisation on Revenue/costs	Tourbit survey	3
	Interaction with stakeholders	M16 Integration with Customers/Suppliers, supply chain management by size class of enterprise	Eurostat, ICT Enterprise Survey	1
		M17 e-Invoices	Eurostat, ICT Enterprise Survey, Canada: Survey of Digital Technology and Internet Use (SDTIU) and others	1
		M18 Businesses sharing SCM information electronically with suppliers and customers	OECD ICT Access and Usage	2
		M19 digital tools to collaborate with suppliers and partners	Tourbit survey	3
Culture	Customer centricity, hierarchy vs. network, openness	C1 Organisation of informatics	Tourbit survey	3
		C2 Employees acceptance to changes	Tourbit survey	3
		C3 Employee autonomy	Tourbit survey	3
		C4 Promotion of open communication	Tourbit survey	3
		C5 Encouraging cooperation between employees	Tourbit survey	3
		C6 Encouraging innovation	Tourbit survey	3
		C7 Knowledge transfer is highly developed between companies and universities.	IMD World Competitiveness Center's Executive Opinion Survey 2023	2
People	Roles, expertise, capabilities	Pe1 Enterprises that provided training to develop/upgrade ICT skills of their personnel	Eurostat, ICT Enterprise Survey	1
		Pe2 Enterprises seeking ICT specialists	Eurostat, ICT Enterprise Survey	1
		Pe3 Assessment of digital competences	Tourbit survey	3

Maturity dimension	Topics covered	Indicators	Indicator set	Data source
		Pe4 Level of employees engagement	Tourbit survey	3
		Pe5 Enterprises make persons employed aware of their obligations in ICT security related issues	Eurostat, ICT Enterprise Survey	1
		Pe6 Employ ICT specialists	Eurostat, ICT Enterprise Survey	1
		Pe7 Share of ICT task-intensive jobs	OECD Going Digital Toolkit	2
		Pe8 Use of Computers and the Internet by employees by size class of enterprise	Eurostat, ICT Enterprise Survey	1
		Pe9 Hiring external parties for ICT-related activities.	Canada: Survey of Digital Technology and Internet Use (SDTIU)	3
		Pe10 Plans to hire external parties for ICT-related activities.	Canada: Survey of Digital Technology and Internet Use (SDTIU)	3
		Pe11 Job vacancies for ICT specialists.	Canada: Survey of Digital Technology and Internet Use (SDTIU)	3
		Pe12 Challenges in filling ICT skill job vacancies.	Canada: Survey of Digital Technology and Internet Use (SDTIU)	3
Governance	Communication & collaboration rules, KPIs, alignment	G1 Data management	Tourbit survey	3
		G2 Enterprises have document(s) on measures, practices or procedures on ICT security	Eurostat, ICT Enterprise Survey	1
		G3 Use at least 3 ICT security measures	Eurostat, ICT Enterprise Survey	1
		G4 Public-private partnerships	IMD World Competitiveness Center's Executive Opinion Survey 2023	2
		G5 Security Policy, Measures, Risks, and Staff Awareness	Eurostat, ICT Enterprise Survey; OECD ICT Access and Usage	1
		G6 Security Incidents and Consequences	Eurostat, ICT Enterprise Survey; OECD ICT Access and Usage	1
		G7 Storage of customer or client information electronically.	Canada: Survey of Digital Technology and Internet Use (SDTIU)	3
		G8 Methods to protect electronically stored customer information.	Canada: Survey of Digital Technology and Internet Use (SDTIU)	3
		G9 Purchase of external datasets.	Canada: Survey of Digital Technology and Internet Use (SDTIU)	3
		G10 Cybersecurity	Tourbit survey	3
Technology	Cloud computing	T1 Enterprises purchasing cloud computing services	Eurostat ICT, OECD ICT Access and Usage	1
		T2 Enterprises purchasing sophisticated or intermediate cloud computing services	Eurostat ICT, Tourbit survey	1
		T3 Enterprises purchasing cloud computing services: E-mail	OECD ICT Access and Usage	3
		T4 Enterprises purchasing cloud computing services: Office software	OECD ICT Access and Usage	3
		T5 Enterprises purchasing cloud computing services: Finance or accounting software	OECD ICT Access and Usage	3
		T6 Enterprises purchasing cloud computing services: CRM software	OECD ICT Access and Usage	3
		T7 Enterprises purchasing cloud computing services: Hosting of databases	OECD ICT Access and Usage	3
		T8 Enterprises purchasing cloud computing services: Storage of files	OECD ICT Access and Usage	3
		T9 Enterprises purchasing cloud computing services: Computing power	OECD ICT Access and Usage	3
	Big data and data analytics	T10 Enterprises analysing big data from any data source	Eurostat ICT, OECD ICT Access and Usage	1
		T11 Enterprises performing Big data analysis only with own employees	OECD ICT Access and Usage	3

