

**CUSTOMER SEGMENT EVOLUTION IN THE NORDIC MOTORHOME RENTAL INDUSTRY:
A LONGITUDINAL ANALYSIS OF CUSTOMER TRANSACTION DATA (2017–2026)**

**CUSTOMER SEGMENT EVOLUTION IN THE NORDIC MOTORHOME RENTAL INDUSTRY:
A LONGITUDINAL ANALYSIS OF CUSTOMER TRANSACTION DATA (2017–2026)**

A Doctoral Dissertation

Submitted in Partial Fulfilment of the Requirements for the Award of the Degree of

DOCTOR OF BUSINESS ADMINISTRATION (DBA)

Submitted by

ELLE TICK

Under the Supervision of

PROFESSOR ENRIQUE GUEVARRA



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CERTIFICATE

This is to certify that the doctoral dissertation entitled “**Customer Segment Evolution in the Nordic Motorhome Rental Industry: A Longitudinal Analysis of Customer Transaction Data (2017–2026)**” has been prepared by **Elle Tick** under my supervision and guidance in partial fulfilment of the requirements for the award of the degree of **Doctor of Business Administration (DBA)** at **Kennedy University**.

The dissertation investigates the evolution of customer segments in the Nordic motorhome rental industry through a longitudinal analysis of customer transaction data covering the period from 2017 to 2026. The study examines changes in customer segment characteristics, composition, and relative size over time, with particular consideration of the markets of Finland, Sweden, and Norway.

The work presented in this dissertation has been undertaken by the candidate under my academic supervision and, to the best of my knowledge, is suitable for submission in fulfilment of the requirements of the doctoral programme.

Dr. Enrique Guevarra

Supervisor:
Professor Enrique Guevarra

DECLARATION

I, **Elle Tick**, hereby declare that the doctoral dissertation entitled “**Customer Segment Evolution in the Nordic Motorhome Rental Industry: A Longitudinal Analysis of Customer Transaction Data (2017–2026)**” is my original research work undertaken in partial fulfilment of the requirements for the award of the degree of **Doctor of Business Administration (DBA)** at **Kennedy University**.

I declare that this dissertation has been developed through my own research, analysis, and academic work under the supervision and guidance of **Professor Enrique Guevarra**. All sources of information, ideas, concepts, and previous research used in this dissertation have been appropriately acknowledged and referenced.

The empirical research uses anonymised secondary customer transaction data. Appropriate measures have been taken to protect the confidentiality of the data, and no personally identifiable customer information is included in the research findings or dissertation.

I further declare that this dissertation has not been submitted, either wholly or substantially, to any other institution for the award of another academic qualification.

I accept responsibility for the academic integrity and originality of the work presented in this dissertation.

Name: Elle Tick

ABSTRACT

Customer segmentation is an important approach for understanding differences in customer characteristics and behaviour and for supporting marketing, service development, and strategic decision-making. However, much of the existing customer segmentation literature provides a relatively static representation of customer groups based on data collected at a particular point in time. Such approaches offer limited understanding of how customer segments change as customer behaviour and market conditions evolve. This limitation is particularly relevant within tourism, where customer demand is influenced by changing travel preferences, economic conditions, technological developments, and external disruptions.

This study examines the **evolution of customer segments in the Nordic motorhome rental industry between 2017 and 2026** through a longitudinal analysis of customer transaction data. The research is based on approximately **21,000 completed motorhome rental transactions** from **Finland, Sweden, and Norway**. The study adopts a **quantitative, longitudinal, and observational research design** using secondary commercial customer transaction data. Behavioural and transactional characteristics are analysed to identify customer segments and examine changes in their characteristics, composition, and relative size over time.

The study focuses on customer characteristics and rental behaviour as dimensions associated with customer segment formation. The available transaction data are used to examine customer and rental characteristics relevant to segmentation, including variables relating to customer characteristics, travel party, booking behaviour, rental duration, season, vehicle category, expenditure, and repeat-customer status, subject to the availability and quality of the relevant variables in the dataset. Cluster analysis is proposed as the principal method for identifying customer segments, supported by descriptive and comparative analyses and appropriate inferential statistical procedures. Segment stability and interpretability are also considered in evaluating the resulting segmentation solutions.

The **COVID-19 pandemic is treated as an external disruption within the observation period rather than as the central focus of the study**. The research therefore examines customer segment structures across pre-pandemic, pandemic, and post-pandemic periods to assess whether observed changes were temporary or persisted following the lifting of travel restrictions. The study also examines differences in customer segment evolution across Finland, Sweden, and Norway.

The research addresses an identified gap in tourism and customer segmentation literature concerning the limited use of longitudinal commercial transaction data to examine the evolution of customer segments over an extended period. By analysing actual customer transaction data across nine years, the study is expected to provide empirical evidence concerning the changing structure and characteristics of customer segments within the Nordic motorhome rental industry.

The study is also expected to provide practical implications for tourism businesses. Understanding how customer segments change over time may assist businesses in evaluating existing segmentation approaches, identifying emerging or declining customer groups, and supporting evidence-based decisions relating to marketing, customer targeting, service development, and strategic planning.

Keywords: Customer Segmentation; Customer Segment Evolution; Customer Analytics; Longitudinal Analysis; Transaction Data; Tourism; Motorhome Rental; Nordic Tourism; Customer Behaviour

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Elle Tick

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CHAPTER 1 — INTRODUCTION

1.1 Background of the Study

Tourism is an important component of the global economy and represents a highly dynamic service sector in which businesses must continuously respond to changes in customer preferences, market conditions, technology, and patterns of consumption. Unlike many conventional products, tourism services are closely connected to customers' motivations, expectations, available resources, travel circumstances, and desired experiences. Consequently, understanding who customers are and how they behave is an important consideration for tourism businesses seeking to make informed decisions regarding marketing, service development, resource allocation, and long-term strategic planning.

One of the established approaches for understanding differences among customers is **customer segmentation**. The concept of market segmentation emerged from the recognition that markets are not necessarily homogeneous and that customers may differ in their needs, preferences, and purchasing behaviour. Smith (1956) introduced market segmentation as an alternative to treating an entire market as a single homogeneous group. Subsequently, segmentation became an important marketing approach through which customers could be classified into groups with relatively similar characteristics and behaviours. Such classifications can assist organisations in developing more targeted marketing activities, allocating resources more effectively, and designing products and services that better correspond with the characteristics of different customer groups (Smith, 1956; Wedel and Kamakura, 2000).

Customer segmentation can be undertaken using different types of characteristics, including demographic, geographic, psychographic, and behavioural information. While demographic and geographic characteristics can provide useful information about the composition of a customer population, they do not necessarily explain how customers actually behave in the marketplace. Behavioural segmentation therefore provides an important complementary perspective by focusing on observable activities such as purchasing patterns, frequency of transactions, expenditure, product choices, and usage behaviour (Wedel and Kamakura, 2000). The increasing availability of digital and transactional information has further strengthened the role of behavioural approaches in customer analysis. Recent research indicates that customer segmentation has increasingly moved towards data-driven and algorithmic approaches capable of identifying patterns within larger customer datasets (Alves Gomes and Meisen, 2023; Salminen et al., 2023).

The development of data-driven customer segmentation has also increased interest in analytical techniques capable of identifying customer groups without requiring all groups to be specified in advance. **Cluster analysis** is particularly relevant in this regard because it enables observations with similar characteristics to be grouped according to their observed patterns. It has consequently become a widely applied technique in market segmentation research (Dolnicar, 2003). However, identifying clusters statistically does not automatically mean that the resulting groups represent meaningful customer segments. Segments need to demonstrate sufficient distinction, interpretability, stability, and practical relevance. Research has therefore emphasised the importance of validating segmentation solutions rather than assuming that every statistically generated cluster represents a stable and meaningful market group (Ernst and Dolnicar, 2018).

Although customer segmentation has developed considerably, a significant issue remains concerning the **temporal stability of customer segments**. A segmentation analysis conducted for a particular year provides information about the customer population during that period, but it does not necessarily demonstrate whether the same customer structure existed previously or whether it will continue in the future. Customer behaviour may change in response to economic circumstances, technological development, demographic changes, lifestyle changes, evolving preferences, and external market conditions. As these behavioural patterns change, the characteristics and relative importance of customer segments may also change.

This observation creates a distinction between viewing segmentation as a **static classification exercise** and examining segmentation as an evolving market phenomenon. A static segmentation identifies which customer groups exist at a particular point in time. A longitudinal perspective, in contrast, makes it possible to examine how the characteristics, composition, and relative size of customer groups change over successive periods. Research on dynamic segmentation has highlighted the limitations of assuming that customer groups remain stationary when customer needs and behaviours develop over time (Bassi, 2016, 2017). Kamakura (2013)

similarly argues for a stronger integration of segmentation with longitudinal customer analysis in order to understand how customer behaviour develops.

The issue is particularly relevant to tourism because tourism demand is inherently sensitive to changing circumstances. Travellers differ in their expenditure, travel party, travel preferences, destination choices, duration of travel, and desired experiences. Moreover, tourism markets can be affected by external events that alter mobility, perceptions of safety, purchasing decisions, and preferred forms of travel. Consequently, a customer segmentation that accurately describes a tourism market during one period may not necessarily describe the same market during another period.

The **COVID-19 pandemic** provides an important example of such an external disruption. The pandemic substantially affected tourism through travel restrictions, mobility constraints, health concerns, economic uncertainty, and changes in consumer priorities. Tourism research has documented changes in travel intentions and preferences during this period, including increased attention to safety and hygiene and changes in domestic and international travel behaviour (Sigala, 2020; Pappas, 2023; Aschauer and Egger, 2023). However, changes observed during a disruption do not necessarily indicate permanent changes in customer behaviour. A longitudinal perspective is therefore important for distinguishing between temporary changes associated with exceptional circumstances and changes that remain evident after market conditions begin to stabilise.

The motorhome rental industry provides a particularly relevant setting in which to examine these issues. Motorhome travel combines **mobility, accommodation, and tourism consumption** within a single travel product. Customers make interconnected decisions concerning the type of vehicle selected, travel party, rental duration, season, booking behaviour, and expenditure. The flexibility and independence associated with motorhome travel also distinguish it from more conventional tourism arrangements. These characteristics mean that the customer population may contain groups with substantially different behavioural patterns.

The Nordic region provides an appropriate geographical context for examining customer segment evolution within this industry. The present study focuses specifically on **Finland, Sweden, and Norway** and examines customer transaction data covering the period **2017–2026**. The study is based on approximately **21,000 completed motorhome rental transactions**, providing an opportunity to examine observed customer behaviour across an extended period rather than relying solely on stated preferences obtained through surveys.

The availability of such longitudinal commercial transaction data is particularly valuable because long-term customer datasets are not commonly available for academic research. Transaction data can provide direct evidence of actual purchasing and rental behaviour and therefore offer a different perspective from studies based on customer intentions, perceptions, or one-time surveys. At the same time, the use of commercial transaction data means that the analysis is necessarily dependent on the variables recorded in the underlying reservation system.

The present study consequently approaches customer segmentation from a **longitudinal perspective**. Rather than asking only which customer segments can be identified within the Nordic motorhome rental market, the study examines how the structure and characteristics of those segments develop between 2017 and 2026. The COVID-19 pandemic is incorporated as an external disruption within this broader period of observation rather than being treated as the central subject of the research. This enables the study to examine whether changes observed around the pandemic period were temporary or whether they formed part of longer-term changes in the customer structure.

The central premise of the study is therefore that customer segments should not necessarily be regarded as permanent categories. Instead, customer segment structures may evolve as customer behaviour and market conditions change. By examining customer transaction data longitudinally, the study seeks to provide a more dynamic understanding of customer segmentation within the Nordic motorhome rental industry.

1.2 Research Context

CUSTOMER SEGMENT EVOLUTION IN THE NORDIC MOTORHOME RENTAL INDUSTRY: A LONGITUDINAL ANALYSIS OF CUSTOMER TRANSACTION DATA (2017–2026)

The research is situated at the intersection of **customer segmentation, customer analytics, tourism, and the Nordic motorhome rental industry**. These four areas provide the context within which the evolution of customer segments is examined.

At the broadest level, the study is concerned with the changing nature of tourism customers. Tourism businesses operate in markets in which customer expectations and purchasing behaviours can change over time. Digitalisation, changing lifestyles, evolving travel preferences, economic conditions, and external disruptions can influence how customers select tourism products and services. As a result, tourism businesses require approaches that enable them not only to identify different customer groups but also to understand whether the relevance and characteristics of those groups change over time.

Within this context, customer analytics provides an increasingly important foundation for understanding customer behaviour. The growth of digital records and transactional databases has enabled organisations to analyse observed customer activity using variables derived from actual transactions. This represents a shift from relying primarily on broad customer characteristics towards examining behavioural patterns within customer populations. Reviews of customer segmentation research have demonstrated the growing use of algorithmic and data-driven methods to identify customer groups from complex datasets (Alves Gomes and Meisen, 2023; Salminen et al., 2023).

The present research extends this context by considering the **temporal dimension of customer analytics**. If customer segments are derived from customer behaviour, then changes in behaviour over time may also produce changes in the observed segment structure. A segmentation analysis undertaken in one year may therefore provide only a partial representation of the customer population. Examining several consecutive years makes it possible to investigate whether segments remain relatively stable, whether their characteristics change, whether their relative size increases or decreases, and whether new patterns emerge.

The tourism industry provides a particularly relevant environment for this type of investigation because tourism demand is influenced by a wide range of market and behavioural conditions. Travellers differ in their travel party, expenditure, duration of travel, timing of bookings, preferred tourism products, and other observable characteristics. These differences may contribute to the formation of distinct customer groups. At the same time, changes in the tourism environment can alter the distribution and characteristics of these groups.

Within tourism, **motorhome rental represents a specialised form of travel consumption**. A motorhome provides both transportation and accommodation, allowing travellers to combine mobility with a degree of independence and flexibility. Consequently, rental decisions can involve several interconnected dimensions of customer behaviour, including booking timing, rental duration, vehicle selection, seasonality, travel party, and expenditure. These characteristics make motorhome rental an appropriate setting for behavioural customer segmentation.

The geographical context of the study is the **Nordic region**, with specific focus on **Finland, Sweden, and Norway**. Nordic tourism has been examined extensively in relation to areas such as nature-based tourism, tourism experiences, destination development, sustainability, and domestic tourism. However, the existing research identified in the synopsis has placed comparatively less emphasis on longitudinal analysis of commercial customer behaviour within the motorhome rental sector.

The Nordic tourism environment also provides an important context for examining changes in domestic and international travel behaviour. Research reported by the Nordic Council of Ministers indicates that domestic tourism represented a substantial component of tourism activity in the Nordic countries before the COVID-19 pandemic and became particularly important during the pandemic period. The continued relevance of domestic tourism following the pandemic further demonstrates that tourism demand in the Nordic region has not simply returned to an identical pre-pandemic structure.

The temporal context of the study is equally important. The observation period extends from **2017 to 2026**, thereby covering periods before, during, and after the COVID-19 disruption. This provides a substantially broader perspective than research examining only the pandemic period itself. The purpose is not to attribute every change in customer behaviour to COVID-19. Instead, the pandemic is treated as one major external disruption within a longer period in which customer segment evolution can be observed.

Other contextual factors may also have influenced customer behaviour during the observation period. These may include inflation, exchange-rate movements, fuel prices, changes in international travel connections, and company-level decisions concerning fleet composition, pricing, booking systems, and product offerings. The synopsis recognises that not all of these factors can necessarily be measured directly using the customer transaction database. They therefore need to be treated carefully as contextual influences rather than automatically interpreted as causal explanations for observed segment changes.

The empirical context of the study is provided by a commercial customer transaction database from **Touring Cars**. The database contains approximately 21,000 completed rental transactions covering Finland, Sweden, and Norway over the 2017–2026 period. The use of a common commercial source across the three countries provides an opportunity to examine customer segment evolution within a relatively consistent organisational context while also enabling cross-country comparison.

The research context is therefore defined by three interconnected dimensions: **customer behaviour, time, and market context**. Customer transaction data provide the empirical basis for identifying behavioural segments; the 2017–2026 period provides the longitudinal dimension; and the Nordic motorhome rental industry provides the specific tourism and geographical context. Together, these dimensions establish the basis for investigating how customer segment structures change over time.

1.3 Research Problem

Customer segmentation has been extensively established within marketing and tourism research as a means of identifying groups of customers with similar characteristics and behaviours. However, a substantial proportion of segmentation research remains **cross-sectional**, meaning that customer groups are identified and described using information from a particular period or point in time. Such research is useful for understanding the characteristics of customers at that particular point, but it provides limited evidence regarding how customer segments develop over longer periods.

The fundamental problem addressed by this study is therefore the **limited understanding of customer segment evolution over time**. Identifying customer segments at a single point in time does not establish whether those segments existed previously, whether their characteristics have changed, or whether their relative importance will remain the same. In markets characterised by changing consumer behaviour, treating customer segments as stable and permanent categories may provide an incomplete representation of the customer population.

This problem is particularly important when customer behaviour is affected by changes in the economic, technological, social, and market environment. Customer preferences and purchasing behaviour may change as circumstances change, potentially altering the composition and characteristics of customer groups. A segmentation framework that is appropriate for one period may therefore become less representative as the market develops.

The problem becomes more significant in the tourism industry because tourism demand is particularly sensitive to changes in mobility, consumer preferences, economic conditions, and external disruptions. The COVID-19 pandemic demonstrated the extent to which tourism behaviour can change within a relatively short period. Travel restrictions, health concerns, financial uncertainty, and changing perceptions of travel altered tourism demand and purchasing intentions. However, existing research has often concentrated on measuring the immediate effects of the pandemic rather than examining whether changes in customer behaviour persisted after restrictions were removed.

Consequently, there remains an important distinction between **observing behavioural change** and **understanding customer segment evolution**. A change in an individual behavioural variable does not necessarily mean that the overall structure of customer segments has changed. Longitudinal segmentation is required to examine whether customer groups themselves become larger or smaller, whether their characteristics change, whether new groups emerge, or whether previously important groups decline in relative importance.

A further problem concerns the **availability of suitable longitudinal data**. Examining customer segment evolution requires information that is sufficiently consistent across multiple years to permit meaningful comparison. Commercial organisations may change their products, pricing structures, booking systems, data collection procedures, and information systems over time. Such changes can create difficulties in distinguishing actual changes in customer behaviour from changes resulting from business operations or measurement practices. The availability of a relatively long-term commercial transaction dataset from the same organisational context therefore represents an important empirical opportunity.

