

# Data utilisation among employees in SMEs in Destination Limfjorden, Denmark

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**ABSTRACT:** This article explores the efforts of Destination Limfjorden in Denmark to enhance employees' competencies and skills in small and medium-sized tourism enterprises (SMEs) through the strategic use of data. The study employs a mixed-method approach, integrating digital questionnaires and semi-structured interviews to identify the competence needs of stakeholders. The research reveals a significant need for improved digital guest services and highlights the importance of data usage within companies, network building and general competence needs. The article also reviews the literature on the role of big data in augmenting tourism research and the challenges SMEs face in harnessing big data analytics. It underscores the need for robust knowledge management initiatives, targeted skill development programmes and a culture of collaboration among tourism SMEs. The article concludes by emphasising the increasing significance of big data competencies for SMEs in the tourism sector, particularly in remote European regions, and the potential of data analytics in fostering resilience among SMEs and enhancing their competitiveness within the evolving dynamics of the tourism industry landscape.

**KEYWORDS:** Big Data, destination management, digital maturity, interviews, tourism

## Introduction

In the last decade, the focus on competencies and skills among employees in the tourism industry in Denmark has undergone several changes and initiatives to improve the employees' competencies and skills and their ability to "deliver" great service and experiences for national and international tourists (Erhvervsministeriet, 2022).

The destination management organisation (DMO) Destination Limfjorden (DL) represents three rural municipalities located along Limfjord in Denmark. The role of the organisation for DL is to develop, coordinate and facilitate local business activities in relation to marketing, networking, guest services and various business support services for the local small and medium-sized (SMEs) tourism stakeholders (Destination Limfjorden, 2023 {Not in reference list}). Since the beginning of 2022, DL has, together with regional educational and research institutions, worked on a project for preparing and developing the SMEs' employees at the destination to work more effectively with the use of data. This project has resulted in activities to improve the competencies and skills of the many employees at the SMEs on a short-term and long-term basis. This article will be a short description of the project and the research related to its topics and a discussion of: (1) Enhancing data utilisation at Destination Limfjorden; and (2), the maturity level of SMEs in using data at Destination Limfjorden.

## Methodology

To identify the competence needs of stakeholders, a mixed-method approach was employed (Creswell, 2018) that integrates quantitative and qualitative data collection techniques, including digital questionnaires and semi-structured stakeholder interviews. The quantitative survey clarified the expressed competence needs and served as a foundation for developing the interview guide for the qualitative phase. The digital questionnaire was completed by 35 stakeholders from various locations at the destination. Subsequently, we conducted 29 semi-structured interviews with representatives from 32 of the businesses. The 35 stakeholders were a mix of different types of businesses and were selected by the DL organisation. Both the 35 stakeholders and the 29 businesses constituted a sample that corresponded to the total number and type of businesses at the destination.

The quantitative data analysis yielded a comprehensive overview of the critical competence areas as perceived by stakeholders. This overview facilitated the identification of patterns and trends in the responses, highlighting prevalent issues and common themes across different stakeholders and locations. For instance, a significant number of respondents indicated a need for improved digital guest services which prompted a focused investigation during the qualitative phase. The insights derived from the quantitative survey were utilised to develop a robust interview guide for the qualitative interviews.

This guide was designed to include targeted questions aimed at probing deeper into the competence needs identified in the quantitative phase. Additionally, the guide incorporated prompts to uncover latent or unstated needs that may not have been fully captured through the survey responses (Brotherton, 2015). Post data collection, all qualitative data from the interviews were transcribed. The subsequent data analysis categorised the data under the following themes: data usage within companies, physical and digital guest services, network building and general competence needs. Additionally, competence needs in relation to these themes was explored, including aspects not explicitly mentioned by the respondents.

### Literature review

Small and medium-sized tourism enterprises located in remote regions of Europe have emerged as focal points of academic inquiry, particularly concerning the potential benefits accrued through the strategic utilisation of big data. Scholarly investigations have consistently underscored the critical role played by big data analytics in augmenting tourism research, primarily by explaining complex spatiotemporal patterns inherent to tourism dynamics (Silva et al., 2018). Through the employment of sophisticated big data methodologies, SMEs can discern intricate travel patterns, thereby facilitating informed decision-making processes crucial for the effective planning and sustainable development of tourism regions (Han et al., 2021). This approach not only addresses prevalent challenges encountered by remote destinations in terms of marketing and tourism development, but also holds promise for enhancing their overall competitiveness in the broader industry landscape (Buultjens et al., 2011).