Maturity dimension	Topics covered	Indicators	Indicator set	Data source
	Tools, technologies	T12 Enterprises performing Big data analysis with external service provider	OECD ICT Access and Usage	3
		T13 Enterprises performing Big data analysis with both	OECD ICT Access and Usage	3
		T14 3D Printing and Robotics usage by size class of enterprise	Eurostat, ICT Enterprise Survey	1
		T15 Internet of Things usage by size class of enterprise	Eurostat, ICT Enterprise Survey, OECD ICT Access and Usage, Tourbit survey	1
		T16 Enterprises using 3D Printing technology	OECD ICT Access and Usage	3
		T17 Enterprises using an ERP software	OECD ICT Access and Usage	3
		T18 Enterprises using any CRM software	OECD ICT Access and Usage	3
		T19 Enterprises using EDI, automated data exchange between enterprises	OECD ICT Access and Usage	3
		T20 Enterprises using RFID technology	OECD ICT Access and Usage	3
		T21 Enterprises using different types of AI technology	Eurostat, ICT Enterprise Survey	1
		T22 Blockchain	Tourbit survey	3
		T23 Digital technologies at your workplace	Tourbit survey	3
		T24 Enterprises support software solutions in customer management	Tourbit survey	3
		T25 Enterprises using of VR/AR	Tourbit survey	3
		T26 Number of tourism businesses using digital marketing services/platforms	UN Tourism – Toolkit of Indicators for Projects (TIPs)	3
		T27 Internal management and business support software	Tourbit survey	3

Note: Data source: 1. Available indicators with accommodation-specific breakdown; 2. Existing indicators that need transfer to tourism and data collection in tourism; 3. Indicators to be included in survey on digital maturity in accommodation businesses; 4. Available indicators that are not tourism-specific.

The orange colour coding illustrates the potential for an indicator to be included in a core set that are particularly relevant for accommodation businesses.

Indicator numbering follows the first letter of the maturity dimension.

Source: OECD elaboration.

Policy considerations and potential areas of future work

More granular, timely and robust evidence is needed to inform tourism policy and business decisions. Measuring digitalisation in tourism is a crucial part of this effort, even if it hasn't received as much attention as the development of sustainability indicators or data initiatives recently. Undertaken at the request of Slovenia, this paper seeks to provide a comprehensive review of existing digitalisation indicator sets both internationally and nationally, with a focus on identifying metrics that are applicable to tourism businesses and specifically pertinent to the accommodation sub-sector in Slovenia.

Key challenges

Several key findings have been drawn from a review of relevant indicator sets. First and foremost, current indicator sets provide limited insights into the complex nature of digital maturity, in addition to the fact that the ability to break down data by firm size and sector remains sparse – for example, in terms of the available tourism sub-sectors and the inclusion of firms with less than 10 employees and self-employed. Therefore, it is challenging to monitor the digital maturity or even the digitalisation of a sub-sector such as accommodation and develop tailored policies with the available indicators.