The problem is particularly evident in the **motorhome rental industry**. Motorhome rental combines tourism, mobility, and accommodation and involves customer decisions concerning rental duration, vehicle category, season, expenditure, travel party, and booking behaviour. Despite the relevance of these behavioural characteristics to segmentation, relatively limited research has been identified that examines how customer segments in the motorhome rental industry evolve longitudinally using actual commercial transaction data.

There is also a geographical dimension to the problem. Existing Nordic tourism research provides substantial knowledge regarding tourism experiences, nature-based tourism, destinations, sustainability, and domestic tourism. However, comparatively limited evidence has been identified concerning the **longitudinal evolution of customer segments in motorhome rental across Finland, Sweden, and Norway using a common commercial transaction dataset**. This limits understanding of whether customer segment changes occur similarly across the three markets or whether distinct patterns emerge.

Another important issue concerns the interpretation of pandemic-related changes. If customer behaviour changed substantially during COVID-19, it cannot automatically be concluded that these changes represent permanent transformations in the tourism customer base. Some changes may have been temporary responses to exceptional circumstances, while others may have persisted after travel restrictions were lifted. Without a sufficiently long observation period, these two possibilities are difficult to distinguish.

The research problem can therefore be expressed as follows:

There is limited empirical understanding of how customer segments in the Nordic motorhome rental industry evolve over an extended period and how the characteristics, composition, and relative size of these segments change across different market conditions, including before, during, and after the COVID-19 pandemic.

Addressing this problem requires a longitudinal approach based on observed customer transaction data. The present study responds to this need by examining approximately 21,000 completed motorhome rental transactions from Finland, Sweden, and Norway between 2017 and 2026. Rather than focusing on individual customer migration between segments—which cannot be reliably established throughout the entire dataset—the study focuses primarily on changes in the **structure and composition of customer segments across successive customer populations**.

1.4 Rationale of the Study

The rationale for this study arises from the need to develop a stronger understanding of **customer segmentation as an evolving rather than exclusively static phenomenon**. While customer segmentation provides organisations with a means of identifying meaningful customer groups, the usefulness of any segmentation framework depends partly on whether it continues to represent the customer population as market conditions change. A longitudinal analysis therefore provides an opportunity to move beyond identifying customer groups at a single point in time and examine how those groups develop across successive periods.

The study is particularly justified by the gap identified in existing research concerning the use of **longitudinal commercial transaction data** for examining customer segment evolution. Existing customer segmentation research has established a strong methodological foundation for data-driven segmentation, including the use of cluster analysis and the importance of segment validation and stability. However, much of this research remains

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focused on identifying customer groups within particular datasets or periods rather than examining how segment structures evolve across an extended period.

The tourism context provides an additional justification. Tourism customers operate within a changing environment in which preferences, travel behaviour, economic circumstances, and external conditions can influence purchasing decisions. Understanding these changes is particularly important for tourism businesses because customer segmentation is frequently used to support marketing, customer targeting, service development, and strategic planning. If the customer population changes substantially over time, segmentation approaches based on historical or single-period observations may become less relevant.

The **motorhome rental industry** offers a particularly valuable context for addressing this issue. Motorhome rental is characterised by a combination of travel, accommodation, mobility, and relatively high-value rental decisions. Customer behaviour can therefore be observed through several transaction-related characteristics. Analysing these characteristics over time provides an opportunity to identify whether distinct behavioural customer groups exist and whether the structure of these groups changes throughout the observation period.

A further rationale is provided by the availability of the **Touring Cars transaction database**. The dataset contains approximately 21,000 completed rental transactions covering **2017–2026** and includes transactions from **Finland, Sweden, and Norway**. Such a long-term commercial dataset provides an empirical foundation for analysing actual customer behaviour rather than relying exclusively on stated preferences or customer intentions. The common organisational source also creates an opportunity to compare customer segment evolution across three Nordic markets within a consistent commercial setting.

The length of the observation period is particularly important because it incorporates **pre-pandemic, pandemic, and post-pandemic periods**. This enables the study to place COVID-19 within a broader longitudinal context. Rather than examining the pandemic as the principal research topic, the study uses it as a major external disruption against which customer segment evolution can be observed. This approach makes it possible to investigate whether changes occurring during the disruption were subsequently reversed or whether they remained visible after market conditions changed.

The study is also justified by the need to distinguish **population-level segment evolution from individual customer migration**. The available database does not allow every individual customer to be reliably followed across the entire period because repeat rentals may be relatively infrequent and customer records may not always permit transactions to be linked to the same individual. The study therefore does not depend on assuming continuous individual customer histories. Instead, it examines changes in the structure, characteristics, and relative size of customer segments across successive annual customer populations.

From a theoretical perspective, the study is justified because it contributes to the growing discussion concerning dynamic and longitudinal approaches to customer segmentation. It provides an opportunity to examine whether the assumption of relatively stable customer groups is appropriate within a specialised tourism market and whether customer segment structures can be meaningfully examined across a longer period.

From an empirical perspective, the study addresses a relatively under-researched combination of **tourism, motorhome rental, Nordic markets, commercial transaction data, and longitudinal customer segmentation**. The combination of these elements distinguishes the study from research based primarily on cross-sectional surveys, interviews, destination-level analysis, or short-term observations.

From a managerial perspective, understanding customer segment evolution may provide practical value to tourism businesses. Customer groups that are important during one period may increase, decrease, or change their behavioural characteristics over time. Identifying such developments can help businesses evaluate whether existing customer segments continue to reflect their markets and whether adjustments may be required in marketing, customer targeting, service development, and strategic planning.

Finally, the study is justified by its potential to provide evidence concerning the **changing customer structure of the Nordic motorhome rental industry**. By examining the period from 2017 to 2026 and comparing Finland, Sweden, and Norway, the research can provide a longitudinal perspective that is not readily available from conventional single-period segmentation studies. The resulting evidence can contribute to a better

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understanding of how tourism customer segments evolve under changing market conditions while recognising the limitations of analysing data from a single commercial organisation.

Accordingly, the rationale of the study rests on three interconnected needs: **the need for a longitudinal perspective in customer segmentation, the limited empirical evidence concerning motorhome rental customers in the Nordic tourism context, and the availability of a substantial commercial transaction dataset capable of supporting such an investigation.** These considerations provide the foundation for examining customer segment evolution between 2017 and 2026.

1.5 Aim of the Study

The primary aim of this study is to **examine how customer segments in the Nordic motorhome rental industry have evolved between 2017 and 2026 using longitudinal customer transaction data.**

The study is based on approximately **21,000 completed motorhome rental transactions** covering **Finland, Sweden, and Norway**. Rather than relying on stated customer preferences or a single-period survey, the study uses observed transaction data collected through normal commercial operations. The dataset provides information relating to customer characteristics, booking information, and rental behaviour, creating an empirical basis for identifying and comparing customer segments across an extended period.

The study aims first to identify customer segments according to their observable behavioural and transactional characteristics. The segmentation is expected to draw on variables available in the dataset, including **age, gender, country of origin, travel party composition, booking lead time, rental duration, season, vehicle category, expenditure, and repeat-customer status**. These variables allow the customer population to be examined not merely according to who the customers are, but also according to how they behave in relation to motorhome rental transactions.

The second and central purpose of the study is to examine **how the identified customer segment structures change over time**. The research therefore moves beyond identifying customer groups at one point in time and examines changes in their characteristics, composition, and relative size between 2017 and 2026. This longitudinal perspective is central to the study because customer segments may not remain stable as customer behaviour and market conditions change.

The study also aims to examine the period surrounding the **COVID-19 pandemic** as part of the wider longitudinal analysis. COVID-19 is not treated as the principal subject of the research. Instead, it represents an external disruption within the 2017–2026 observation period. The study therefore considers the customer segment structure before, during, and after the pandemic to determine whether changes observed during the disruption were temporary or persisted after travel restrictions were lifted.

A further aim is to examine whether customer segment evolution differs across **Finland, Sweden, and Norway**. By using transaction data from the three countries within the same broader commercial context, the research can compare similarities and differences in the development of customer segments across the Nordic markets.

The final aim is to interpret the observed segment evolution from a managerial perspective. The study seeks to establish how knowledge of changing customer segments may assist tourism businesses in evaluating their existing segmentation approaches and making informed decisions concerning **marketing, customer targeting, service development, and strategic planning**.

Thus, the overall aim can be expressed as:

To identify and examine the evolution of customer segments in the Nordic motorhome rental industry between 2017 and 2026 using observed customer transaction data, with particular attention to changes in segment characteristics, composition and relative size, differences across Finland, Sweden and Norway, and the persistence of behavioural changes surrounding the COVID-19 disruption.

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1.6 Research Objectives

The research objectives translate the overall aim into specific analytical tasks. They are structured around the actual purpose of the transaction dataset and the longitudinal nature of the study.

RO1: To analyse the characteristics of customer segments in the Nordic motorhome rental industry.

This objective focuses on identifying and describing distinct customer groups using observable customer and rental transaction characteristics. The analysis will consider the characteristics available in the dataset, including customer characteristics and rental-related variables such as age, gender, country of origin, travel party, booking lead time, rental duration, season, vehicle category, expenditure, and repeat-customer status.

RO2: To examine changes in customer segment structure between 2017 and 2026.

This objective addresses the longitudinal dimension of the study. It examines whether customer segments change in their **characteristics, composition, and relative size** across the nine-year observation period.

RO3: To examine changes in customer segment structure before, during, and after the COVID-19 pandemic.

This objective treats COVID-19 as an external disruption within the longitudinal period. It examines whether the customer segment structure changed during the pandemic and whether those changes remained observable following the lifting of travel restrictions.

RO4: To compare customer segment evolution across Finland, Sweden, and Norway.

This objective examines whether the characteristics, composition, relative size, and development of customer segments differ across the three countries represented in the dataset.

RO5: To evaluate the managerial implications of customer segment evolution for tourism businesses.

This objective interprets the observed changes in customer segments in terms of their potential relevance to marketing, customer targeting, service development, and strategic planning.

Objective Structure

Objective	What is being examined	Data/Analytical focus
RO1	Who the customer segments are	Customer and rental characteristics
RO2	How segments changed from 2017–2026	Segment characteristics, composition and relative size
RO3	What happened around COVID-19	Pre-pandemic, pandemic and post-pandemic segment structures
RO4	Whether evolution differs by country	Finland, Sweden and Norway
RO5	Why the findings matter for business	Marketing, targeting, service development and strategy

The objectives therefore progress from **identification**, to **longitudinal examination**, to **disruption-period comparison**, to **cross-country comparison**, and finally to **managerial interpretation**.

1.7 Research Questions

The research questions are directly aligned with the objectives and the longitudinal structure of the study.

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Main Research Question

RQ1

How have customer segments evolved in the Nordic motorhome rental industry between 2017 and 2026?

This is the central research question because the principal purpose of the study is not simply to identify customer segments, but to examine their development over time.

The main question is addressed through the following sub-questions:

RQ1a

How did the COVID-19 pandemic influence customer segment evolution?

This question examines changes in the customer segment structure during the pandemic period within the broader 2017–2026 longitudinal analysis.

RQ1b

To what extent did customer segment changes observed during the COVID-19 pandemic persist after travel restrictions were lifted?

This question distinguishes short-term disruption-related changes from changes that continued into the post-pandemic period.

RQ1c

How does customer segment evolution differ between Finland, Sweden, and Norway?

This question addresses the cross-country dimension of the research and examines whether the three markets demonstrate similar or different patterns of segment evolution.

RQ1d

What managerial implications arise from the observed changes in customer segments?

This question connects the empirical findings to the practical use of customer segmentation in tourism businesses.

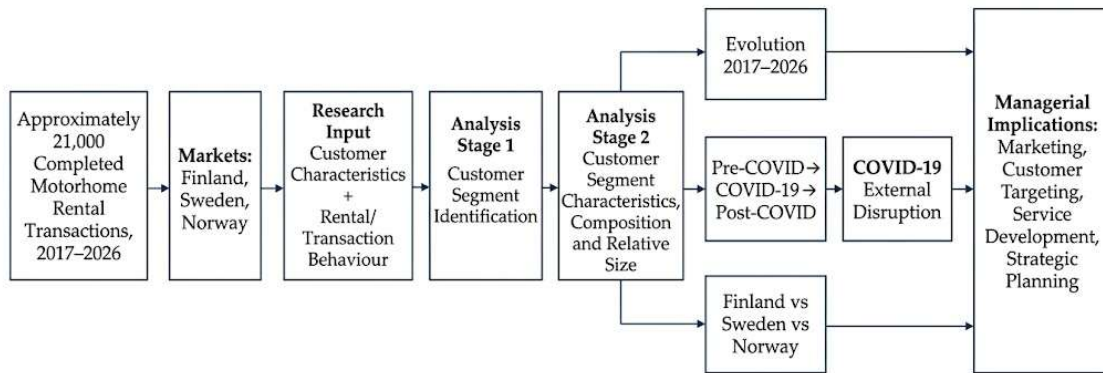
Alignment of Research Objectives and Questions

Research Objective	Research Question	Primary focus
RO1	RQ1	Identification and characteristics of customer segments
RO2	RQ1	Evolution between 2017 and 2026
RO3	RQ1a, RQ1b	COVID-19 influence and post-pandemic persistence
RO4	RQ1c	Finland–Sweden–Norway comparison
RO5	RQ1d	Managerial implications

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Figure 1.1. Research Aim, Objectives and Research Questions Alignment

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1.8 Significance of the Study

The significance of this study derives from the opportunity to examine **customer segment evolution using actual commercial transaction data over a nine-year period**. The study is significant because it brings together a longitudinal perspective, behavioural customer segmentation, tourism research, and a specialised motorhome rental context across three Nordic countries.

1.8.1 Theoretical Significance

The study contributes to customer segmentation research by examining customer segments as **evolving structures rather than exclusively static categories**.

Traditional segmentation analysis can establish that particular customer groups exist within a given population. However, a single-period analysis cannot adequately demonstrate whether those groups remain stable over time. By examining customer transaction data across 2017–2026, the present study investigates changes in segment characteristics, composition, and relative size.

This contributes to the broader development of research on dynamic customer segmentation and longitudinal customer analysis. The study therefore shifts the analytical emphasis from:

“What customer segments exist?”

towards:

“How does the customer segment structure change over time?”

This distinction represents an important conceptual contribution of the research.

1.8.2 Empirical Significance

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The study has particular empirical significance because it uses approximately **21,000 completed motorhome rental transactions** covering **2017–2026**.

The data are based on actual completed rental transactions rather than stated intentions. This enables the study to examine observable customer and rental behaviour within a real commercial setting.

The dataset covers:

- **Finland**
- **Sweden**
- **Norway**
- **2017–2026**
- Approximately **21,000 completed rental transactions**

The study consequently provides a relatively extensive longitudinal empirical basis for investigating customer segment evolution in the Nordic motorhome rental context.

1.8.3 Significance of the Customer and Rental Variables

Another important contribution comes from examining customer segments through **multiple dimensions of actual rental behaviour**.

The synopsis identifies customer characteristics such as:

- Age
- Gender
- Country of origin
- Travel party composition

and rental behaviour such as:

- Booking lead time
- Rental duration
- Season
- Vehicle category
- Expenditure
- Repeat-customer status

These variables allow the study to move beyond a purely demographic description of customers and examine how different types of customers actually engage with the motorhome rental service.

This is important because two customers may have similar demographic characteristics while displaying very different rental behaviours. A behavioural and transactional approach can therefore provide a more differentiated understanding of customer segments.

1.8.4 Longitudinal Significance

The strongest significance of the study lies in its **2017–2026 longitudinal perspective**.

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The nine-year observation period allows the research to examine customer segments across multiple market conditions rather than relying on a single-year snapshot.

This provides an opportunity to identify:

- Stable customer segments
- Growing customer segments
- Declining customer segments
- Changes in segment composition
- Changes in segment characteristics
- Changes in the relative size of segments
- Patterns associated with different periods

The study therefore provides evidence about **customer segment evolution**, which is the central concept expressed in the thesis title.

1.8.5 Significance of the COVID-19 Dimension

The COVID-19 pandemic provides an important analytical context because it represents a major disruption occurring within the study period.

However, its significance needs to be framed carefully.

The study does **not** ask simply:

“What was the impact of COVID-19 on tourism?”

Instead, COVID-19 is used within the longer 2017–2026 observation period to examine:

What happened to customer segments during the disruption, and did those changes persist afterwards?

This distinction allows the study to investigate whether changes observed during the pandemic were temporary or represented longer-lasting changes in customer segment structure. The synopsis explicitly identifies COVID-19 as an external disruption rather than the primary topic of the research.

1.8.6 Cross-Country Significance

The study is also significant because it does not examine a single Nordic market.

The transaction data cover:

Finland + Sweden + Norway

This allows the research to examine whether customer segment evolution follows similar patterns across the three markets or whether country-specific differences are evident.

The cross-country dimension strengthens the study because it allows longitudinal development to be considered alongside geographical variation.

The resulting analytical structure is therefore:

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Time: 2017–2026

Geography: Finland, Sweden, Norway

Behaviour: Customer and rental transaction characteristics

Segments: Characteristics, composition and relative size

1.8.7 Methodological Significance

Methodologically, the study combines **customer segmentation and longitudinal comparison**.

Cluster analysis is proposed for identifying customer groups from behavioural and transactional variables. Importantly, the synopsis also recognises that a technically valid cluster solution does not automatically constitute a meaningful customer segmentation. Segment stability, distinction, interpretability, and usefulness therefore need to be considered.

The study consequently provides an opportunity to demonstrate how customer segmentation can be incorporated into a longitudinal research design rather than being treated solely as a one-time classification exercise.

1.8.8 Managerial Significance

The findings may provide practical value to motorhome rental and other tourism businesses.

If customer segments change over time, businesses need to understand whether their existing customer categories continue to represent the market adequately.

The findings may therefore support decisions concerning:

Marketing

Identifying which customer groups are becoming more or less prominent can help businesses evaluate their marketing priorities.

Customer Targeting

Understanding segment characteristics can assist businesses in developing more appropriate targeting strategies.

Service Development

Changes in customer behaviour may indicate changing requirements for tourism services and rental offerings.

Strategic Planning

Longitudinal evidence can provide businesses with a stronger basis for considering how their customer population may develop in the future.

The purpose is not to assume that the study will prescribe a particular business strategy. Rather, the research provides **evidence about customer segment development** that can inform managerial decision-making.

1.8.9 Significance for Nordic Tourism Research

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The study also contributes to Nordic tourism research by focusing specifically on **customer segment evolution within motorhome rental across Finland, Sweden, and Norway**.

Existing Nordic tourism research has addressed areas including nature-based tourism, tourism experiences, destinations, sustainability, and domestic tourism. The synopsis identifies comparatively limited research examining the longitudinal development of customer behaviour using commercial transaction data within the motorhome rental sector.