#### *Big data and sustainability*

Despite the evident advantages associated with big data integration in the tourism sector, SMEs face obvious barriers, notably a scarcity of required knowledge and resources to fully harness the potential of big data analytics (Ramli et al., 2022). Mitigating these challenges necessitates a multifaceted approach characterised by robust knowledge management initiatives and targeted skill development programmes tailored to the specific needs of SMEs (Wang & Wang, 2020). Moreover, fostering a culture of collaboration and knowledge sharing among tourism SMEs emerges as a crucial imperative, facilitating collective efforts aimed at optimising the utilisation of emergent technologies and enabling effective competition with larger industry players (O'Connor, 2023).

Recent scholarly endeavours have further explained the nuanced interplay between SMEs in remote European tourism sectors and their proficiency in big data competencies. Mariani et al. (2018), through a comprehensive literature review, accentuated the important role of big data in conferring a competitive advantage in the realms of hospitality and tourism, emphasising its flourishing significance in the industry. Complementarily, O'Connor (2023) advocates for the strategic deployment of information and communications technologies (ICTs) to bolster the competitiveness of tourism SMEs vis-à-vis their larger counterparts, aligning with overarching global development objectives. Furthermore, research by Ciasullo et al. (2022) highlighted the symbiotic relationship between big data analytics capabilities, co-innovation and organisational

resilience, expounding the transformative potential of data analytics in fostering resilience among SMEs operating in the tourism domain. Additionally, a study by Sanchez-Hughet et al. (2022) accentuated the urgent need for SMEs to embrace big data strategies to capitalise on increasing opportunities in the European tourism landscape, underscoring its pivotal role in sustaining growth and competitiveness.

In summation, the convergence of scholarly insights underscores the increasing significance of big data competencies for SMEs operating in the tourism sector, particularly in remote European regions. Leveraging data analytics, embracing ICTs, fostering innovation and enhancing resilience through adept utilisation of big data capabilities emerge as indispensable strategies for SMEs to navigate and thrive within the evolving dynamics of the tourism industry landscape.

#### *The convergence of big data and sustainability in small and medium-sized tourism enterprises (SMEs)*

The literature extensively delineates the challenges faced by tourism SMEs, particularly those engaged in providing modest accommodations, in adhering to sustainability imperatives (Hassanli & Ashwell, 2018). Notably, collaborative endeavours, networking initiatives and clustering mechanisms have been identified as strategic enablers for SMEs operating in regional, rural and peripheral tourism domains, thereby underscoring the salience of relational strategies in geographically isolated settings (Jacobsen, 2016). Moreover, scholarly investigations focusing on small regional airports have shown the integration of sustainability considerations into the operational frameworks of remote SMEs, thus clarifying their conscientious endeavours towards sustainability (Boiral et al., 2017).

In recent years, a discernible surge of scholarly interest has been observed in harnessing big data analytics to bolster sustainability endeavours in the tourism sector, particularly among small and medium-sized enterprises situated in Europe's remote hinterlands. Studies conducted by Del Vecchio et al. (2018) and Rahmadian et al. (2021) have underscored the escalating utilisation of big data in fostering sustainable tourism practices. Rahmadian et al. (2021) explain the multifaceted applications of big data across both academic and non-academic spheres, illustrating its efficacy in identifying, ranking and predicting tourist behaviours with precision. Similarly, Del Vecchio et al. (2018) accentuate the criticality of deploying coherent data collection methodologies in the context of sustainable tourism endeavours, emphasising the significance of data quality and integrity in driving informed decision-making processes.

Furthermore, Vitálišová et al. (2021) propose an integrated operational framework tailored to sustainable tourism development in remote regions, offering a scalable model applicable across analogous geographical contexts worldwide. This initiative resonates profoundly with the overarching objective of advancing sustainability in tourism SMEs in Europe's remote locations. Additionally, Mariani et al. (2021) articulate the significant role of big data analytics in augmenting the competitiveness and productivity of tourism destinations, thereby potentially giving strategic advantages to SMEs located in remote areas.

Moreover, the research by Gutiérrez Rodríguez et al. (2020) delves into the validation of dynamic capabilities in SMEs affiliated with the nature tourism cluster, clarifying the positive influence of absorptive capacity, adaptability and innovation

capabilities on SME performance outcomes. This underscores the indispensable role of dynamic capabilities in fostering sustainable operational paradigms in SMEs operating in the tourism sector. In summation, the integration of big data analytics, sustainable development frameworks and dynamic capabilities stands poised to play a central role in advancing sustainability objectives in tourism SMEs in Europe's remote regions. Through judicious utilisation of these methodological tools and conceptual frameworks, SMEs can elevate their operational efficiency, enhance competitiveness and meaningfully contribute to the realisation of sustainable tourism practices.