Moving forward with implementing digitalisation indicators and organising data collection, other challenges for measuring digitalisation should be taken into consideration:

- **Business size affects the choice of technologies and tools.** The level of technology adoption varies greatly among tourism businesses, particularly small and micro enterprises typically having slower tech adoption. A different business size may require different indicators to provide in-depth information. Survey filters can help tailor a survey to the business size.
- **Different tourism sub-sectors and their specific products and services require different technologies and tools.** Existing surveys ask, at a top level, whether enterprises use AI tools or cloud services. To get more granular data, it is important to directly ask for specifics that matter for the enterprise. In practice, a restaurant uses tools different from those of an activity provider.
- **Limited user knowledge of digital tools implemented could cause a response bias.** Are respondents to surveys aware of different tools implemented in their business and whether, for example, an outsourced service utilises cloud computing? The complexity of digital tools and the quantity of platforms used should be taken into consideration as well. For accuracy, surveys should ask for specific tools rather than for categories of tools implemented to avoid response bias.
- **Data collection at the business level needs to respect customer privacy regulations.** With the increase in data collection that goes beyond implemented ICT, e.g. by capturing the customers use of ICT services, privacy and security become a major responsibility and concern.
- **Indicator selection may focus on the direct effects of digitalisation while skipping potentially hidden, or indirect impacts.** To raise businesses' awareness of the potential benefits of digital uptake, indicators like return on investment (ROI) can be particularly effective. Determining return-of-investment for digital initiatives can, however, be complex. Direct impacts are often easier to measure. These include increases in productivity, cost reductions, improvements in customer engagement metrics, and enhanced process efficiency. Indirect effects

are typically broader and may include employee satisfaction, customer loyalty, brand reputation, and long-term strategic positioning.

- **Use of standardised international surveys vs. tailored surveys.** The lack of standardisation in digital indicators, e.g. when launching tailored surveys, can lead to inefficiencies and increased costs. It then raises the question of comparability at the international level or in-depth insights at the sub-national or sub-sectoral level. Therefore, a core set of standardised and comparable indicators would be beneficial on an international level.

Policy considerations

To ensure a comprehensive evaluation and effective selection of indicators, it is essential to recognise the challenges as outlined above. Moving forward to measure the digital maturity of accommodation businesses in Slovenia, requires the following steps:

- In developing a draft indicator set, **discuss the relevance and priority of indicators** with businesses, industry associations and policy makers. This could include selecting a smaller set of indicators that focusses on the needs of micro enterprises to streamline a potential survey in addition to the results from the Eurostat survey. Such consultation should accompany the implementation process, for example to discuss KPIs and changes to meet emerging trends and new policy priorities.
- **Define the indicators** clearly, and the measurable unit in detail. This may include making reference to business size, share of GDP, number of employees or region.
- **Elaborate on potential ways to collect data**, including the introduction of specific questions on digital maturity in the accommodation sector in existing surveys (e.g. administrative or business surveys), where available. In addition, dissemination to micro-enterprises is crucial to provide a holistic picture of the sector. This will include exchanges with statistical institutions such as Eurostat and current data initiatives to explore potential cooperation on data collection.
- **If needed, develop a specific survey on accommodation to complement available indicators.** This requires a concrete gap assessment between the dimensions of digital maturity and the available indicators to identify the need for additional questions. Supplementary questions can either build on existing indicators from other sectors or on surveys from peer countries. This approach provides some comparability and could be enriched by adding specific questions related to adaptation. The potential benefit of such a survey lies in the detailed analysis it allows. For example, a survey could include specific technologies and digital tools, barriers perceived by enterprises in adopting tools, and background information on R&D, financing or skills.
- **Explore and develop data systems/platforms** that could combine different available data sources.
- **Develop an implementation plan** for the indicator set, including a pilot phase, timelines and allocating responsibilities and resources. The implementation of the indicator set could also follow a stepwise approach, prioritising specific sources or indicators and benefit from regular review to ensure that the data collected addresses the key policy issues identified.