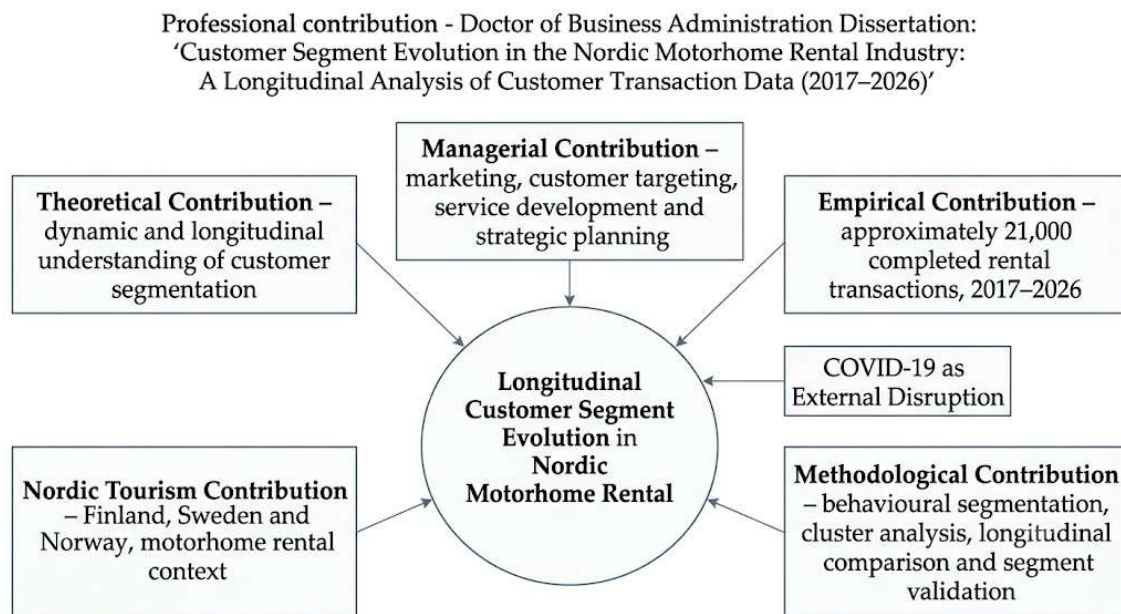
The study therefore adds a **transaction-level customer perspective** to the broader Nordic tourism literature.

1.8.10 Overall Significance

The significance of the study can be summarised as follows:

Area of Significance	Contribution
Customer segmentation	Examines customer groups using observable behavioural and transactional characteristics
Longitudinal research	Examines segment evolution across 2017–2026 rather than a single period
Empirical evidence	Uses approximately 21,000 completed rental transactions
Tourism research	Extends customer segmentation research within a specialised tourism sector
Motorhome rental	Provides evidence concerning customer segment structures within motorhome rental
Nordic context	Compares Finland, Sweden and Norway
COVID-19 context	Examines pandemic-period disruption within a longer longitudinal period
Methodology	Combines segmentation with longitudinal and comparative analysis
Management	Provides evidence relevant to marketing, targeting, service development and strategic planning

Figure 1.2. Significance and Contribution of the Study



1.9 Scope and Delimitations of the Study

The scope of a study defines the boundaries within which the research is conducted, while delimitations specify the deliberate choices made by the researcher concerning what is included and excluded from the investigation. For the present study, the scope is defined by the research topic, geographical coverage, observation period, industry context, data source, unit of analysis, and analytical approach.

1.9.1 Geographical Scope

The study focuses on the **Nordic motorhome rental market**, specifically **Finland, Sweden, and Norway**. These three countries constitute the geographical coverage of the empirical dataset. The cross-country dimension allows the study to examine similarities and differences in customer segment evolution across the three markets.

The study does not seek to represent all Nordic countries or the European motorhome rental market. Its geographical focus is deliberately restricted to the three countries represented in the available transaction data.

1.9.2 Temporal Scope

The study covers the period from **2017 to 2026**. This nine-year observation period provides the longitudinal basis for examining changes in customer segment characteristics, composition, and relative size.

The period also incorporates three analytically relevant phases:

- **Pre-pandemic period**
- **COVID-19 disruption period**
- **Post-pandemic period**

The inclusion of these periods allows the study to examine customer segment evolution across changing market conditions. COVID-19 is treated as an external disruption within the observation period rather than as the primary focus of the research.

1.9.3 Industry Scope

The research is limited to the **motorhome rental industry**. It does not examine tourism consumption generally or attempt to compare motorhome rental with other forms of tourism accommodation or transportation.

The focus on motorhome rental is appropriate because the service combines mobility and accommodation and involves a range of observable rental and transaction behaviours.

1.9.4 Empirical Scope

The empirical analysis is based on approximately **21,000 completed motorhome rental transactions**. The data originate from the commercial reservation database of Touring Cars and cover transactions from Finland, Sweden, and Norway between 2017 and 2026.

The study therefore examines **observed transaction behaviour** rather than relying primarily on stated customer intentions.

1.9.5 Variable Scope

The study focuses on customer and rental characteristics available within the transaction database. The synopsis identifies customer characteristics including **age, gender, country of origin, and travel party composition**, together with rental-related variables including **booking lead time, rental duration, season, vehicle category, expenditure, and repeat-customer status**.

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The final analytical use of individual variables will depend on their availability, completeness, consistency, and suitability within the prepared dataset.

1.9.6 Analytical Scope

The research adopts a **quantitative, longitudinal, and observational design**. The analysis is primarily descriptive and comparative, while customer segmentation introduces an exploratory component. Cluster analysis is proposed for identifying groups of customers with similar behavioural and transactional characteristics.

The study subsequently examines changes in:

- Customer segment characteristics
- Segment composition
- Relative segment size
- Segment development across years
- Segment differences across Finland, Sweden, and Norway
- Segment structures before, during, and after the COVID-19 disruption

1.9.7 Delimitations of the Study

The study has several deliberate delimitations.

First, it focuses on **behavioural and transactional customer segmentation** rather than attempting to incorporate all possible forms of segmentation. Psychographic, motivational, attitudinal, and qualitative dimensions are outside the principal analytical scope because these characteristics are not directly available in the commercial transaction data.

Second, the study focuses primarily on **population-level segment evolution** rather than individual customer migration between segments. The dataset does not allow every individual customer to be reliably followed throughout the entire observation period because repeat rentals are relatively infrequent and customer records may not always permit transactions to be reliably linked to the same individual.

Third, the research is limited to transactions from **one commercial organisation**. Although the dataset covers three countries and nine years, the findings therefore primarily describe the customer population represented by the organisation and should not automatically be generalised to every motorhome rental company.

Fourth, the study does not attempt to establish direct causal relationships between external events and changes in customer segments. Factors such as pricing, fleet composition, fuel prices, exchange rates, booking systems, and other market conditions may influence customer behaviour, but these factors may not all be directly measurable within the transaction database.

Finally, the study is delimited to the period **2017–2026**. Customer segment developments outside this period are not empirically examined.

Scope at a Glance

Dimension	Scope of the Study
Industry	Nordic motorhome rental
Countries	Finland, Sweden, Norway
Period	2017–2026
Data	Approximately 21,000 completed rental transactions
Data type	Secondary commercial transaction data
Research approach	Quantitative
Research design	Longitudinal and observational
Segmentation focus	Behavioural and transactional

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Primary segmentation method	Cluster analysis
Longitudinal focus	Segment characteristics, composition and relative size
COVID-19 role	External disruption within the observation period
Individual customer tracking	Not the principal focus
Psychographic/qualitative segmentation	Outside the study scope

1.10 Definition of Key Terms

The following terms are central to the conceptual and empirical structure of the study. Their definitions are based primarily on how they are used and operationalised within the research proposal.

1.10.1 Customer Segmentation

Customer segmentation refers to the process of dividing a customer population into groups whose members share sufficiently similar characteristics or behaviours to permit meaningful analysis and differentiation.

In this study, segmentation is primarily behavioural and transactional rather than solely demographic.

1.10.2 Customer Segment

A **customer segment** refers to a group of customers displaying similar behavioural and transactional characteristics and identified through the segmentation analysis.

For this study, customer segments are identified using cluster analysis rather than being completely predefined before the analysis.

1.10.3 Customer Characteristics

Customer characteristics refer to observable characteristics of customers recorded in the research dataset.

For the purposes of this study, these include **age, gender, country of origin, and travel party composition**, subject to the availability and quality of the relevant data.

1.10.4 Rental Behaviour

Rental behaviour refers to observable patterns associated with customers' motorhome rental transactions.

In this study, rental behaviour includes **booking lead time, rental duration, season, vehicle category, expenditure, and repeat-customer status**, as specified in the research proposal.

1.10.5 Customer Transaction Data

Customer transaction data refers to recorded information generated through completed commercial rental transactions.

In this research, the term refers specifically to the secondary data extracted from the Touring Cars reservation handling database and used to examine observed motorhome rental behaviour.

1.10.6 Customer Segment Evolution

Customer segment evolution refers to changes in the **structure, characteristics, composition, and relative size of customer segments over time**.

This is the central concept of the dissertation. It allows the study to move beyond identifying customer groups at one point in time and examine how those groups develop across the 2017–2026 observation period.

1.10.7 Longitudinal Analysis

Longitudinal analysis refers to the examination of phenomena across multiple periods in order to identify changes and developments over time.

In this study, longitudinal analysis is applied to customer transaction data covering the period **2017–2026**.

1.10.8 Behavioural Segmentation

Behavioural segmentation refers to the classification of customers according to observable patterns of behaviour rather than relying exclusively on demographic or geographic characteristics.

In this study, behavioural segmentation is based on observable customer and rental transaction characteristics.

1.10.9 Cluster Analysis

Cluster analysis refers to a group of statistical techniques used to identify observations that display similarities across selected variables and to organise them into groups.

In the present study, cluster analysis is proposed as the principal method for identifying customer segments from behavioural and transactional characteristics.

1.10.10 External Disruption

An **external disruption** refers to a major external condition or event that can influence customer behaviour and tourism demand during the observation period.

In this study, the **COVID-19 pandemic** represents the principal external disruption considered. Other market conditions may also be recognised contextually where relevant.

1.10.11 Pre-Pandemic Period

The **pre-pandemic period** refers to the portion of the 2017–2026 observation period preceding the COVID-19 disruption and provides a basis for understanding the customer segment structure before the disruption.

1.10.12 Pandemic Period

The **pandemic period** refers to the portion of the study period during which COVID-19 substantially affected tourism activity and travel conditions.

1.10.13 Post-Pandemic Period

The **post-pandemic period** refers to the period following the major COVID-19 travel restrictions, allowing the study to examine whether behavioural and segment changes observed during the disruption persisted.

1.10.14 Relative Segment Size

Relative segment size refers to the proportion or share of the customer population represented by a particular customer segment within a specified period or market.

1.10.15 Nordic Motorhome Rental Industry

For this study, the **Nordic motorhome rental industry** refers specifically to the motorhome rental markets represented by the research dataset in **Finland, Sweden, and Norway**.

1.11 Organisation of the Thesis

The dissertation is organised into six principal chapters. The structure follows the logical progression from establishing the research context and problem to reviewing existing knowledge, explaining the methodology, presenting the empirical findings, discussing their implications, and drawing the final conclusions.

Chapter 1 — Introduction

The first chapter establishes the foundation of the study. It introduces the background and research context, explains the research problem and rationale, presents the aim, objectives, and research questions, and explains the significance of the research. The chapter also establishes the scope and delimitations, defines the key terms used throughout the dissertation, and provides an overview of the organisation of the thesis.

Chapter 2 — Literature Review

The second chapter critically reviews the literature relevant to customer segmentation, data-driven customer analytics, customer segment evolution, tourism customer behaviour, motorhome tourism, Nordic tourism, and external disruptions. Particular attention is given to behavioural segmentation, cluster analysis, dynamic and longitudinal segmentation, and the stability and interpretation of customer segments.

The chapter subsequently develops the conceptual foundation of the study, critically evaluates existing empirical research, identifies the research gap, and positions the present research within the existing body of knowledge.

Chapter 3 — Research Methodology

The third chapter explains how the research is conducted. It presents the research philosophy and approach, research design, study setting, data source, population and sample, variables and operational definitions, and procedures for data preparation.

The chapter also explains the proposed analytical procedures, including descriptive analysis, customer segmentation, cluster analysis, segment validation and stability assessment, longitudinal comparison, cross-country comparison, and appropriate statistical testing. Ethical considerations and methodological limitations are also addressed.

Chapter 4 — Data Analysis and Results

The fourth chapter presents the empirical findings obtained from the customer transaction dataset.

It begins by describing the dataset and data preparation before presenting the characteristics of the customer population and rental behaviour. The chapter then presents the identified customer segments and their characteristics before examining how segment characteristics, composition, and relative size change between 2017 and 2026.

The chapter also examines customer segment structures across the pre-pandemic, pandemic, and post-pandemic periods and compares segment evolution across Finland, Sweden, and Norway.

Chapter 5 — Discussion

The fifth chapter interprets the empirical findings in relation to the research questions and existing literature.

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The discussion focuses on the meaning of the observed customer segment structures and their evolution over time. It considers changes in segment characteristics, composition, and relative size, the role of COVID-19 as an external disruption, the persistence of observed changes, and differences across Finland, Sweden, and Norway.

The chapter also considers the theoretical, empirical, methodological, and managerial implications of the findings.

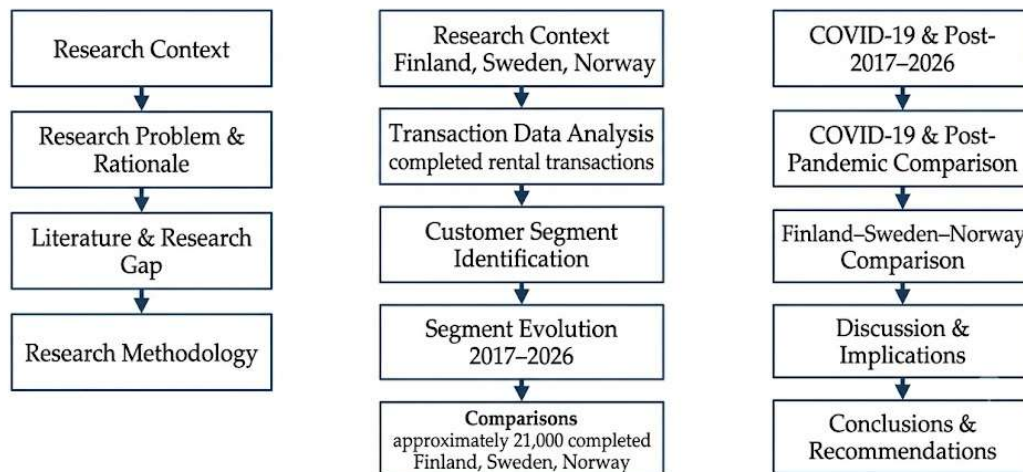
Chapter 6 — Conclusion and Recommendations

The final chapter synthesises the research and presents the overall conclusions. It summarises the major findings and relates them to the research questions and objectives.

The chapter subsequently discusses the study's contributions, managerial implications, recommendations, limitations, and directions for future research before presenting the final conclusion.

Overall Structure of the Dissertation

The organisation of the dissertation follows the following progression:



This structure ensures that the empirical analysis remains directly connected to the central research problem concerning **how customer segments evolve over time**.

1.12 Chapter Summary

This chapter established the foundation for the study “**Customer Segment Evolution in the Nordic Motorhome Rental Industry: A Longitudinal Analysis of Customer Transaction Data (2017–2026)**”.

The chapter began by establishing the background to customer segmentation and explaining the growing importance of behavioural and data-driven approaches to understanding customer populations. It then identified the importance of moving beyond static segmentation towards an understanding of how customer segments can change as customer behaviour and market conditions evolve.

The research context was subsequently defined around the Nordic motorhome rental industry, with specific focus on **Finland, Sweden, and Norway** and an observation period extending from **2017 to 2026**. The empirical foundation of the research consists of approximately **21,000 completed rental transactions**, providing a longitudinal basis for examining observed customer and rental behaviour.

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The research problem was established as the limited understanding of how customer segments evolve over extended periods, particularly within specialised tourism sectors and through the use of commercial transaction data. The rationale for the study was then presented in terms of the opportunity to address this gap using longitudinal transaction data from the motorhome rental industry.

The chapter defined the overall aim of the research and established five research objectives concerned with **customer segment characteristics, segment changes between 2017 and 2026, COVID-19-related changes and their persistence, cross-country differences, and managerial implications**. The main research question asks how customer segments evolved in the Nordic motorhome rental industry between 2017 and 2026, supported by sub-questions concerning COVID-19, post-pandemic persistence, country differences, and managerial implications.

The significance of the research was considered from theoretical, empirical, methodological, tourism, Nordic, and managerial perspectives. Particular significance arises from the combination of **longitudinal analysis, behavioural customer segmentation, commercial transaction data, and cross-country comparison**.

Finally, the scope and delimitations of the study were established, the principal concepts were defined, and the organisation of the dissertation was presented. The chapter therefore provides the foundation for the subsequent literature review, which will critically examine the theoretical and empirical knowledge underlying customer segmentation and customer segment evolution.

CHAPTER 2 — LITERATURE REVIEW

2.1 Introduction

Customer segmentation represents an established area of research within marketing and customer analytics and has become increasingly relevant to tourism businesses seeking to understand differences in customer characteristics and behaviour. The underlying premise of segmentation is that customers within a market are not necessarily homogeneous. Differences in customer needs, preferences, purchasing behaviour, and consumption patterns can create meaningful groups that require different forms of marketing and service approaches.

For the present study, the literature review is particularly concerned with the transition from **traditional customer segmentation towards behavioural, data-driven, and longitudinal approaches**. This progression is important because the central concern of the dissertation is not merely to identify customer groups within the Nordic motorhome rental industry, but to examine how those groups **evolve between 2017 and 2026**.

The literature review therefore establishes the conceptual and methodological foundation for understanding customer segment evolution. It begins with the concept of customer segmentation and its historical development before considering the limitations of traditional approaches. Subsequent sections will examine behavioural segmentation, data-driven customer analytics, segmentation methods, customer segment evolution, tourism customer behaviour, motorhome tourism, the Nordic tourism context, and external disruptions affecting tourism behaviour. The review will ultimately establish the research gap that provides the basis for the empirical investigation.

Customer segmentation has traditionally been associated with the identification of relatively homogeneous groups within a broader heterogeneous market. Smith (1956) provided an early and influential foundation for the concept by presenting market segmentation as an alternative to treating a market as a single homogeneous population. Wedel and Kamakura (2000) subsequently established segmentation as a structured approach involving the identification and description of groups according to relevant customer characteristics.