## Results

A mixed-method approach, combining digital questionnaires and semi-structured interviews, was used to identify stakeholders' competences needs in the region of Limfjorden in the north-west of Denmark (Creswell, 2018). The quantitative survey clarified these needs and informed the interview guide. Thirty-five stakeholders completed the questionnaire, and 29 interviews were conducted with representatives from 32 companies, reflecting the broader business landscape.

The quantitative analysis highlighted critical competence areas and trends, such as the need for improved digital guest services, which was further explored in the qualitative phase. The interviews were transcribed and analysed into themes like data usage, guest services, network building and general competence needs, including latent issues not fully captured in the survey (Brotherton, 2015). Overall, the quantitative and qualitative data correlated well, complementing each other in providing concrete recommendations for improving data usage and SME maturity levels at Limfjorden, Denmark. We begin by looking at the current data utilisation in the companies.

### *Data utilisation in the companies*

The current state of data collection among operators at DL is notably limited. Many operators do not engage in data collection or utilisation at all, while a few, primarily larger operators, employ more structured methods to enhance guest services. These methods often rely on their own booking systems rather than a systematic data collection approach. Most respondents collect data through personal interactions with guests, resulting in knowledge that remains unstructured and confined to individuals or specific companies.

Over 50% of respondents wish to become more data-driven, but they face significant barriers such as time constraints, financial limitations and a lack of perceived value in data orientation. The latter issue is particularly widespread and represents a major obstacle that stakeholders must address. Resistance to increased data usage is common among many operators, indicating a need for further analysis. Key questions include how to demonstrate the necessity of increased data usage and how to overcome prejudices against strategic data use. Insights can be drawn from Dania Academy of Applied Science's previous big data research (Pahus & Sunesen, 2022), which offers three overarching recommendations for becoming more data-driven. A critical step in overcoming these challenges is motivating stakeholders to recognise how becoming data-driven can enhance financial performance. More than 50% of respondents view training and competence development as essential solutions. This finding aligns with

Pahus & Sunesen's (2022) research, which emphasised the importance of competence development for small and medium-sized enterprises in effectively utilising big data.

In summary, enhancing data utilisation in the Danish tourism sector necessitates targeted efforts in training and competence development, alongside strategic initiatives to demonstrate the tangible benefits of a data-driven approach.

### *Maturity levels of SMEs in data usage*

This assessment reviews the digital maturity of companies in DL, focusing on their data utilisation practices, digital guest service capabilities, networking activities and general competence development needs. The analysis draws from current practices as well as perceived barriers and motivations related to advancing digital capabilities. The following is based on the quantitative and qualitative data collected for this project.

Data collection practices among operators in DL are considerably restricted. Only a handful of larger operators, such as Jesperhus (a large entertainment park at the destination), employ structured data collection methods, primarily utilising their booking systems to enhance guest services. The majority of data collection is conducted through personal interactions with guests, leading to unstructured and isolated knowledge in individual companies. More than half of the operators have expressed a desire to adopt more data-driven practices; however, they encounter substantial obstacles such as time constraints, costs and a limited recognition of the value that data can offer. There is also widespread resistance to implementing more strategic data usage, highlighting the critical need to effectively demonstrate the advantages of data-driven methodologies.

There is a distinct preference for physical over digital guest interactions among DL companies. The use of digital tools such as social media platforms like Facebook and Instagram is familiar to several operators, but not actively pursued. This indicates a significant potential for growth in digital guest services, which is currently underutilised due to a combination of limited digital skills and a lack of proactive digital strategy. Almost all stakeholders view network building as the responsibility of DL's tourist organisations and business houses, with no significant self-initiated activities. This passive stance towards networking underscores a broader reluctance to engage proactively in community-wide digital strategies.

There is a recognised need for training to better understand and utilise data, particularly among smaller operators. Training needs extend to digital marketing tools beyond social media, including search engine optimisation, Google services and TripAdvisor. Stakeholders need to understand how to collect and analyse data themselves, or how to effectively use externally collected data (e.g. from Danish Statistics, or Visit Denmark).

The digital maturity level of companies at DL is relatively low, with substantial gaps in both digital competencies and the strategic use of digital tools. The sector shows a strong inclination towards traditional, physical guest service methods, with digital interactions and data-driven decision-making not fully integrated or leveraged. Enhancing the digital maturity of Destination Limfjorden requires a comprehensive strategy focused on education, support and a clear demonstration of the value added by digital initiatives. The area has potential for significant digital growth, which can lead to improved operational efficiency and enhanced guest experiences if stakeholders are properly equipped and motivated to embrace digital transformation.