Potential areas of future work

The key challenges and policy considerations for Slovenia highlight that measuring the digital maturity of tourism businesses is a complex undertaking which also raises avenues for future work, including:

- **Definition of a dedicated framework on digital maturity** for the accommodation or for tourism businesses more widely. Although this paper mapped available indicators according to the dimensions of digital maturity, it opens discussion on a clear definition of dimensions and exploring potential indicators that could complement under-represented dimensions such as leadership, governance or culture. A more conceptual framework could complement this discussion.
- **Review of specific indicator sets and surveys on micro enterprises** beyond tourism. Business surveys are well developed across various economic sectors. A dedicated review may reveal interesting work and questionnaires tailored to micro enterprises. This also includes ways to collect data from these enterprises that usually face time constraints when responding to surveys.
- **Developing new indicators** that capture current trends and data sources. This paper has been built upon existing indicators, however, there is a need to supplement the digital maturity dimensions and to capture current trends. This includes (i) indicators at the interface of digitalisation and sustainability, for example on smart energy management, tracking of energy consumption, smart devices that track tourists' activities etc, but also (ii) indicators based on alternative data sources, especially online platforms and more granular telecommunication data; (iii) qualitative indicators to assess barriers in implementing technology and finally (iv) customer-centric data to prove the relevance and acceptance of digital tools.
- **Discuss and review consistency of available indicators on a regular basis**, as progress in digitalisation requires a frequent adjustment of indicators, for example relevance of websites, thresholds along with broadband coverage, granularity of cloud services and social media channels and issues of outsourcing.
- **Develop a composite index on digital maturity**; this could be backed up by a core set of indicators. This may include criteria or values associated with levels of digital maturity (unaware to transformed) and the implementation of basic and sophisticated ICT functions. First steps towards a composite index are made by Eurostat with regard to digital intensity.
- **Piloting country-specific surveys** and developing models to implement digitalisation indicators systematically in the long run. This may include modular surveys that analyse different maturity dimensions on a yearly basis and possible integration with existing surveys.
- **Explore the scaling of business self-assessment surveys as indicators**. Various self-assessment tools, like Tourbit, are very well tailored to tourism-specific digitalisation. Engaging businesses in participating in these surveys while accumulating the results for various regions would add value for policy makers.

In conclusion, measuring the digital maturity of tourism and accommodation businesses provides a relevant stream for future work and for supporting the sector through tailored policies. The implementation of a dedicated set of indicators, which could also be applied internationally, requires a comprehensive process, including discussions on policy priorities in tourism and digitalisation, a review of current and ongoing work beyond tourism businesses, the definition of a digital maturity framework and the detailed development of indicators.

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Notes

¹ A measurable variable employed as a representation to quantify specific characteristics or trends, often used to evaluate the effectiveness, performance, or condition of a project or sector.

² Collections of indicators that together provide a comprehensive overview of a topic, project, or research area. These sets are designed to capture multiple facets of the subject matter to aid thorough analysis and decision-making.

³ The tourism industries comprise all establishments for which the principal activity is a tourism characteristic activity. Tourism industries (also referred to as tourism activities) are the activities that typically produce tourism-characteristic products (UN Tourism, 2010^[6]). 98% of the tourism business in Slovenia have less than 10 employees or self-employed (European Commission, 2023^[7]).

⁴ Against the background of the Slovenian strategies' ambitious goals and initiatives, digitalisation indicators are required to assess the situation of businesses, to set a baseline and to develop appropriate policies and monitor their impact. This comes with challenges, such as the small scale of many tourism businesses⁴ (including accommodation providers⁴), which makes it difficult to capture their digital maturity, or the fast pace of emerging technologies. In addition, digitalisation in tourism includes many different stakeholders, technologies and levels. As for other areas, developing indicators to measure the digitalisation of tourism, including the digital maturity of tourism businesses, should be undertaken with an understanding of policy priorities (policy-led), the needs and challenges of the sector (practice-related), and taking into consideration available data.

⁵ An aggregated measurement derived from individual indicators, often combined through formulae to provide a single numerical result. This index simplifies the interpretation of complex, multi-dimensional data, enabling comparisons and benchmarking.

⁶ Data collection tools designed to gather primary data directly from respondents. Tailored to capture specific information not available through existing data sources, these surveys allow for targeted analysis of particular issues or populations.

⁷ Eurostat has worked with its partners in the European Statistical System on updating NACE, which will enter into force on 1.1.2025.