The development of customer segmentation has subsequently been influenced by improvements in data availability and analytical techniques. The increasing availability of digital and transactional data has enabled researchers and organisations to move beyond relatively simple customer classifications and examine behavioural patterns using increasingly sophisticated analytical methods. Recent reviews indicate a growing role for algorithmic and data-driven approaches in customer segmentation, although important methodological questions remain concerning variable selection, the appropriate number of segments, validation, and the stability and interpretability of resulting groups (Alves Gomes and Meisen, 2023; Salminen et al., 2023).

This development is particularly relevant to the present research because the empirical study is based on approximately **21,000 completed motorhome rental transactions covering Finland, Sweden, and Norway from 2017 to 2026**. The dataset contains customer characteristics, booking information, and rental-related information, allowing the research to examine customer groups through observable transaction behaviour rather than relying solely on stated preferences.

The literature review also addresses an important limitation of conventional segmentation: **the tendency to provide a static representation of customers**. A segmentation produced from one period can describe the customer structure at that particular point in time, but it cannot by itself demonstrate whether the same structure existed previously or whether it will persist in the future. This limitation becomes particularly important in tourism, where customer behaviour can change in response to economic conditions, technology, changing travel preferences, and external disruptions.

Accordingly, the review moves towards the concept of **customer segment evolution**, which provides the theoretical link between segmentation and the longitudinal research design adopted in this dissertation. Research on dynamic segmentation suggests that customer groups should not necessarily be considered permanently fixed, as customer behaviour and needs may develop over time (Bassi, 2016, 2017; Kamakura, 2013).

The chapter therefore progresses from the fundamental concept of customer segmentation towards increasingly dynamic and data-driven perspectives. This progression is necessary for positioning the present study, which

examines not only **who the customer segments are**, but also **how their characteristics, composition, and relative size change over time**.

2.2 Customer Segmentation

Customer segmentation is a fundamental concept within marketing and customer analytics and refers broadly to the process of identifying groups of customers that share sufficiently similar characteristics or behaviours. The concept is based on the recognition that customers within a market may differ substantially in their needs, preferences, purchasing patterns, and responses to products or services. Rather than treating the entire market as a single homogeneous population, segmentation enables organisations to recognise and analyse such differences.

The intellectual foundation of market segmentation can be traced to Smith (1956), who proposed segmentation as an alternative marketing strategy to undifferentiated treatment of the market. The underlying logic is that heterogeneous demand can be addressed more effectively when customers are divided into groups according to characteristics that are relevant to their behaviour or needs. This foundational idea has remained central to segmentation research while the characteristics used to define customer groups and the methods employed to identify them have developed considerably.

Wedel and Kamakura (2000) conceptualise market segmentation as a process involving the identification of groups of consumers who share relevant characteristics and differ from other groups. Segmentation can therefore serve both an analytical and managerial function. Analytically, it helps researchers understand heterogeneity within a customer population. Managerially, it can support decisions concerning targeting, product development, communication, resource allocation, and customer relationship strategies.

Customer segmentation can be based on several broad categories of information. Traditional segmentation approaches commonly distinguish among **demographic, geographic, psychographic, and behavioural** bases of segmentation. Demographic approaches classify customers according to characteristics such as age or gender, while geographic approaches focus on location or market area. Psychographic approaches consider characteristics related to lifestyles, attitudes, values, or motivations, whereas behavioural approaches focus on observable customer actions and transaction patterns.

The distinction between these approaches is important for the present study because the research focuses primarily on **observable customer and rental behaviour**. The research proposal identifies customer characteristics including age, gender, country of origin, and travel party composition, together with rental-related characteristics including booking lead time, rental duration, season, vehicle category, expenditure, and repeat-customer status.

The increasing availability of customer transaction data has strengthened the role of behavioural segmentation. Whereas traditional segmentation may rely on relatively broad descriptive characteristics, transactional data provide an opportunity to examine what customers actually do. In a motorhome rental context, for example, information concerning booking timing, rental duration, selected vehicle category, expenditure, and season can provide behavioural distinctions that may not be visible through demographic characteristics alone.

Recent research indicates that segmentation has increasingly moved towards **data-driven analytical approaches**. Alves Gomes and Meisen (2023), in their review of 105 studies published between 2000 and 2022, identify substantial variation in segmentation methods, data sources, and customer variables and demonstrate the development of segmentation from relatively simple classifications towards analytical approaches using larger customer datasets. Similarly, Salminen et al. (2023), through a systematic review of 172 studies, highlight the increasing importance of algorithmic methods while identifying continuing methodological questions concerning variables, algorithms, the number of segments, and validation procedures.

The increasing sophistication of segmentation methods does not, however, eliminate the need for conceptual and methodological judgement. A segmentation solution can be statistically identifiable without necessarily being meaningful from a customer or managerial perspective. Dolnicar (2003) emphasises that cluster analysis, for

example, should not be interpreted mechanically, because the identification of statistical groupings does not automatically demonstrate that meaningful market segments exist. Similarly, Ernst and Dolnicar (2018) emphasise the importance of assessing segmentation stability rather than assuming that a particular clustering solution necessarily represents a reliable customer structure.

This issue is particularly important for the present study because customer segments are not being examined solely as statistical groupings. The objective is to understand how meaningful customer groups develop across time. Consequently, the study must consider not only the characteristics of identified segments but also their **composition, relative size, and development across successive years**.

This introduces a temporal dimension into customer segmentation. If customer characteristics and behaviours change over time, the segments identified from those behaviours may also change. Therefore, a segmentation conducted for a single year may provide an incomplete representation of a market whose customer structure is developing. The present study addresses this issue by applying segmentation within a longitudinal framework covering 2017–2026.

The importance of this distinction becomes particularly apparent in tourism. Tourism markets are characterised by heterogeneous customer populations and are exposed to changes in travel preferences, economic conditions, technology, and external events. Consequently, customer segmentation in tourism needs to account not only for differences between customer groups but also for the possibility that the importance and characteristics of those groups may change over time.

For the present dissertation, customer segmentation therefore serves as the **analytical starting point** rather than the final research objective. The study first seeks to identify meaningful customer groups from transaction behaviour and then uses the resulting segment structures to investigate their development over the 2017–2026 period. This distinction provides the foundation for the subsequent discussion of customer segment evolution.

2.2.1 Concept of Customer Segmentation

The concept of customer segmentation is founded on the proposition that a market consists of customers who are heterogeneous rather than identical. Customers may differ in their needs, preferences, purchasing behaviour, financial value, consumption patterns, and responses to marketing activities. Segmentation provides a systematic means of recognising such heterogeneity by organising customers into groups with comparatively similar characteristics.

Smith's (1956) contribution is particularly important to the development of the segmentation concept. Market segmentation was presented as an alternative to treating the market as a homogeneous whole. The central logic was that organisations could obtain greater relevance from their marketing strategies by recognising differences in demand and adapting their approach to identifiable market groups. This principle subsequently became an important foundation of modern marketing thought.

The concept developed further as researchers sought to establish more systematic bases for defining segments. Wedel and Kamakura (2000) distinguish between different segmentation bases and approaches, recognising that customers can be classified using observable characteristics as well as less directly observable preferences and behavioural dimensions. This provides a broad conceptual foundation within which demographic, geographic, psychographic, and behavioural segmentation can be understood.

Demographic segmentation uses characteristics such as age and gender to differentiate customers. These variables are relatively straightforward to collect and interpret and can provide useful information about the composition of a customer population. However, demographic similarity does not necessarily imply behavioural similarity. Two customers of similar age or gender may demonstrate very different purchasing behaviours.

Geographic segmentation differentiates customers according to geographical characteristics such as country or market location. In the context of the present research, country of origin and the three markets of Finland,

Sweden, and Norway provide relevant geographical dimensions. Geographic information can help identify market differences, but it may not by itself explain the behavioural mechanisms underlying those differences.

Psychographic segmentation focuses on characteristics such as attitudes, values, lifestyles, interests, and motivations. Such information can provide a richer understanding of why customers behave in particular ways. However, these characteristics are not directly represented in the commercial transaction data forming the basis of the present research and are therefore outside its principal empirical scope.

Behavioural segmentation, by contrast, focuses on what customers actually do. It may consider variables relating to purchase frequency, expenditure, product selection, usage patterns, booking behaviour, and other observable activities. This approach is particularly relevant to the present research because the available transaction data provide direct evidence of motorhome rental behaviour.

The distinction between customer characteristics and customer behaviour is therefore central to the conceptualisation of segmentation in this dissertation. Customer characteristics can provide descriptive information about the individuals represented in the dataset, whereas rental behaviour provides information about how those customers engage with the motorhome rental service.

In the present study, customer segmentation is operationally understood as the identification of **groups of customers with similar behavioural and transactional characteristics through cluster analysis**. This operational definition is consistent with the research proposal, which defines a customer segment as a group of customers with similar behavioural and transactional characteristics identified using cluster analysis.

This definition also establishes an important distinction between **predefined customer categories** and **data-derived segments**. Under a predefined approach, the researcher determines categories before examining the data. A data-driven approach instead allows patterns within the observations to contribute to the identification of customer groups. Cluster analysis is particularly relevant where the underlying customer structure is not fully known in advance because it can identify groups according to similarities across selected variables (Dolnicar, 2003).

Nevertheless, data-driven segmentation should not be understood as entirely objective or automatic. The selection of variables, data preparation, treatment of unusual observations, choice of clustering method, determination of the number of clusters, and interpretation of the resulting groups all influence the final segmentation. Consequently, meaningful segmentation requires both statistical assessment and substantive interpretation.

This point is particularly important when segmentation is extended across time. A customer segment identified in one period may differ in size or characteristics from a segment identified in another period. Therefore, the concept of segmentation in this dissertation is closely connected to the broader concept of **segment evolution**. The purpose is not simply to produce a set of customer categories but to establish a basis for examining how the customer structure represented by those categories changes across the 2017–2026 period.

2.2.2 Development of Customer Segmentation

The development of customer segmentation can be understood as a progression from relatively broad market classifications towards increasingly detailed, behavioural, data-driven, and analytical approaches.

The foundation of modern segmentation is commonly associated with Smith (1956), who challenged the assumption that markets should necessarily be treated as homogeneous. His contribution established market segmentation as a means of recognising differences in demand and developing marketing approaches around identifiable groups. At this stage, segmentation represented an important conceptual shift: instead of asking how a firm could address the market as a single entity, attention could be directed towards differences among groups of customers.

Subsequent segmentation research expanded the range of characteristics that could be used to distinguish customer groups. Demographic and geographic variables became widely used because they were relatively accessible and straightforward to interpret. Psychographic variables later provided opportunities to incorporate

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lifestyle, attitudes, values, and motivations. Behavioural variables further expanded segmentation by allowing customer groups to be distinguished according to actual purchasing and usage patterns.

The development of behavioural segmentation was particularly important because observable behaviour can provide information that demographic characteristics alone cannot capture. In the context of tourism, customers who share demographic characteristics may nonetheless differ considerably in their travel patterns, expenditure, booking timing, travel duration, and product preferences.

The development of information technologies subsequently transformed the availability and scale of customer data. Digital platforms, reservation systems, customer databases, and transaction-processing systems have generated increasingly detailed records of customer activity. This development has enabled segmentation to become more strongly associated with **customer analytics and data-driven decision-making**.

Alves Gomes and Meisen (2023) demonstrate this development through their review of customer segmentation methods, identifying a wide range of approaches and data sources and highlighting the movement towards more analytical forms of customer targeting. Salminen et al. (2023) similarly identify the growing importance of algorithmic methods in customer segmentation research.

The development of analytical methods has also increased the use of techniques capable of identifying customer groups directly from observed data. Cluster analysis has become particularly relevant because it allows researchers to identify groups based on similarities across multiple variables without necessarily defining all customer categories beforehand. Dolnicar (2003) identifies cluster analysis as a commonly used approach in market segmentation while also highlighting the methodological challenges associated with its application.

More recent work has further emphasised the importance of **behavioural variables** in data-driven segmentation. The development of interaction-based and transaction-based variables allows customer activity to be transformed into measurable dimensions of engagement. Suh (2025), for example, demonstrates how behavioural variables derived from customer interactions can be used to identify customer segments in a large customer dataset.

However, the development of customer segmentation has also revealed limitations in treating segmentation as a purely technical exercise. The existence of sophisticated algorithms does not eliminate questions concerning whether the resulting segments are distinct, meaningful, stable, and useful. Ernst and Dolnicar (2018) specifically emphasise the risk of random or unstable segmentation solutions and highlight the importance of testing segment stability through repeated analyses.

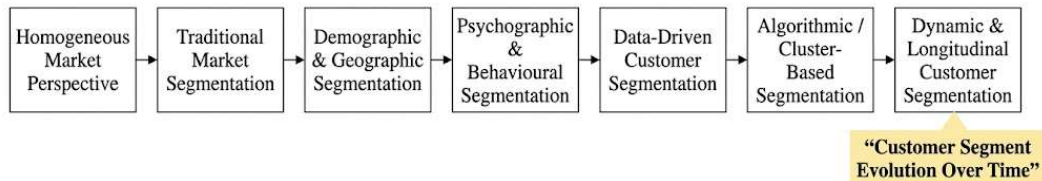
An additional development in segmentation research concerns the recognition that **customers and customer segments may change over time**. Earlier segmentation approaches frequently provided a representation of customer groups for a particular period. More recent dynamic and longitudinal perspectives recognise that customer behaviour may develop and that segment membership or segment structures may therefore change.

Bassi (2016) argues that stationary customer segments may be unrealistic in markets where customer needs and product choices evolve. Bassi (2017) further demonstrates the potential of longitudinal approaches to examine changes in customer segment membership across different periods. Kamakura (2013) also advocates combining customer segmentation with longitudinal customer analysis to understand how customer behaviour develops over time.

This development from **static classification to dynamic analysis** is particularly important for the present study. The research does not stop at identifying customer groups within the motorhome rental dataset. Instead, the segmentation provides the foundation for examining how customer segment structures develop across the 2017–2026 period.

The evolution of customer segmentation can therefore be represented conceptually as:

Evolution of Customer Segmentation



2.2.3 Traditional Customer Segmentation

Traditional customer segmentation generally approaches the market by identifying customer groups according to characteristics that are assumed to distinguish one group from another. Its fundamental purpose is to recognise heterogeneity within the broader market and provide a basis for differentiated marketing and business decisions.

The foundations of this approach can be traced to Smith (1956), who proposed market segmentation as an alternative to treating a market as a homogeneous whole. The concept subsequently developed around several established segmentation bases, particularly **demographic, geographic, psychographic, and behavioural characteristics** (Wedel and Kamakura, 2000).

Demographic segmentation represents one of the most straightforward traditional approaches. Customers can be divided according to characteristics such as age, gender, income, or other population characteristics. The principal advantage of demographic segmentation is that such information is generally relatively easy to collect, classify, and communicate. It can therefore provide a clear description of the composition of a customer population.

However, demographic characteristics do not necessarily explain customer behaviour. Customers who share similar demographic characteristics may have substantially different purchasing patterns, preferences, expenditure levels, or product choices. Consequently, demographic segmentation may describe **who customers are** without adequately explaining **how they behave**.

Geographic segmentation similarly provides a means of distinguishing customers according to location. It can be particularly useful when customer behaviour differs across geographical markets. For tourism businesses, geographic segmentation can help distinguish customers according to their origin or market. However, geographic location alone cannot necessarily explain the behavioural differences that occur within or across markets.

Psychographic segmentation attempts to address some of the limitations of purely descriptive segmentation by incorporating characteristics such as values, lifestyles, attitudes, interests, and motivations. This approach can provide deeper insight into customer preferences and reasons for consumption. Nevertheless, psychographic information commonly requires dedicated survey or qualitative research instruments and is therefore not directly available within the commercial transaction dataset used for the present study.

Traditional segmentation can also incorporate behavioural characteristics, such as purchase frequency, expenditure, or product usage. However, the availability of large-scale transaction data has enabled behavioural segmentation to become increasingly sophisticated. Instead of relying on broad predefined behavioural

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categories, organisations can now derive behavioural variables directly from customer transactions and use analytical methods to identify patterns within the data.

This distinction is important for understanding the methodological position of the present study. The research does not reject traditional segmentation categories; rather, it builds upon the broader segmentation concept while placing greater emphasis on **observable customer and rental behaviour**.

The traditional approach also tends to produce a relatively **static representation** of the market. Once customers are classified into segments, the resulting groups may be treated as relatively stable categories for marketing and planning purposes. This creates a potential limitation when customer behaviour changes over time.

For example, a customer segment that represents a substantial proportion of the customer population in one period may become less prominent in a later period. Similarly, the characteristics of a segment may change even if the broad segment label remains similar. A static segmentation conducted in only one period cannot adequately demonstrate these developments.

This limitation is especially relevant to the present research because the study covers **2017–2026**, a period containing substantial changes in tourism market conditions and an important external disruption in the form of COVID-19. The research proposal explicitly identifies the limitation of conventional segmentation in providing only a picture of customers at a particular time and argues for a longitudinal perspective capable of examining changes in segment characteristics and relative sizes.

Traditional segmentation also faces methodological concerns when analytical techniques such as cluster analysis are used. A segmentation solution may appear statistically coherent while lacking practical meaning or stability. Dolnicar (2003) emphasises established weaknesses associated with the use of cluster analysis for market segmentation, while Ernst and Dolnicar (2018) demonstrate the importance of avoiding random segmentation solutions through stability assessment.

Therefore, the limitations of traditional segmentation can be summarised in four principal areas:

Limitation	Implication for Customer Analysis
Static representation	Does not adequately show how segments change over time
Reliance on broad characteristics	May not capture detailed behavioural differences
Limited temporal perspective	Cannot distinguish temporary changes from longer-term evolution
Potential instability of analytical segments	A statistically generated segment may not necessarily be meaningful or reproducible

These limitations do not make traditional segmentation irrelevant. Rather, they establish the need for more advanced approaches capable of incorporating **behavioural data, analytical techniques, validation, and time**.

This provides the transition to the next sections of the literature review. The development of data-driven customer segmentation allows researchers to use transactional information to identify behavioural patterns, while the development of dynamic and longitudinal segmentation provides a framework for examining how those patterns change. For the present dissertation, these developments are particularly relevant because the empirical analysis uses actual motorhome rental transactions collected over nine years and seeks to understand the **evolution of customer segment structures rather than simply describing the customer population at one point in time**.

2.2.4 Behavioural Customer Segmentation

Behavioural customer segmentation focuses on differences in what customers **actually do**, rather than relying primarily on descriptive characteristics such as age, gender, or geographical location. The approach is based on the premise that customers who may appear similar in demographic or geographic terms can nevertheless demonstrate substantially different purchasing patterns, levels of expenditure, product preferences, and usage behaviour. Consequently, behavioural information provides an important basis for distinguishing customer groups according to their actual interactions with a product or service.