## Discussion

### *Enhancing data utilisation at DL: suggestions for further development*

The effective utilisation of data is increasingly recognised as a cornerstone for enhancing the operations and decision-making processes at tourism destinations. At DL, there is a pressing need to improve data literacy and technical competencies among operators. This discussion explores the essential components of training and competence development, alongside strategic initiatives that can support and promote data-driven practices. Drawing from research conducted in the literature review, we underscore the challenges faced by SMEs in the tourism sector, particularly regarding the adoption of big data analytics, and highlight the critical steps required to foster a culture of collaboration, innovation and resilience.

- Training and competence development are fundamental components for improving data utilisation at the destination. Operators currently lack the necessary skills and knowledge to effectively collect, analyse and interpret data, as indicated by the data collected in this project. Enhancing data literacy among stakeholders is essential, enabling them to understand the importance and utility of data in decision-making processes. This involves developing technical skills related to data management tools and software, which are crucial for handling data efficiently, employing analytical techniques, and utilising data-driven insights to enhance operations. Furthermore, fostering analytical thinking is vital, as it trains operators to critically analyse data, formulate relevant questions and make informed decisions based on data insights. The importance of training and competence development is further highlighted in recent research focused on small and medium-sized enterprises in the tourism sector. Despite the evident advantages associated with big data integration, SMEs face notable impediments, such as a scarcity of required knowledge and resources to fully harness the potential of big data analytics (Ramli et al., 2022). This gap underscores the necessity for robust knowledge-management initiatives and targeted skill development programmes tailored to the specific needs of SMEs (Wang & Wang, 2020).
- Fostering a culture of collaboration and knowledge sharing among tourism SMEs is crucial, facilitating collective efforts to optimise the utilisation of emergent technologies and enabling effective competition with larger industry players (O'Connor, 2023). Recent scholarly endeavours have elucidated the nuanced interplay between SMEs in remote European tourism sectors and their proficiency in big data competencies. Mariani et al. (2018) accentuated the pivotal role of big data in conferring a competitive advantage in the realms of hospitality and tourism, emphasising its significance for the industry.
- Complementarily, O'Connor (2023) advocated for the strategic deployment of information and communications technologies to bolster the competitiveness of tourism SMEs vis-à-vis their larger counterparts, aligning with overarching global development objectives. Furthermore, research by Ciasullo et al. (2022) elucidated the symbiotic relationship between big data analytics capabilities, co-innovation and organisational resilience, highlighting the transformative potential of data analytics in fostering resilience among

SMEs in the tourism domain. Additionally, the study by Sanchez-Huguet et al. (2022) underscored the urgent need for SMEs to embrace big data strategies to capitalise on increasing opportunities in the European tourism landscape, emphasising its pivotal role in sustaining growth and competitiveness.

The convergence of scholarly insights underscores the increasing significance of big data competencies for SMEs operating in the tourism sector, particularly in remote European regions. Leveraging data analytics, embracing ICTs, fostering innovation and enhancing resilience through adept utilisation of big data capabilities emerge as indispensable strategies for SMEs to navigate and thrive in the evolving dynamics of the tourism industry landscape. By investing in training, competence development and strategic initiatives and demonstrating tangible benefits, stakeholders can significantly improve data utilisation and drive the success of tourism destinations.

### *Maturity levels of SMEs in using data*

This article provides critical insights into the digital maturity of companies operating at DL, spotlighting their data utilisation, digital guest services, networking activities and overall digital competence. While the larger operators like Jesperhus demonstrate structured approaches to data collection, the broader industry shows considerable lag in digital adoption and integration. Several key themes and challenges have emerged that warrant a detailed discussion to guide future initiatives and improvements.

Currently, data collection among DL operators is fragmented and primarily confined to larger entities. Smaller operators rely on personal interactions, which, while valuable for customer engagement, do not translate into actionable insights due to their unstructured nature. This scenario underscores a critical gap in the digital maturity of the region's businesses. Additionally, this article highlights a significant underutilisation of digital tools for guest services. Despite familiarity with platforms like Facebook and Instagram, there is little active engagement or strategic use of social media. This gap presents a notable opportunity for growth. Networking is largely viewed as the responsibility of external organisations rather than individual operators. This passive stance inhibits the development of a cohesive, community-wide digital strategy. Active engagement and collaboration could foster a more robust digital ecosystem.