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Within the broader development of market segmentation, behavioural segmentation represents a movement from asking primarily **who the customers are** towards examining **how customers behave**. Wedel and Kamakura (2000) identify behavioural characteristics as an important basis for segmentation because observable customer activities can provide information concerning purchasing and usage patterns. In a tourism context, this distinction is particularly relevant because travellers with similar demographic characteristics may nevertheless differ in the timing, duration, expenditure, and nature of their travel purchases.

Behavioural segmentation can incorporate a range of observable characteristics. These may include purchase frequency, expenditure, product selection, usage patterns, timing of purchases, and other forms of customer engagement. The specific variables depend on the nature of the business and the data available. In the present study, the behavioural perspective is applied to **motorhome rental transactions**, where customer behaviour can be observed through rental-related characteristics.

The research proposal identifies several variables relevant to this behavioural perspective, including **booking lead time, rental duration, season, vehicle category, expenditure, and repeat-customer status**. These variables provide information about how customers engage with the motorhome rental service rather than simply describing their demographic characteristics. Customer characteristics such as **age, gender, country of origin, and travel party composition** provide additional information for profiling the resulting segments.

For example, booking lead time can distinguish customers according to how far in advance they arrange their rental, while rental duration can indicate differences in the length of travel undertaken. Vehicle category can provide information about product preference, and expenditure can distinguish customers according to the monetary value associated with their transactions. Season can capture differences in when customers undertake their rentals, while repeat-customer status provides information concerning previous engagement with the rental provider.

The importance of using several behavioural dimensions simultaneously is that individual variables may provide only a partial representation of customer behaviour. A customer who spends a relatively high amount, for instance, may not necessarily represent the same type of customer as another high-spending customer if their rental duration, booking behaviour, vehicle selection, or travel period differs substantially. Combining relevant behavioural and transactional variables can therefore provide a more comprehensive basis for identifying customer groups.

This approach is particularly suitable for the present study because the empirical dataset consists of approximately **21,000 completed rental transactions collected between 2017 and 2026**. Rather than depending on customer responses concerning intended behaviour, the study can examine behaviour recorded through actual completed rental transactions.

Behavioural segmentation also has an important connection with the longitudinal purpose of the dissertation. If customers are segmented according to observable behaviour, changes in those behaviours over time may alter the characteristics and relative importance of the resulting segments. Consequently, behavioural segmentation provides the **foundation for examining customer segment evolution** rather than representing the final analytical objective in itself.

The approach does, however, have limitations. Transactional behaviour does not necessarily explain the motivations, attitudes, preferences, or psychological processes behind customer decisions. For example, a transaction can reveal when a customer booked, how long the rental lasted, which vehicle category was selected, and how much was spent, but it may not reveal *why* that customer made those choices. Psychographic and motivational characteristics therefore remain outside the principal empirical scope of the present study.

Behavioural segmentation should consequently be understood as a means of identifying **observable patterns of customer behaviour**, rather than as a complete explanation of customer decision-making.

This provides the conceptual bridge between traditional customer segmentation and the data-driven and longitudinal approach adopted in the present research.

2.2.5 Data-Driven Customer Segmentation

Data-driven customer segmentation represents a further development of customer segmentation in which customer groups are identified through the systematic analysis of available customer data. Rather than relying exclusively on predetermined categories, data-driven approaches use patterns within datasets to identify similarities and differences among customers.

The development of data-driven segmentation has been closely associated with the increasing availability of digital and transactional information. Customer databases and digital systems have created opportunities for organisations to collect and analyse substantially larger quantities of behavioural information than were traditionally available. As a result, segmentation has increasingly moved from relatively simple classification towards analytical approaches capable of identifying more complex patterns within customer populations.

Alves Gomes and Meisen (2023), in their review of 105 studies published between 2000 and 2022, identify substantial variation in customer segmentation methods, data sources, and customer variables and demonstrate the increasing importance of data-driven segmentation. Salminen et al. (2023), through a systematic review of 172 studies, similarly identify algorithms as an increasingly important component of customer segmentation while highlighting continuing questions concerning variable selection, algorithm selection, the number of segments, and validation.

A central feature of data-driven segmentation is the use of multiple variables to identify patterns that may not be apparent when customers are examined through individual characteristics. In the present study, this approach is particularly relevant because the transaction database provides several dimensions through which customers and their rental behaviour can be examined.

The research proposal identifies customer characteristics including **age, gender, country of origin, and travel party composition**, together with rental-related characteristics including **booking lead time, rental duration, season, vehicle category, expenditure, and repeat-customer status**. These variables provide a basis for examining customer heterogeneity using actual rental transaction information.

The principal analytical method proposed for the present research is **cluster analysis**. Cluster analysis is particularly relevant to data-driven segmentation because it can identify groups of observations according to similarities across selected variables without requiring all customer categories to be specified in advance. Dolnicar (2003) identifies cluster analysis as one of the commonly used approaches to market segmentation.

However, data-driven segmentation does not mean that the resulting segments are automatically objective, permanent, or meaningful. Decisions concerning which variables are included, how the data are prepared, which clustering procedure is applied, and how many clusters are retained can influence the resulting segmentation. Consequently, statistical results need to be assessed alongside substantive interpretation.

Ernst and Dolnicar (2018) specifically highlight the possibility of obtaining unstable or random segmentation solutions and emphasise the importance of testing cluster stability rather than relying on a single segmentation result. This issue is particularly relevant to a study examining customer segments across multiple years because apparent changes in segment structure should not simply reflect instability in the analytical procedure.

Data-driven segmentation is therefore particularly valuable to this dissertation for two reasons. First, it provides a systematic method for identifying customer groups from the characteristics contained in the commercial transaction data. Second, it provides the segment structure that can subsequently be compared across the **2017–2026 period**.

The relationship between data-driven segmentation and the present study can be summarised as:

Stage	Role in the Study
Transaction data	Provides observed customer and rental information
Variable selection	Identifies relevant characteristics for segmentation
Data preparation	Ensures data are suitable for analysis
Cluster analysis	Identifies groups with similar characteristics

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Segment profiling	Describes the characteristics of identified groups
Validation/stability	Evaluates whether the segmentation is meaningful and reliable
Longitudinal comparison	Examines how segment structures change over 2017–2026

Thus, data-driven segmentation constitutes the methodological foundation for the subsequent analysis of **customer segment evolution**.

2.3 Customer Analytics and Transactional Data

Customer analytics refers broadly to the systematic use of customer-related data and analytical methods to understand customer characteristics, behaviour, value, and patterns of interaction. Its development has been closely connected to the increasing availability of digital and transactional data.

The significance of customer analytics for the present study lies in its ability to connect **individual customer and transaction observations with broader patterns in the customer population**. Rather than treating customers as a homogeneous market, customer analytics enables organisations and researchers to examine differences between customers using multiple dimensions of observed behaviour.

The development of customer analytics has also changed the role of customer data within segmentation. Customer segmentation can increasingly be performed using information generated through ordinary business transactions rather than requiring specifically designed research surveys. This creates opportunities to analyse actual purchasing behaviour across larger populations and longer periods.

Recent research reviewed by Alves Gomes and Meisen (2023) and Salminen et al. (2023) illustrates the increasing use of data-driven and algorithmic approaches within customer segmentation. The development is particularly relevant to the present research because the empirical foundation consists of a large commercial transaction dataset covering several years.

In the context of this dissertation, customer analytics connects four elements:

Customer information
↓
Transaction behaviour
↓
Analytical identification of customer groups
↓
Longitudinal examination of segment evolution

The following sections examine the specific role of customer transaction data, behavioural analytics, data-driven customer-group identification, and the advantages and challenges associated with transaction-based segmentation.

2.3.1 Customer Transaction Data

Customer transaction data are records generated through actual commercial interactions between customers and an organisation. Depending on the business context, such data may contain information about purchases, dates, products or services selected, quantities, expenditure, booking behaviour, and other characteristics associated with individual transactions.

For the present study, customer transaction data refer specifically to the **completed motorhome rental transactions** contained within the commercial reservation database used for the research. The dataset covers approximately **21,000 completed rentals between 2017 and 2026** across **Finland, Sweden, and Norway**.

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The importance of these data lies in the fact that they record **observed rental behaviour**. Unlike survey-based research, in which respondents report preferences, intentions, or perceptions, completed transactions provide evidence of behaviour that actually occurred.

The dataset provides information relating to customer characteristics, booking information, and rental details. The research proposal identifies customer characteristics including **age, gender, country of origin, and travel party composition**, while rental behaviour includes **booking lead time, rental duration, season, vehicle category, expenditure, and repeat-customer status**.

This combination of customer and transaction information is particularly valuable for customer segmentation because it enables the analysis to consider several dimensions simultaneously. The research can therefore examine not only demographic or geographic differences but also differences in how customers use the motorhome rental service.

The longitudinal structure of the transaction data provides an additional advantage. Because the observations cover 2017–2026, the data can be organised across successive years and compared to identify changes in customer segment structures. This temporal dimension is central to the research question concerning customer segment evolution.

However, transaction data are generated primarily for **commercial and operational purposes rather than academic research**. Consequently, the available variables may not capture every factor that influences customer decisions. The synopsis specifically notes that factors such as travel motivations, customer satisfaction, and psychological characteristics cannot be studied directly through the available transaction data.

A further limitation concerns individual customer identification. The research proposal notes that customers cannot necessarily be followed reliably across the entire observation period because bookings may have been made using different names or contact information and repeat rentals are relatively infrequent. Consequently, the study focuses primarily on changes in **customer segment structure and composition across successive annual customer populations**, rather than assuming continuous individual-level migration between segments.

This distinction is methodologically important. The study uses longitudinal transaction data, but its longitudinal perspective is primarily concerned with **changes in the customer population and segment structure**, rather than constructing a complete individual customer life-cycle history.

2.3.2 Behavioural Customer Analytics

Behavioural customer analytics involves the analysis of observable customer activities in order to identify patterns, differences, and relationships within a customer population. It extends customer analysis beyond basic descriptive characteristics by examining what customers actually do.

In a transaction-based environment, behavioural analytics can use variables such as purchase frequency, expenditure, timing, product selection, duration, and usage patterns. The specific behavioural dimensions depend on the characteristics of the underlying business and the data available.

For the present research, behavioural analytics is applied to **motorhome rental behaviour**. The dataset provides an opportunity to examine characteristics such as booking lead time, rental duration, season, vehicle category, expenditure, and repeat-customer status, together with customer characteristics such as age, gender, country of origin, and travel party composition.

The analytical value of this approach lies in identifying patterns that may not be visible when individual variables are examined separately. For example, differences in expenditure may become more meaningful when considered alongside rental duration, vehicle category, season, and booking behaviour. Similarly, differences between customer groups may involve combinations of characteristics rather than a single distinguishing variable.

Behavioural customer analytics therefore provides the analytical basis for identifying customer segments according to **patterns of behaviour**.

The approach also fits the longitudinal purpose of the dissertation. Behavioural characteristics can be examined year by year, allowing researchers to determine whether the customer population demonstrates changes over time. These changes can subsequently be considered in relation to changes in customer segment structure.

This is particularly important for the present study because the central research problem concerns the limitations of static segmentation. If customer behaviour changes, then the composition and relative importance of behavioural segments may also change. Longitudinal behavioural analytics therefore provides a means of investigating this development.

At the same time, behavioural analytics should not be interpreted as a complete explanation of customer decision-making. Transactional behaviour shows **what occurred**, but it does not necessarily establish **why it occurred**. For example, a change in booking lead time may be observed in the data, but the transaction data alone cannot necessarily establish whether that change resulted from customer preferences, pricing, availability, market uncertainty, external disruption, or other factors.

The present study therefore uses behavioural analytics primarily to **identify and describe customer segment structures and their development**, while avoiding unsupported causal interpretations.

2.3.3 Data-Driven Identification of Customer Groups

Data-driven identification of customer groups involves using analytical procedures to discover meaningful similarities and differences within a customer population. Unlike approaches that define customer groups entirely in advance, data-driven methods allow the characteristics of the dataset to contribute to the identification of customer groups.

This approach is particularly relevant when the underlying structure of the customer population is not known beforehand. In the present study, the objective is not to assume in advance that the Nordic motorhome rental customer population consists of a predetermined number of groups. Instead, the segmentation analysis is intended to identify customer groups based on similarities across relevant behavioural and transactional characteristics.

Cluster analysis is therefore proposed as the principal segmentation technique. Its suitability derives from its capacity to group observations according to their similarity across selected variables. Dolnicar (2003) identifies cluster analysis as a commonly applied method for market segmentation, while also emphasising the methodological considerations required for meaningful application.

The identification of customer groups in this study is expected to proceed through several analytical stages:

1. **Selection of relevant customer and rental variables**
2. **Preparation and cleaning of the transaction data**
3. **Application of cluster analysis**
4. **Evaluation of alternative clustering solutions**
5. **Assessment of segment stability**
6. **Interpretation and profiling of the identified customer groups**
7. **Comparison of segment structures across time and countries**

The selection of variables is particularly important. Including too few variables may provide an incomplete representation of customer behaviour, while inappropriate or poorly measured variables may distort the resulting segmentation. The research proposal therefore recognises the importance of considering variable selection, clustering procedures, number of segments, and validation.

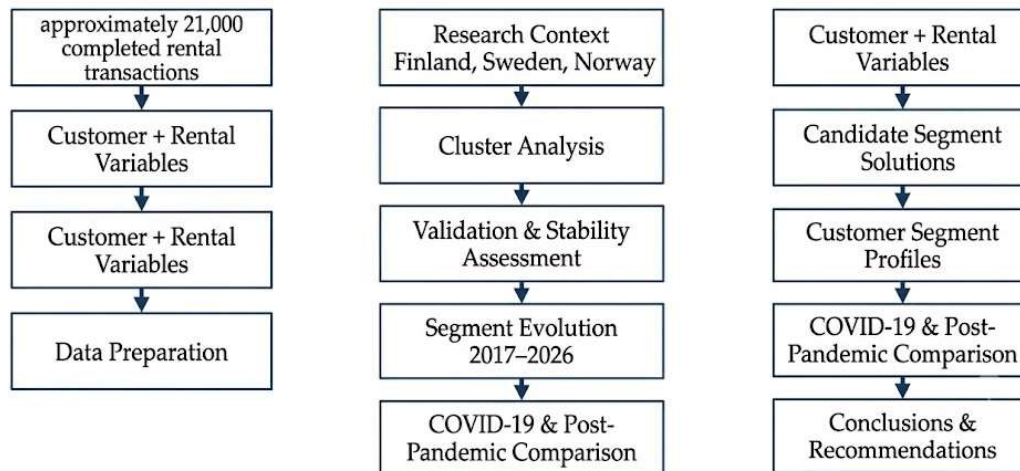
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The identification of customer groups must also be distinguished from the interpretation of customer segments. A cluster generated by an algorithm becomes substantively useful only when its characteristics can be meaningfully described and differentiated from other groups. Consequently, segment profiling forms an important part of the analytical process.

Stability is equally important. If a segmentation solution changes substantially when the analysis is repeated under similar conditions, it may indicate that the identified groups are not sufficiently robust. Ernst and Dolnicar (2018) emphasise this concern and advocate the assessment of segmentation stability rather than reliance on a single clustering solution.

For the present study, this issue has an additional longitudinal implication. Apparent differences between customer segments across years need to be distinguished from changes resulting from an unstable analytical solution. Establishing a sufficiently meaningful and stable segmentation structure is therefore important before examining segment evolution.

The data-driven identification process can consequently be represented as:



This analytical sequence provides the methodological bridge between the transaction database and the central research question concerning customer segment evolution.

2.3.4 Advantages and Challenges of Transaction-Based Segmentation

Transaction-based segmentation provides several advantages for understanding customer behaviour, particularly when the objective is to examine actual behaviour across an extended period. At the same time, the approach presents important methodological and interpretive challenges that need to be recognised.

Advantages of Transaction-Based Segmentation

1. Evidence of Observed Behaviour

One of the principal advantages is that transaction data represent **behaviour that has actually occurred**. The present study uses completed rental transactions rather than relying exclusively on stated intentions. This provides a direct empirical basis for examining how customers interact with the motorhome rental service.

2. Multiple Behavioural Dimensions

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Transaction data can contain several behavioural characteristics simultaneously. In this study, these include booking lead time, rental duration, season, vehicle category, expenditure, and repeat-customer status, alongside customer characteristics such as age, gender, country of origin, and travel party.

This multidimensionality provides a stronger basis for identifying behavioural differences than reliance on a single variable.

3. Longitudinal Analysis

A major advantage for the present research is the availability of transactions across **2017–2026**. The data can therefore be examined across successive years to identify changes in customer segment characteristics, composition, and relative size.

4. Large Empirical Base

Approximately **21,000 completed transactions** provide a substantial empirical base for the segmentation analysis. The size of the dataset creates an opportunity to identify patterns within the customer population that may be difficult to observe using smaller samples.

5. Cross-Country Comparison

Because the dataset covers **Finland, Sweden, and Norway**, transaction-based segmentation can be used to examine similarities and differences in customer segment structures across the three markets.

6. Reduced Dependence on Stated Intentions

Because the analysis is based on completed transactions, it does not depend solely on what customers report that they intended to do. This is particularly valuable when studying actual rental behaviour.

Challenges of Transaction-Based Segmentation

1. Data Were Not Originally Collected for Research

The transaction database was created for commercial purposes rather than specifically for academic research. Consequently, the researcher is limited to the variables recorded within the reservation system. Important customer characteristics that could influence behaviour may therefore be absent.

2. Limited Access to Motivational and Psychological Variables

Transaction records can show what customers did but generally cannot fully explain why they did it. The present study therefore cannot directly examine variables such as travel motivation, customer satisfaction, attitudes, or psychological characteristics where these are not recorded in the dataset.

3. Individual Customer Tracking

The dataset does not allow every individual customer to be reliably followed throughout the full 2017–2026 period. Consequently, the study focuses on population-level segment evolution rather than assuming that every customer can be tracked through successive segment memberships.

4. Potential Operational Changes

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Changes within the organisation may influence observed transaction behaviour. The synopsis identifies possible changes in **fleet composition, pricing, booking practices, and product offerings** as factors that need to be considered when interpreting changes in customer behaviour.

5. External Market Conditions

Customer behaviour may also be affected by factors such as inflation, exchange rates, fuel prices, international travel connections, and major external disruptions. Not all such factors are necessarily contained in the transaction database, which limits the ability to establish direct causal explanations.

6. Segmentation Stability

A clustering algorithm can produce groups that appear statistically distinct but are not necessarily stable or meaningful. This makes validation and stability assessment essential. Ernst and Dolnicar (2018) highlight the risk of random segmentation solutions, while Dolnicar (2003) emphasises the methodological weaknesses that can arise when cluster analysis is applied without sufficient consideration of its assumptions and interpretation.

Summary of Advantages and Challenges

Advantages	Challenges
Observed rather than stated behaviour	Data collected primarily for business purposes
Multiple customer and rental variables	Missing psychological or motivational information
Approximately 21,000 transactions	Individual customers cannot always be reliably tracked
Nine-year observation period	Operational changes may affect behaviour
Three-country coverage	External market influences may not be directly measurable
Suitable for behavioural segmentation	Cluster solutions require validation and stability assessment
Supports longitudinal comparison	Does not automatically establish causality

For the present study, these advantages and challenges must be considered together. The strength of the dataset lies in its **scale, longitudinal coverage, commercial origin, and behavioural information**, while its principal limitations arise from the fact that the data were not originally collected for research and cannot capture every dimension of customer decision-making.

This balance is important for interpreting the subsequent empirical findings. The study can identify and compare patterns in observed customer and rental behaviour, but it should not interpret those patterns as definitive explanations of customer motivations or as proof that particular external factors caused specific segment changes. The transaction data provide evidence of **what changed and how customer segment structures developed**, while interpretation of the reasons for those changes must remain appropriately cautious.

2.4 Customer Segment Evolution

Customer segmentation traditionally seeks to identify groups of customers who demonstrate similarities in selected characteristics or behaviours. However, identifying customer groups at a single point in time does not establish that those groups remain unchanged. Customer populations can develop as purchasing behaviour, customer preferences, market conditions, and external circumstances change. The concept of **customer segment evolution** therefore extends conventional segmentation by introducing a temporal dimension into the analysis.

For the present study, this distinction is particularly important because the empirical investigation covers **2017–2026** and is based on approximately **21,000 completed motorhome rental transactions** across **Finland, Sweden, and Norway**. The objective is not simply to establish which customer groups can be identified from the transaction data, but to examine how the characteristics, composition, and relative size of those groups develop across the observation period.

The literature on dynamic segmentation indicates that customer groups should not necessarily be assumed to be stationary. Bassi (2016, 2017) demonstrates the importance of considering changing customer segment structures, while Kamakura (2013) argues for greater integration between segmentation and longitudinal

customer analysis. These perspectives are particularly relevant when customer behaviour is observed over several periods.

In the context of tourism, the temporal dimension is especially relevant because customer behaviour can respond to changes in travel conditions, economic circumstances, technological developments, and external disruptions. The COVID-19 pandemic provides an important example within the present observation period. However, the research does not treat COVID-19 as the central explanatory variable. Instead, it is considered an external disruption occurring within the longer period of customer segment observation.

Customer segment evolution can consequently be understood through several related dimensions:

1. **Changes in segment characteristics**
2. **Changes in segment size**
3. **Changes in segment composition**
4. **Changes across time**
5. **Differences between geographical markets**

These dimensions provide the conceptual basis for examining how the Nordic motorhome rental customer population develops throughout 2017–2026.

2.4.1 Static and Dynamic Segmentation

Static Segmentation

Static segmentation refers to an approach in which customers are classified into groups using information relating to a particular period. The resulting segments provide a representation of the customer population at that point in time.

Static segmentation has considerable practical value. It allows organisations to understand the characteristics of their customers and to develop differentiated marketing and service strategies. However, its principal limitation is that it provides limited information about **how customer segments develop over time**.

For example, a segmentation based on rental transactions from a single year could identify several customer groups according to their rental behaviour. However, it would not establish whether those groups had the same characteristics in previous years, whether their relative sizes had changed, or whether new behavioural patterns subsequently emerged.

This limitation becomes important when markets are characterised by changing customer behaviour. Treating a segmentation generated from one period as a permanent representation of the customer population can result in an overly static interpretation of a changing market.

Dynamic Segmentation

Dynamic segmentation introduces a temporal dimension by recognising that customer segments can change as customer behaviour and market conditions change.

Bassi (2016) questions the assumption that customer segments necessarily remain stationary and argues that changing customer needs and product choices can result in evolving segment structures. Bassi (2017) further demonstrates the value of longitudinal approaches for examining customer segment membership over time. Kamakura (2013) similarly emphasises the importance of integrating segmentation with longitudinal customer analysis.

Dynamic segmentation does not necessarily mean that every individual customer must be tracked continuously. This distinction is particularly important for the present research. The available transaction data do not allow all

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individual customers to be reliably followed throughout 2017–2026 because repeat rentals may be relatively infrequent and customer records may not always permit transactions to be reliably linked. The study therefore focuses primarily on **population-level changes in segment structure and composition** rather than assuming complete individual-level segment migration.

The difference can be summarised as follows:

Static Segmentation	Dynamic Segmentation
Examines customers at a particular period	Examines customers across multiple periods
Produces a snapshot of segment structure	Examines changes in segment structure
Emphasises current segment characteristics	Emphasises segment development
Limited ability to identify temporal change	Designed to examine temporal change
May treat segments as relatively stable	Recognises that segments can evolve

For this dissertation, the dynamic perspective is particularly appropriate because the central research question asks **how customer segments evolved between 2017 and 2026**.

2.4.2 Concept of Customer Segment Evolution

Customer segment evolution refers to the process through which the **characteristics, composition, relative size, and structure of customer segments change over time**.

The concept extends the traditional definition of segmentation in two ways. First, it recognises that customer segments represent populations whose behaviour can change. Second, it treats time as an important analytical dimension rather than merely as a characteristic of the dataset.

In the present study, customer segment evolution is examined through transaction data covering **2017–2026**. The research therefore asks not only whether distinct customer groups can be identified, but whether the characteristics and distribution of those groups differ across successive years.

The concept can be understood at several levels.

Segment Characteristics

A segment may retain a broadly similar identity while some of its characteristics change. For example, its average rental duration, expenditure, booking lead time, or vehicle preferences may develop over time.

Segment Size

The proportion of customers represented by a particular segment may increase or decrease from one period to another.

Segment Composition

The characteristics of the customers represented within a segment may change even where the segment remains present.

Segment Structure

The overall configuration of the customer population may change if some segments become more prominent, less prominent, merge conceptually, or new behavioural patterns become evident.

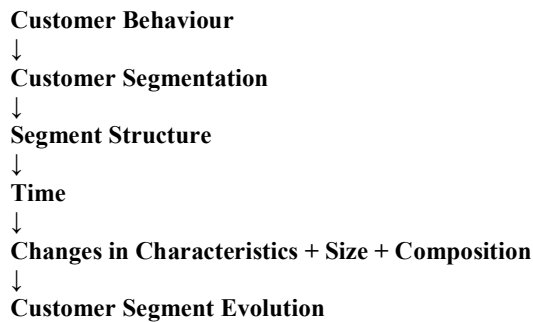
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This conceptualisation is consistent with the research proposal's emphasis on examining changes in **segment characteristics and relative sizes** rather than attempting to track every individual customer across the entire observation period.

Customer segment evolution should also be distinguished from simple changes in individual variables. A change in average rental duration, for example, does not automatically mean that customer segmentation has changed. Segment evolution concerns whether changes in observed characteristics result in meaningful differences in the **structure or composition of customer groups**.

This distinction is important for the empirical analysis because the study must examine customer characteristics jointly rather than interpreting isolated changes in individual variables as evidence of segment transformation.

The concept can therefore be represented as:



For the present research, customer segment evolution therefore represents the principal conceptual bridge between **customer segmentation** and the **longitudinal analysis of motorhome rental transactions**.

2.4.3 Changes in Segment Characteristics

Changes in segment characteristics refer to alterations in the observable attributes and behaviours associated with particular customer segments across different periods.

In the present study, segment characteristics are derived from the customer and rental information contained in the transaction dataset. The research proposal identifies variables including **age, gender, country of origin, travel party composition, booking lead time, rental duration, season, vehicle category, expenditure, and repeat-customer status**.

These variables provide several dimensions through which changes in customer segments can be examined.

For example, changes in **booking lead time** may indicate differences in how far in advance customers arrange motorhome rentals. Changes in **rental duration** can indicate shifts in the length of rental use. Changes in **vehicle category** can indicate alterations in product preferences, while changes in **expenditure** can indicate differences in the monetary characteristics of customer groups.

Similarly, changes in **travel party composition** may indicate developments in the types of groups using motorhome rental services. Changes in **repeat-customer status** can provide information concerning the extent to which different segments contain returning customers.

The importance of analysing these characteristics collectively is that customer segments are multidimensional. A segment should not be defined solely by one variable when its distinguishing characteristics arise from a combination of customer and behavioural attributes.

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The longitudinal dimension then allows these profiles to be compared across years. A segment that appears broadly similar in 2017 and 2026 may nevertheless demonstrate important changes in its underlying characteristics. Conversely, a segment may retain particular characteristics while its relative importance within the customer population changes substantially.

This distinction means that segment evolution can involve both **qualitative and quantitative change**:

- **Qualitative change** concerns changes in the characteristics that define or distinguish a segment.
- **Quantitative change** concerns changes in the number or proportion of customers represented by the segment.

The study therefore does not assume that customer segments either remain completely stable or disappear entirely. Segment evolution can occur gradually through changes in the characteristics of the customers associated with a segment.

This perspective is particularly relevant to tourism because customer behaviour can respond to changes in travel preferences, economic conditions, availability, and external circumstances. The nine-year period examined in the present research therefore provides an opportunity to determine whether customer segment characteristics demonstrate continuity or change.

2.4.4 Changes in Segment Size and Composition

Changes in segment size and composition represent another important dimension of customer segment evolution.

Segment size refers to the proportion or number of customers represented by a particular segment within a given period. **Segment composition** refers to the characteristics of the customers represented within that segment.

These concepts should be considered together because a segment can change in size without necessarily changing substantially in composition, while its composition can change even if its overall size remains relatively stable.

For example, a segment may represent a relatively large proportion of customers in one year and a smaller proportion several years later. This represents a change in segment size. However, if the characteristics of customers within that segment also change, the development represents a change in composition as well.

The present study is specifically concerned with these population-level changes. The research proposal states that the longitudinal analysis will focus on changes in **segment characteristics and relative sizes** and will examine how these structures develop over time.

This approach is particularly appropriate given the limitations concerning individual customer tracking. Rather than claiming that specific individuals moved from one segment to another, the research can compare the customer segment structures represented in successive periods.

The distinction can be illustrated as:

2017 Customer Population

→ Segment A / Segment B / Segment C

2019 Customer Population

→ Segment A / Segment B / Segment C

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2021 Customer Population

→ Segment A / Segment B / Segment C

2026 Customer Population

→ Segment A / Segment B / Segment C

The analytical objective is to examine **how the characteristics and relative representation of these groups differ across periods**.

This approach is especially relevant when examining the COVID-19 period. If the relative size of a particular segment increases during the pandemic and subsequently returns towards its earlier level, the evidence may indicate a temporary change. If the segment remains substantially different after travel restrictions are lifted, the evidence may instead indicate a more persistent development.

However, such observations should not automatically be interpreted as causal evidence of COVID-19 effects. Other factors—including pricing, fleet composition, fuel prices, exchange rates, booking systems, and product offerings—may also influence customer behaviour and may not be fully measured within the transaction dataset.

2.4.5 Longitudinal Customer Analysis

Longitudinal customer analysis examines customer characteristics and behaviour across multiple periods in order to identify patterns of change and continuity.

The principal advantage of longitudinal analysis over cross-sectional analysis is that it introduces **time as an explicit analytical dimension**. Rather than asking what the customer population looks like at one point in time, longitudinal research asks how the population develops across multiple periods.

Kamakura (2013) emphasises the importance of combining segmentation with longitudinal customer analysis to obtain a stronger understanding of customer behaviour over time. Bassi (2016, 2017) similarly demonstrates the relevance of dynamic approaches to customer segmentation where customer needs and choices may change.

The present study applies this principle to a nine-year dataset of motorhome rental transactions. The longitudinal design allows customer segment structures to be examined across **2017–2026**, including the period before, during, and after the COVID-19 disruption.

The analysis can consequently consider several temporal comparisons:

Longitudinal Dimension	Purpose
Year-to-year comparison	Identify gradual changes in segment structure
Pre-pandemic vs pandemic	Examine segment changes during disruption
Pandemic vs post-pandemic	Examine whether changes persisted
2017 vs 2026	Assess longer-term evolution
Country × time	Compare evolution across Finland, Sweden and Norway

Longitudinal analysis also enables the research to distinguish between **temporary variation and longer-term development**. A change observed for one year may represent normal variation, whereas a change sustained across several periods provides stronger evidence of structural development.

Nevertheless, longitudinal analysis does not automatically establish causality. Observing that a segment changed during a particular period does not prove that a specific event caused the change. This is particularly important for the present study because the transaction dataset does not directly measure all external market conditions.

The strength of the longitudinal design therefore lies primarily in its ability to establish **patterns of change over time**.

For the present research, longitudinal customer analysis ultimately provides the framework through which customer segmentation becomes an investigation of **customer segment evolution**. This is the key distinction between the study and a conventional single-period segmentation exercise.

2.5 Customer Segmentation Methods

Customer segmentation methods provide the analytical procedures through which heterogeneous customer populations can be divided into meaningful groups.

The choice of segmentation method is important because different methods can produce different representations of customer groups. The methodology must therefore be appropriate for the nature of the research question, the characteristics of the available data, and the intended interpretation of the resulting segments.

For the present study, segmentation methodology is particularly important because the objective is to identify customer groups from **actual motorhome rental transaction data** and subsequently examine how those groups evolve across time.

The research proposal identifies **cluster analysis** as the principal segmentation approach and recognises the importance of variable selection, segment determination, interpretability, and stability.

The following sections examine these methodological dimensions.

2.5.1 Cluster Analysis

Cluster analysis comprises a family of statistical techniques designed to group observations according to similarities across selected variables. Within customer segmentation research, clustering is particularly useful when the researcher seeks to identify customer groups without fully specifying the groups in advance.

Dolnicar (2003) identifies cluster analysis as a widely used approach in market segmentation. Its attractiveness arises from its ability to examine multiple customer characteristics simultaneously and organise observations into groups based on their similarities.

For the present research, cluster analysis is relevant because the customer population may contain behavioural patterns that cannot be adequately represented through predefined categories.

The potential input variables include the customer and rental characteristics identified in the research proposal, including:

- Age
- Gender
- Country of origin
- Travel party
- Booking lead time
- Rental duration
- Season
- Vehicle category
- Expenditure
- Repeat-customer status

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The exact treatment of these variables must depend on their measurement properties, completeness, and suitability for the selected clustering procedure.

Cluster analysis generally involves several methodological decisions. These include:

1. Selection of variables
2. Data preparation
3. Treatment of different measurement scales
4. Selection of an appropriate clustering technique
5. Determination of the number of clusters
6. Evaluation of the resulting solution
7. Interpretation and profiling of clusters

These decisions mean that cluster analysis should not be treated as a completely automatic procedure.

The literature also identifies important limitations. Dolnicar (2003) cautions against mechanically interpreting cluster analysis results as naturally occurring market segments. Statistical clusters require substantive interpretation and evaluation. Similarly, the resulting clusters may vary depending on variable selection and analytical decisions.

For a longitudinal study, an additional issue arises: **the comparability of segment solutions across periods**. If the clustering procedure produces substantially different solutions across years, researchers must determine whether this represents genuine customer segment evolution or methodological instability.

Consequently, cluster analysis provides the starting point for segmentation, but the resulting groups require further assessment through segment profiling, interpretation, and stability analysis.

2.5.2 Selection of Segmentation Variables

Variable selection is one of the most important stages in customer segmentation because the variables included in the analysis influence the characteristics of the resulting segments.

A segmentation model can only identify distinctions represented within the variables provided to it. If an important behavioural dimension is excluded, the resulting segmentation may fail to capture meaningful customer differences. Conversely, including irrelevant, highly redundant, poorly measured, or inconsistent variables may introduce noise into the analysis.

For the present study, variable selection is guided by the characteristics of the transaction dataset and the research focus on customer and rental behaviour.

The research proposal identifies the following relevant dimensions:

Customer characteristics

- Age
- Gender
- Country of origin
- Travel party composition

Rental and transaction characteristics

- Booking lead time
- Rental duration

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- Season
- Vehicle category
- Expenditure
- Repeat-customer status

These variables represent different dimensions of customer behaviour and characteristics. Their combination can provide a multidimensional representation of the customer population.

Variable selection must also consider the longitudinal nature of the dataset. A variable that is available and consistently defined across one year but not another may reduce the comparability of the analysis. Similarly, changes in data recording procedures can create apparent behavioural changes that actually result from changes in measurement.

Consequently, the suitability of each variable should be assessed in terms of:

- Conceptual relevance
- Availability across the study period
- Data completeness
- Measurement properties
- Consistency across countries
- Potential redundancy
- Relevance to customer behaviour
- Contribution to segment differentiation

This approach is particularly important because the purpose of the research is not to maximise the number of variables but to identify a **meaningful representation of customer behaviour**.

The selected variables should therefore correspond directly with the research question concerning customer segment evolution.

2.5.3 Determination of Customer Segments

Determining the appropriate number and structure of customer segments is a central challenge in cluster-based segmentation.

There is no universal number of customer segments that is appropriate for every market. The number of clusters must instead be determined through a combination of statistical evidence, segment interpretability, stability, and substantive relevance.

A purely statistical approach may identify a technically optimal number of clusters according to a particular criterion, but this does not necessarily mean that the resulting groups constitute useful customer segments. Dolnicar (2003) emphasises the importance of interpreting clustering results within the substantive context of the research rather than relying solely on algorithmic output.

For the present study, determining the number of segments should therefore involve consideration of:

- Statistical separation between clusters
- Within-cluster similarity
- Between-cluster differences
- Segment size
- Interpretability
- Stability
- Practical relevance

Segment size is particularly important. A cluster containing a very small number of observations may be statistically identifiable but have limited analytical or managerial relevance. Conversely, an excessively large number of clusters may produce distinctions that are statistically detectable but difficult to interpret.

The determination process is further complicated by the longitudinal nature of the research. The optimal number of clusters may not necessarily be identical across all years. However, changing the number of clusters every year can make longitudinal comparison difficult.

The research must therefore balance two requirements:

Represent the customer structure accurately
and
Maintain sufficient comparability across time.

This methodological issue is central to a study concerned with customer segment evolution.

2.5.4 Segment Interpretability

Statistical identification alone is insufficient to establish that a customer segment is meaningful. **Segment interpretability** concerns the extent to which the characteristics of a segment can be clearly understood, differentiated, and substantively described.

A useful customer segment should demonstrate a recognisable profile that distinguishes it from other segments. This profile should be based on meaningful patterns in the underlying customer and rental variables rather than on arbitrary statistical distinctions.