At DL, networking and community engagement are predominantly seen as the domain of external organisations, such as tourist offices and business houses, rather than the responsibility of individual operators. This prevailing view contributes to a passive stance among many businesses, limiting their proactive involvement in collective digital strategies. Such an approach inhibits the development of a cohesive and community-wide digital strategy, which is crucial for the region's digital growth. When operators pass networking and collaboration on to external entities, they miss valuable opportunities for peer learning, resource sharing and joint innovation. This lack of engagement stifles the creation of a unified digital ecosystem where businesses can collectively advance their digital maturity. A more active and participatory approach – where individual operators take initiative and work together – could transform the digital landscape of DL. Encouraging operators to embrace active engagement and collaboration can significantly enhance the region's digital

ecosystem. By fostering a culture where businesses regularly interact, share insights and support each other's digital initiatives, DL can have a more dynamic and resilient community. This active participation would not only drive individual digital advancements, but also strengthen the region's overall competitive position in the digital realm.

In summary, shifting from a passive reliance on external organisations to a more collaborative and engaged approach among operators is essential. This transition is pivotal for developing a robust digital ecosystem that can effectively harness the collective strengths of all stakeholders at DL. Based on the findings in this article, we offer the following advice:

- (1) Promote data literacy: Stakeholders should invest in training to improve data literacy and technical skills, enabling better data collection, analysis and utilisation. This will help operators overcome barriers and see the tangible benefits of data-driven practices;
- (2) Enhance digital maturity: Encourage smaller operators to adopt structured data collection methods and digital guest services. This will close the gap in digital maturity and improve overall service quality and operational efficiency;
- (3) Foster collaboration: Shift from a passive reliance on external organisations to active collaboration among operators. This will help build a robust digital ecosystem, facilitating knowledge sharing, innovation and collective growth in the region; and
- (4) Demonstrate the financial benefits: Clearly illustrate how becoming data-driven can lead to better financial performance. This will motivate stakeholders to engage more fully with digital transformation efforts.

### Suggestions for further research

To build on the findings of this study, several areas of further research are recommended. First, while the study identifies a general resistance to adopting data-driven practices among smaller operators, there is a need to delve deeper into the specific barriers that prevent these businesses from embracing structured data collection and digital guest services. Future research could explore financial, technical and cultural factors that contribute to this resistance. A more detailed understanding of these obstacles would help in designing effective strategies to encourage digital adoption in the tourism sector.

Second, while this study emphasises the need for collaboration among operators to foster a robust digital ecosystem, further research could explore successful collaboration models in other regions. Investigating how these models enhance digital ecosystems elsewhere and determining how they could be adapted for the Limfjorden area would provide actionable insights for regional development.

Thirdly, there is a need for longitudinal studies to assess the long-term impact of increased data utilisation and digital maturity on business performance and regional tourism growth. Such research could provide valuable evidence on the benefits of digital transformation, offering stakeholders concrete examples of how embracing data-driven practices can lead to sustained growth and competitiveness in the tourism industry.

### Conclusion

The study on data utilisation among employees in small and medium-sized enterprises at Destination Limfjorden provides significant insights into the current digital maturity and the challenges faced by these businesses. The findings highlight a pronounced need for improved data collection and utilisation practices, particularly among smaller operators who currently rely heavily on personal interactions rather than systematic data collection. This reliance results in isolated and unstructured knowledge, underscoring a critical gap in digital competencies.

Operators express a clear desire to adopt more data-driven practices but face substantial barriers, including time constraints, financial costs and a limited understanding of data's potential value. Moreover, there is a notable resistance to embracing strategic data usage, which poses a challenge for fostering a culture of digital innovation. The region's approach to guest services remains predominantly physical, with digital interactions underutilised despite familiarity with social media platforms. This underutilisation signals a significant opportunity for growth in digital guest services. Additionally, the passive stance toward networking and community engagement, often left to external organisations, limits the development of a cohesive, community-wide digital strategy. This lack of proactive collaboration stifles the creation of a unified digital ecosystem.

Addressing these issues requires a multifaceted strategy. Enhancing data literacy through targeted training and competence development is essential. Operators need to acquire the technical skills to collect, analyse and leverage data effectively. Promoting a culture of collaboration and proactive engagement can facilitate the sharing of resources and joint innovation, which is crucial for building a robust digital community. Demonstrating the tangible benefits of data-driven approaches can also motivate stakeholders to overcome existing prejudices and embrace digital transformation.

In conclusion, the digital maturity of SMEs at DL is currently low, but there is significant potential for growth. By focusing on education, support and the clear articulation of the benefits of digital initiatives, DL can enhance its operational efficiency and guest experiences. Embracing a collaborative and engaged approach will be pivotal in harnessing the collective strengths of all stakeholders, driving the region towards a more dynamic and competitive digital future.

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