In the present study, segment interpretation can draw upon variables such as customer characteristics, travel party, booking lead time, rental duration, season, vehicle category, expenditure, and repeat-customer status, depending on their final analytical suitability.

For example, if one segment demonstrates a distinctive combination of longer rental duration, particular vehicle preferences, and higher expenditure, these characteristics may contribute to an interpretable segment profile. The purpose is not to assign labels based on assumptions, but to derive descriptions from the observed characteristics of the cluster.

Interpretability is also important for longitudinal comparison. If the meaning of a segment cannot be clearly established in one period, it becomes difficult to determine whether the segment represents a comparable customer group in another period.

Consequently, interpretation should involve examining:

- Segment size
- Central characteristics
- Distinguishing variables
- Behavioural patterns
- Customer characteristics
- Differences from other segments
- Changes in the profile over time

The interpretation of segments must also remain grounded in the available data. Because the transaction dataset does not directly measure psychological motivations, researchers should not assign motivational labels that cannot be supported by the observed variables.

This is an important methodological safeguard for the present study: **segments should be described according to observable transaction characteristics rather than inferred customer motivations.**

2.5.5 Segment Stability and Validation

Segment stability and validation are essential components of rigorous customer segmentation.

A cluster solution may appear meaningful in one analysis but fail to reproduce when the data or analytical conditions change. Consequently, a statistically generated segmentation should not automatically be treated as a reliable representation of the customer population.

Ernst and Dolnicar (2018) specifically highlight the importance of testing segmentation stability and demonstrate that apparently meaningful segmentation solutions can sometimes result from random patterns. Dolnicar (2003) similarly emphasises the methodological weaknesses that can arise when cluster analysis is applied without adequate evaluation.

Segment stability refers broadly to the extent to which the identified customer groups remain sufficiently consistent when the analysis is repeated or evaluated under alternative conditions.

Segment validation concerns the evaluation of whether the resulting segmentation demonstrates adequate statistical and substantive quality.

For the present longitudinal research, stability has an additional meaning. The researcher must distinguish between:

A genuine change in customer segment structure

and

A change produced by an unstable segmentation procedure.

This distinction is crucial. If the segmentation solution changes substantially between years simply because of methodological instability, interpreting that difference as customer segment evolution would be inappropriate.

Validation should therefore consider:

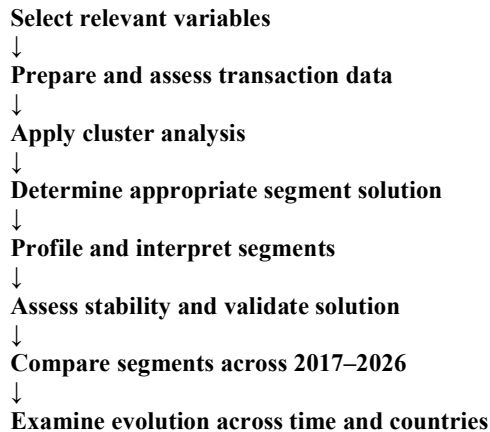
- Statistical quality of the cluster solution
- Separation between segments
- Internal consistency
- Segment size
- Interpretability
- Reproducibility or stability
- Consistency of segment characteristics across periods

The issue becomes especially important when examining the COVID-19 period. Changes in customer segment structure during the pandemic may reflect genuine changes in customer behaviour, but they may also be influenced by unusually different sample sizes, transaction patterns, or data characteristics. Robust validation is therefore necessary before interpreting such differences substantively.

The research proposal explicitly identifies **cluster validation and stability assessment** as part of the methodological framework.

Methodological Logic

The methodological logic developed in this section can therefore be summarised as:



This sequence is particularly important for the present dissertation because **customer segment evolution can only be interpreted meaningfully if the underlying segmentation is itself sufficiently valid, interpretable, and stable.**

2.6 Tourism Customer Behaviour

Tourism customer behaviour represents a central area of tourism research because tourism consumption is characterised by substantial heterogeneity among travellers. Customers differ not only in demographic characteristics but also in their motivations, expenditure, travel-party composition, destination choices, transport preferences, duration of travel, and desired experiences. Consequently, treating tourism customers as a homogeneous population may provide an incomplete understanding of tourism demand.

This heterogeneity creates a strong rationale for customer segmentation in tourism. Segmentation allows tourism businesses and researchers to identify groups of customers that demonstrate relatively similar characteristics or behavioural patterns. However, the relevance of segmentation extends beyond identifying differences between customers at a single point in time. Tourism behaviour can change as economic circumstances, technology, travel preferences, and external events change. The synopsis therefore positions customer segment evolution as a central issue in understanding changing tourism markets.

The present study applies this perspective specifically to the Nordic motorhome rental industry. The transaction database contains information relating to customer characteristics, booking information, and rental details. These data allow tourism customer behaviour to be examined through observed transactions rather than relying exclusively on stated intentions.

2.6.1 Customer Behaviour in Tourism

Customer behaviour in tourism encompasses the decisions and activities associated with the selection, purchase, consumption, and use of tourism products and services. Tourism consumption differs from many conventional forms of consumption because it involves mobility, time, destination choice, accommodation, transportation, experiences, and financial expenditure.

Tourism customers may therefore demonstrate substantial differences in how they plan and consume travel services. One customer may prefer a short, highly planned trip, whereas another may undertake a longer journey with greater flexibility. Similarly, customers may differ in their preferred accommodation, vehicle type, travel party, booking timing, and expenditure.

These differences are important because observable tourism behaviour can provide a basis for distinguishing customer groups. In the context of the present study, this perspective is particularly relevant because the motorhome rental transaction data contain behavioural information concerning **booking lead time, rental duration, season, vehicle category, expenditure, and repeat-customer status**. Customer characteristics include **age, gender, country of origin, and travel party composition**.

Tourism customer behaviour is also influenced by the wider environment in which travel decisions occur. Economic conditions, technological development, travel accessibility, changing consumer preferences, and unexpected disruptions can affect demand. The COVID-19 pandemic provides a particularly important example because restrictions on movement and concerns regarding health and safety altered tourism behaviour across many markets.

For this reason, tourism customer behaviour should not necessarily be regarded as fixed. The same customer population may demonstrate different behavioural patterns under different market conditions. This provides an important conceptual basis for examining customer segment evolution longitudinally.

2.6.2 Tourism Market Segmentation

Tourism market segmentation applies the broader principles of customer segmentation to the tourism context. Its purpose is to recognise heterogeneity among tourists and organise customers into groups that demonstrate meaningful similarities.

Tourism segmentation can be based on demographic, geographic, psychographic, and behavioural characteristics. However, the usefulness of each approach depends on the research objective and the information available. Demographic information can describe the composition of a tourism population, while behavioural information can provide evidence concerning actual travel and purchasing activities.

The present study places particular emphasis on **behavioural and transactional segmentation**. This is consistent with the available commercial database, which contains actual completed rental transactions and information relating to customer characteristics and rental behaviour.

Tourism segmentation is also more complex than simply assigning tourists to demographic categories. Tourists with similar demographic characteristics may have different motivations, expenditure levels, travel-party structures, preferred vehicle categories, or travel durations. Consequently, multidimensional segmentation can provide a more detailed representation of tourism customers.

The literature also indicates that tourism segmentation presents methodological challenges. A segmentation solution needs to be sufficiently meaningful and interpretable, and customer segments cannot automatically be assumed to be permanent or objectively existing categories. The synopsis specifically identifies segment stability and interpretability as important considerations in the proposed analysis.

For the present research, tourism market segmentation therefore provides the conceptual basis for identifying customer groups before examining whether those groups change across the 2017–2026 observation period.

2.6.3 Behavioural Characteristics of Tourism Customers

Behavioural characteristics provide information about **how tourism customers interact with tourism products and services**. They can include the timing of purchases, frequency of use, duration of consumption, expenditure, product selection, and other observable activities.

The relevance of behavioural characteristics is particularly strong in motorhome rental because the rental transaction contains several observable dimensions of customer behaviour.

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The research synopsis identifies:

- **Booking lead time**
- **Rental duration**
- **Season**
- **Vehicle category**
- **Expenditure**
- **Repeat-customer status**

as rental-behaviour variables. It also identifies:

- **Age**
- **Gender**
- **Country of origin**
- **Travel party composition**

as customer characteristics.

These variables provide complementary information. Booking lead time can indicate differences in planning behaviour, while rental duration provides information about the length of the customer's rental. Vehicle category can indicate differences in product selection, while expenditure provides a monetary dimension to customer behaviour. Season captures temporal differences in rental activity, and repeat-customer status provides information concerning previous engagement with the service.

Travel party composition is also relevant because motorhome travel can accommodate different forms of travel groups. Customers travelling as couples, families, or other group configurations may demonstrate different rental requirements and behaviours.

The importance of these variables lies in their **combined pattern**, rather than necessarily in any single variable. A meaningful customer segment may be characterised by a combination of several behavioural characteristics.

The study therefore uses behavioural characteristics as the basis for identifying customer groups and subsequently examining whether these groups change over time. This approach is consistent with the research proposal's emphasis on customer segments being formed through observable customer and rental characteristics rather than demographic variables alone.

2.6.4 Changing Tourism Customer Behaviour

Tourism customer behaviour is not necessarily static. Changes in technology, economic conditions, consumer lifestyles, travel preferences, and external disruptions can influence how customers plan, purchase, and consume tourism services.

Digitalisation has changed the way tourism customers search for information, compare alternatives, make bookings, and communicate with service providers. At the same time, changing lifestyles and consumer preferences have contributed to increased demand for different forms of tourism experiences and greater flexibility.

External disruptions can create more abrupt changes. The COVID-19 pandemic represents the most important disruption within the observation period of this study. The synopsis notes that the pandemic affected travel restrictions, health concerns, financial circumstances, and consumer priorities, resulting in substantial changes in tourism behaviour.

However, identifying a behavioural change during a disruption does not establish whether that change is permanent. This distinction is central to the present study. The research therefore examines customer segment

structures across **pre-pandemic, pandemic, and post-pandemic periods** to assess whether observed changes persisted after travel restrictions were lifted.

The longitudinal design is consequently important because it allows the study to distinguish between:

Short-term behavioural variation

and

Longer-term customer segment evolution.

2.7 Motorhome Tourism and Rental Industry

Motorhome tourism represents a distinctive form of tourism in which transportation and accommodation are combined within a single travel product. This creates a particular consumption context in which customers have considerable control over their mobility, itinerary, accommodation, and travel duration.

The motorhome rental industry is consequently relevant to customer segmentation because customers may differ substantially in how they use this form of tourism. The synopsis identifies motorhome travel as combining **accommodation, mobility, and tourism consumption**, with customers making interconnected decisions concerning destination, vehicle category, travel party, rental duration, season, and expenditure.

The sector also provides an appropriate context for longitudinal research because customer behaviour may develop as travel preferences and market conditions change.

2.7.1 Motorhome Tourism

Motorhome tourism can be understood as a form of travel in which a motorhome provides both transportation and accommodation. This characteristic differentiates motorhome travel from conventional tourism arrangements where transportation and accommodation are purchased separately.

The combination of mobility and accommodation provides customers with a degree of flexibility and independence. Travellers can modify routes, destinations, and overnight arrangements more easily than in tourism models based entirely on fixed accommodation.

This flexibility is relevant to customer segmentation because different customers may value different aspects of the motorhome experience. Some may prioritise flexibility and independence, while others may be more strongly associated with particular vehicle categories, travel durations, seasonal periods, or expenditure patterns.

The research synopsis identifies motorhome tourism as an appropriate context for examining customer segment evolution because customers make interconnected decisions concerning **destination, vehicle category, travel party, rental duration, season, and expenditure**.

The sector is therefore not treated simply as another accommodation market. Its combined mobility and accommodation characteristics create a distinctive behavioural environment for customer analysis.

2.7.2 Motorhome Rental as a Tourism Service

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Motorhome rental is a tourism service in which customers temporarily obtain access to a motorhome for travel purposes. Unlike conventional accommodation services, the rental product incorporates both a means of transportation and a place to stay.

This creates several dimensions of customer decision-making. Customers must select a vehicle category, determine the length of the rental, select a travel period, and decide when to make the booking. The transaction may therefore contain considerably more behavioural information than a simple accommodation booking.

The present research uses this characteristic as an analytical advantage. The database contains **booking and rental information**, allowing customer behaviour to be examined through completed commercial transactions.

The service is also characterised by relatively high-value and occasional purchases. The research synopsis notes that repeat rentals are relatively infrequent because motorhome rentals are typically high-value and occasional purchases. This characteristic has an important implication for the study: customer segment evolution is examined primarily at the **population level**, rather than through assumptions about continuous individual customer migration between segments.

2.7.3 Motorhome Rental Customer Behaviour

Motorhome rental customer behaviour can be examined through the observable characteristics of the rental transaction.

For the present study, these behaviours include:

Booking behaviour
→ booking lead time

Usage behaviour
→ rental duration

Timing behaviour
→ season

Product-selection behaviour
→ vehicle category

Economic behaviour
→ expenditure

Relationship behaviour
→ repeat-customer status

These behavioural dimensions are complemented by customer characteristics such as age, gender, country of origin, and travel party composition.

The combination is important because motorhome customers may differ simultaneously across several dimensions. For example, two customers may both rent during the same season but differ substantially in rental duration, expenditure, vehicle category, and booking lead time.

The purpose of behavioural analysis is therefore to identify **patterns of characteristics**, rather than simply ranking customers according to individual variables.

The longitudinal nature of the research then permits these patterns to be compared across years. The study can consequently investigate whether the customer population represented in the transactions demonstrates stable or changing behavioural structures.

2.7.4 Customer Segmentation in Motorhome Tourism

Customer segmentation in motorhome tourism remains a comparatively underdeveloped area of research when considered specifically from a longitudinal commercial transaction perspective.

The synopsis identifies this as an important empirical gap. Existing Nordic tourism research has concentrated more heavily on nature-based tourism, destination development, sustainability, entrepreneurship, and tourism experiences, while comparatively less attention has been directed towards longitudinal customer behaviour using commercial transaction data.

This creates a particular opportunity for the present research.

The study combines:

- A specialised tourism sector
- Actual commercial transaction data
- A nine-year observation period
- Three Nordic markets
- Behavioural customer segmentation
- An external disruption within the observation period

The research therefore contributes to motorhome tourism research by examining not merely the characteristics of motorhome customers but the **evolution of customer segment structures**.

The importance of this approach is reinforced by the synopsis's observation that motorhome rental research has relatively limited evidence concerning longitudinal commercial customer behaviour.

2.8 Nordic Tourism Context

The Nordic tourism context provides the geographical and market setting for the empirical research. The study focuses specifically on **Finland, Sweden, and Norway**, which are represented within the commercial transaction database.

Nordic tourism provides an appropriate setting for examining customer segment evolution because the region contains developed tourism markets with substantial domestic and international tourism activity. At the same time, tourism demand across the Nordic countries has been affected by changing travel behaviour and external disruptions.

The synopsis identifies existing Nordic tourism research as focusing primarily on areas such as **nature-based tourism, destination development, sustainability, entrepreneurship, and tourism experiences**. It also identifies a relative lack of longitudinal research examining customer behaviour through commercial transaction data.

The present research addresses this narrower customer-level perspective.

2.8.1 Tourism in the Nordic Region

Tourism represents an important economic and social activity within the Nordic region. The Nordic tourism environment includes substantial domestic travel as well as international tourism.

The **Nordic Council of Ministers'** report *Exploring Domestic Tourism in the Nordics* is particularly relevant to this study. According to the synopsis, more than **60% of registered overnight stays in Denmark, Finland, Norway, and Sweden before the COVID-19 pandemic were associated with domestic tourism**, while the importance of domestic tourism increased substantially during the pandemic. Following the pandemic, international tourism recovered while domestic tourism remained at a somewhat higher level than before the pandemic.

These developments demonstrate why customer behaviour should be considered within its wider market context.

For the present study, however, Nordic tourism is not examined as a general phenomenon. It provides the context within which customer transaction data from **Finland, Sweden, and Norway** are analysed.

2.8.2 Finland

Finland represents one of the three national markets included in the study.

The Finnish tourism context is relevant to the research because Finland forms part of the Nordic tourism system in which domestic and international tourism interact with changing travel preferences and external market conditions.

The present study does not attempt to provide a comprehensive analysis of Finnish tourism as a whole. Instead, Finland is examined specifically through the customer transaction data represented within the motorhome rental dataset.

The Finnish market therefore contributes to the study's cross-country comparison by providing one national context in which customer segment characteristics and their evolution can be examined.

The principal analytical question is not simply whether Finland differs from the other countries in overall tourism activity, but whether **customer segment structures and their development over 2017–2026 demonstrate country-level differences**.

2.8.3 Sweden

Sweden represents the second national market included in the empirical study.

As with Finland, the Swedish tourism context is relevant primarily because it provides a distinct national environment within the common commercial dataset. The inclusion of Sweden enables customer segment characteristics to be examined in relation to another Nordic market while maintaining a consistent overall research framework.

The study does not assume in advance that Swedish customers will form a fundamentally different segmentation structure. Instead, the empirical analysis will determine whether meaningful differences emerge in customer segment characteristics, composition, relative size, or development over time.

This approach is important because cross-country differences should be **identified through the transaction data rather than assumed from national characteristics**.

2.8.4 Norway

Norway represents the third national market in the study.

Norway is included within the same commercial transaction database as Finland and Sweden, enabling the study to compare customer segment evolution across the three markets.

The value of including Norway lies in the ability to investigate whether customer segment evolution is broadly consistent across the Nordic markets or whether particular patterns are associated with individual countries.

As with Finland and Sweden, the research does not impose predetermined conclusions concerning Norwegian customer behaviour. The country comparison forms an empirical component of the research questions and will be determined through the subsequent analysis.

2.8.5 Domestic and International Tourism in the Nordic Region

The distinction between domestic and international tourism is relevant to understanding the Nordic tourism environment.

The Nordic Council of Ministers' research indicates that domestic tourism represented a substantial share of registered overnight stays before the COVID-19 pandemic and became even more important during the pandemic. International tourism subsequently recovered, while domestic tourism remained somewhat above its pre-pandemic level.

This development is relevant to the present research because **country of origin** is one of the customer characteristics identified within the transaction database.

Country of origin can therefore provide an important dimension for profiling customer segments and examining whether customer populations differ across Finland, Sweden, and Norway.

However, country of origin should not be interpreted automatically as equivalent to domestic versus international tourism without appropriate operationalisation in the dataset. The empirical analysis should establish how the available country information is coded and how it should be interpreted.

This distinction is important for maintaining methodological accuracy.

2.9 External Disruptions and Tourism Behaviour

Tourism is particularly exposed to external disruptions because tourism consumption involves mobility, transportation, expenditure, and perceptions of safety.

The COVID-19 pandemic represents the most significant external disruption within the observation period of the present study. The pandemic affected tourism through travel restrictions, reduced mobility, health concerns, financial uncertainty, and changes in customer priorities.

However, the study does not treat COVID-19 as its principal research topic. Instead, it is treated as an **external disruption within a longer longitudinal period**. This distinction is fundamental to the theoretical positioning of the dissertation.

The research therefore asks how customer segment structures developed across the broader period and whether changes observed around the pandemic persisted after travel restrictions were lifted.

2.9.1 External Market Disruptions

External market disruptions are events or conditions outside the immediate customer transaction that can affect tourism demand and customer behaviour.

Examples relevant to tourism include:

- Major health crises
- Travel restrictions
- Economic uncertainty
- Changes in transportation availability
- Changes in fuel prices
- Inflation
- Exchange-rate movements
- Geopolitical uncertainty

The research synopsis specifically identifies **inflation, exchange rates, fuel prices, international flight connections, fleet composition, pricing, and booking systems** as contextual factors that may influence observed segment evolution. However, it also notes that these factors may not all be available as variables within the customer database.

This creates an important distinction between **contextual influence** and **measured causal effect**.

The present study can identify changes in customer segment structures using the transaction data, but it should not automatically attribute those changes to a particular external factor when that factor has not been directly measured.

2.9.2 COVID-19 and Tourism Behaviour

COVID-19 produced a major disruption to tourism activity. Travel restrictions, border controls, health concerns, uncertainty, and changes in household circumstances altered the conditions under which tourism consumption occurred.

Research cited in the synopsis indicates changes in tourism purchasing intentions and customer preferences during the pandemic. Pappas (2023) examined tourism purchasing intentions across 2019, 2020, and 2021, while Aschauer and Egger (2023) examined changes in tourists' values and holiday preferences. The synopsis reports increased attention to hygiene and safety and increased domestic travel during the pandemic period.

These studies provide important contextual evidence but also illustrate the distinction between **observing behaviour during a crisis** and understanding whether that behaviour persists afterwards.

For the present dissertation, COVID-19 therefore functions as a contextual marker within the longitudinal analysis rather than as an independent central research theme.

2.9.3 Changes in Travel Behaviour During COVID-19

The pandemic altered the conditions under which travel decisions were made.

The literature identified in the synopsis indicates increased attention to safety and hygiene and greater importance of domestic travel during the pandemic period.

Motorhome tourism provides an interesting context within this broader development because the form of travel combines accommodation and mobility and can offer travellers greater control over their travel environment. The synopsis specifically identifies **flexibility, privacy, and independence** as characteristics that became particularly attractive during the pandemic.

However, these observations do not establish that all motorhome customers changed their behaviour in the same way. This is precisely where segmentation becomes important.

A market-level change in demand may conceal different responses among different customer groups. Some segments may have increased in relative importance, others may have declined, while some may have changed their behavioural characteristics.

The present study therefore investigates the **segment-level structure of customer behaviour** rather than assuming that the entire customer population responded uniformly.

2.9.4 Post-Pandemic Tourism Behaviour

The recovery of tourism following COVID-19 has not necessarily represented a complete return to pre-pandemic conditions.

The synopsis reports that international tourism in Europe had generally returned to, and slightly exceeded, its pre-pandemic level by 2024, while recovery varied between countries and regions. Domestic tourism recovered earlier, while international tourism remained more exposed to mobility restrictions, geopolitical uncertainty, and higher travel costs.

The Nordic context provides further evidence of this uneven recovery. Domestic tourism remained somewhat higher than before the pandemic even as international tourism recovered.

These developments support the rationale for extending the observation period beyond the pandemic itself.

If analysis stopped during the pandemic, it would be impossible to establish whether the observed customer structure represented a temporary crisis response or a longer-term transformation.

The **2017–2026** dataset allows this distinction to be investigated.

2.9.5 Temporary and Persistent Behavioural Changes

One of the central issues in longitudinal tourism research is distinguishing between **temporary behavioural changes** and **persistent changes**.

A temporary change occurs when customer behaviour changes during a particular period but subsequently moves towards its previous pattern.

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A persistent change occurs when the altered behaviour remains evident after the conditions that initially produced the change have substantially changed.

This distinction is central to the present research. The synopsis explicitly states that the COVID-19 pandemic divides the dataset into **pre-pandemic, pandemic, and post-pandemic phases**, allowing the research to examine whether changes in customer segments were temporary or persisted after travel restrictions were lifted.

The longitudinal structure therefore provides three analytical reference points:

Pre-pandemic

→ baseline customer segment structure

Pandemic

→ disruption-period customer segment structure

Post-pandemic

→ subsequent customer segment structure

The comparison does not establish causality by itself. Instead, it provides evidence concerning the **temporal persistence of observed segment changes**.

This distinction is fundamental to the research because the dissertation is concerned with customer segment evolution rather than simply documenting the immediate impact of COVID-19.

2.10 Theoretical Foundations of the Study

The theoretical foundation of the study is derived from the intersection of **customer segmentation theory, behavioural segmentation, dynamic segmentation, and longitudinal customer analysis**.

The first theoretical foundation is market segmentation. Smith (1956) established the principle that markets can be divided into groups according to differences in demand, while Wedel and Kamakura (2000) developed the conceptual basis for different segmentation approaches.

The second foundation is **behavioural segmentation**, which focuses on observable customer actions rather than demographic characteristics alone. This is particularly relevant to the present research because the available dataset contains actual rental behaviour.

The third foundation is **dynamic customer segmentation**. Bassi (2016, 2017) and Kamakura (2013), as discussed in the synopsis, provide a basis for considering customer segments as potentially changing rather than necessarily stationary.

The fourth foundation is **longitudinal analysis**. The present research uses time as an explicit analytical dimension, with calendar year providing the basis for examining segment evolution from 2017 through 2026.

The theoretical logic can therefore be expressed as:

Customer Heterogeneity

↓

Customer Segmentation

↓

Behavioural & Transactional Characteristics

↓

Customer Segment Formation

↓

Segment Structure

↓

Time

↓

Segment Evolution

External market conditions, including COVID-19, are treated as **contextual influences** rather than predetermined causal explanations. The synopsis explicitly states that the conceptual framework does not assume direct causal relationships.

This is an important theoretical position because it prevents the study from making causal claims that cannot be supported by the observational transaction data.

2.11 Conceptual Framework

The conceptual framework establishes the principal constructs examined in the research and the expected relationships among them.

The framework is based on the assumption that customer segments are formed through combinations of **observable customer characteristics and rental-related characteristics** rather than demographic variables alone.

The transaction database provides the empirical foundation for these constructs. Customer characteristics include **age, country of origin, and travel party**, while rental-related variables include **booking lead time, rental duration, season, vehicle category, and expenditure**. The operational definition also identifies gender and repeat-customer status within the customer and rental dimensions.

The framework then introduces **calendar year** as the longitudinal dimension. Customer segment structures are examined across 2017–2026 to determine how their characteristics, composition, and relative size change.

COVID-19 and other external market conditions are positioned as contextual factors that may influence customer behaviour and therefore the observed segment structure.

Importantly, the framework does **not** assume that these contextual factors directly cause specific segment changes. This is consistent with the observational nature of the research.

2.11.1 Customer Characteristics

Customer characteristics represent observable attributes associated with the customers included in the transaction dataset.

The research synopsis identifies:

- **Age**
- **Gender**
- **Country of origin**
- **Travel party composition**

as customer characteristics.

These characteristics can be used to profile the customer segments identified through the segmentation analysis.

However, they should not automatically be treated as the sole basis of segmentation. The conceptual framework explicitly emphasises the importance of combining customer characteristics with rental-related characteristics.

This distinction is important because the central research interest concerns **customer behaviour and segment evolution**, rather than demographic profiling alone.

2.11.2 Rental Behaviour

Rental behaviour represents the observable ways in which customers interact with the motorhome rental service.

The research defines rental behaviour through:

- **Booking lead time**
- **Rental duration**
- **Season**
- **Vehicle category**
- **Expenditure**
- **Repeat-customer status**

These variables provide the behavioural foundation for the segmentation analysis.

The conceptual framework assumes that combinations of these behavioural characteristics may differentiate customer groups. For example, customers may demonstrate different patterns in booking timing, rental duration, vehicle selection, and expenditure.

The longitudinal component then examines whether these behavioural profiles remain consistent or change across the study period.

2.11.3 Customer Segment Formation

Customer segment formation represents the analytical process through which customers are grouped according to similarities in their observable characteristics and behaviours.

The research proposes **cluster analysis** as the principal method for identifying customer segments. Cluster analysis is appropriate because it enables groups to be identified directly from observed customer behaviour without requiring all categories to be predetermined in advance.

The proposed analytical sequence is:

Customer Characteristics + Rental Behaviour
↓
Cluster Analysis
↓
Candidate Customer Segments
↓
Validation & Stability Assessment
↓
Segment Profiles

This process ensures that segment formation precedes the longitudinal analysis of segment evolution.

2.11.4 Time and Customer Segment Evolution

Time represents a central construct within the conceptual framework.

The study covers **2017–2026**, allowing customer segment structures to be compared across multiple years. The objective is to identify changes in:

- Segment characteristics
- Segment composition
- Relative segment size
- Segment structure

The research therefore treats **calendar year as the longitudinal dimension**.

The conceptual relationship is:

Customer Segment Structure at Time 1

→ **Change over Time**

→ **Customer Segment Structure at Time 2**

Repeated across the study period, this enables the identification of longer-term patterns.

Importantly, customer segment evolution is defined at the **population level**. Because individual customers cannot reliably be followed throughout the entire period, the study does not assume that every observed segment change represents individual customers moving between segments.

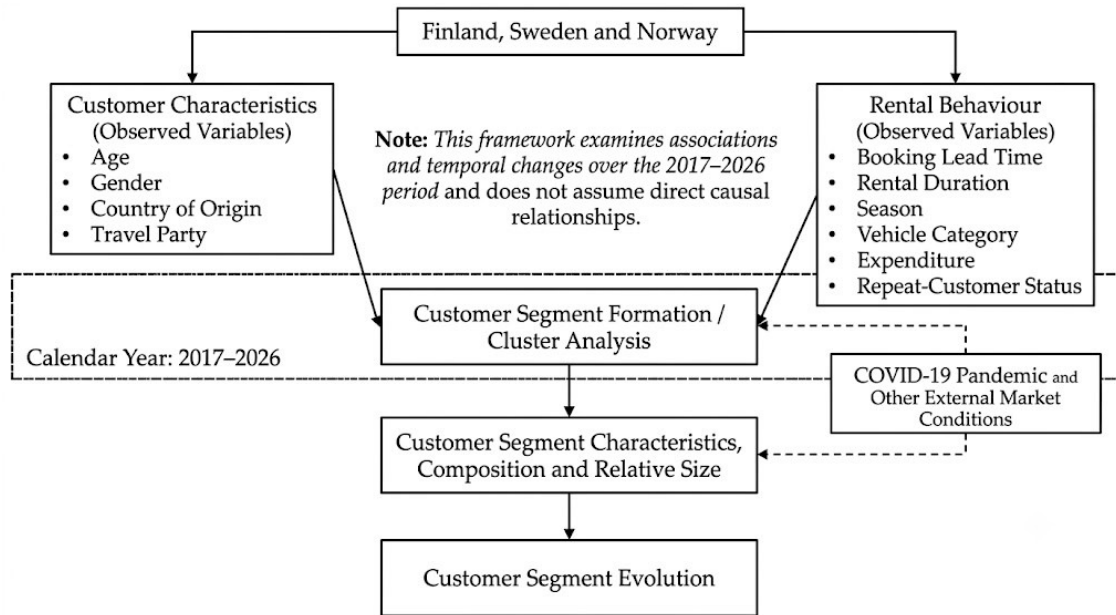
2.11.5 External Disruption as Context

External disruption represents the contextual dimension of the conceptual framework.

The primary disruption examined is the **COVID-19 pandemic**, although other market conditions may also be relevant to interpreting observed changes.

The pandemic is positioned within the framework as a contextual factor that may influence customer behaviour and, consequently, observed customer segment structures.

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The conceptual position is therefore:

External Disruption



Potential Change in Customer Behaviour



Observed Customer Segment Structure

However, the arrows should not be interpreted as establishing direct causality. The synopsis explicitly states that the framework does not assume direct causal relationships and recognises that factors such as inflation, exchange rates, fuel prices, international flight connections, and company-level decisions may also influence observed behaviour.

2.12 Critical Review of Existing Literature

The literature reviewed in this chapter demonstrates that customer segmentation is an established field with substantial theoretical and methodological development. Traditional segmentation provides a basis for recognising customer heterogeneity, while behavioural and data-driven approaches provide increasingly sophisticated ways of identifying differences in customer behaviour.

However, the literature also reveals several limitations.

First, much segmentation research continues to provide a **static representation of customer groups**. Such approaches are useful for describing customers at a particular point in time but provide limited evidence concerning how customer segment structures develop over several years.

Second, research on dynamic segmentation exists, but the synopsis indicates that such research is concentrated particularly in **financial services, telecommunications, and e-commerce**. Although the methods are relevant, their findings cannot simply be transferred to tourism because tourism involves distinctive patterns of mobility, experience consumption, seasonality, and external disruption.

Third, tourism segmentation research frequently relies on **surveys, interviews, and destination-level analyses**, whereas comparatively little attention has been given to longitudinal commercial transaction data. This is particularly apparent within the Nordic motorhome rental context.

Fourth, COVID-19-related research has documented changes in tourism behaviour during the pandemic, but comparatively less attention has been directed towards whether customer segment structures changed over a longer period **before, during, and after the disruption**.

Fifth, segmentation methodology itself requires careful treatment. Cluster analysis can identify statistical groupings, but segment interpretability and stability must be assessed before those groups can be treated as meaningful customer segments. The synopsis therefore proposes evaluation of alternative clustering solutions, statistical criteria, practical interpretability, and segment stability.

Taken together, the literature suggests that the principal unresolved issue is not whether customer segmentation is useful. Rather, the unresolved issue concerns **how customer segments develop over time within a specialised tourism market and whether those developments can be observed using actual commercial transaction data**.

2.13 Research Gap

The literature reviewed in this chapter establishes a clear research gap consisting of **three connected limitations**.

Gap 1: Limited Longitudinal Analysis of Customer Segments

Much existing customer segmentation research produces a static representation of customers. Although longitudinal studies have examined behavioural changes during COVID-19, comparatively limited attention has been given to the **long-term evolution of customer segment structures before, during, and after the disruption**.

Gap 2: Dynamic Segmentation Is Concentrated Outside Tourism

Research on dynamic customer segmentation has developed in areas such as financial services, telecommunications, and e-commerce. These studies provide useful methodological insights, but their findings cannot automatically be transferred to tourism because tourism customers operate within a substantially different consumption environment.

Gap 3: Limited Combination of Longitudinal Commercial Data and Tourism Segmentation

Tourism segmentation research has rarely combined:

Long observation period

+

Actual commercial transaction data

+

Cross-country comparison

+

External disruption within the same dataset

The present study addresses this combination by examining approximately **21,000 completed motorhome rental transactions from 2017–2026 across Finland, Sweden, and Norway**.

The research gap can therefore be summarised as:

There is limited empirical evidence explaining how customer segment structures evolve over an extended period within a specialised tourism sector, particularly through the use of actual commercial transaction data across multiple Nordic countries and across pre-pandemic, pandemic, and post-pandemic periods.

The present study responds to this gap by identifying customer segments using behavioural and transactional characteristics and comparing their **characteristics, relative sizes, and composition across time and between Finland, Sweden, and Norway.**

2.14 Positioning of the Present Study

The present study is positioned at the intersection of four research areas:

Customer Segmentation

→ identification of heterogeneous customer groups

Customer Analytics

→ use of transaction data to examine observable customer behaviour

Tourism and Motorhome Research

→ application within a specialised tourism service

Longitudinal Analysis

→ examination of segment development across 2017–2026

The study's distinctive position arises from bringing these four areas together.

Unlike conventional segmentation research, the study does not stop after identifying customer groups.

Unlike conventional tourism research, it does not rely primarily on destination-level analysis, interviews, or one-time surveys.

Unlike pandemic-specific research, it does not treat COVID-19 as the central object of investigation.

Instead, the study uses COVID-19 as a **contextual disruption within a longer period of observation.**

The empirical positioning can therefore be expressed as:

~21,000 Completed Motorhome Rental Transactions

2017–2026

Finland | Sweden | Norway

↓

Behavioural & Transactional Segmentation

↓

Customer Segment Identification

↓

Segment Characteristics + Composition + Relative Size

↓

Longitudinal Comparison

↓

Pre-COVID | COVID-19 | Post-COVID

↓

Cross-Country Comparison

↓

Customer Segment Evolution

This positioning is consistent with the synopsis, which describes the expected theoretical contribution as applying a longitudinal perspective to customer segmentation in an under-researched tourism sector and the managerial contribution as supporting businesses in evaluating existing segments and identifying emerging or declining customer groups.

The study therefore contributes primarily by **connecting customer segmentation with longitudinal analysis of actual commercial transaction behaviour within Nordic motorhome tourism**.

2.15 Chapter Summary

This chapter reviewed the theoretical and empirical literature underlying the study of customer segment evolution in the Nordic motorhome rental industry.

The chapter first examined **tourism customer behaviour**, establishing that tourism customers are heterogeneous in their characteristics, purchasing behaviour, travel patterns, and consumption preferences. It then examined tourism market segmentation and highlighted the importance of behavioural characteristics for understanding differences between tourism customers.

The chapter subsequently focused on **motorhome tourism and the motorhome rental industry**. Motorhome travel was established as a distinctive tourism form combining accommodation, mobility, and tourism consumption. The specific relevance of motorhome rental to customer segmentation was established through its observable dimensions of booking behaviour, rental duration, season, vehicle category, expenditure, travel party, and other customer characteristics.

The discussion then moved to the **Nordic tourism context**, focusing specifically on Finland, Sweden, and Norway. Existing Nordic tourism research was considered, alongside evidence concerning domestic and international tourism. The review identified that Nordic tourism research has addressed areas such as nature-based tourism, destination development, sustainability, entrepreneurship, and tourism experiences, while comparatively less attention has been directed towards longitudinal customer behaviour using commercial transaction data.

The chapter then examined **external disruptions and tourism behaviour**, with particular attention to COVID-19. The pandemic was established as an important contextual disruption within the study period but not as the central research topic. The literature indicates substantial changes in tourism behaviour during the pandemic, but the persistence of these changes remains an important issue requiring longitudinal examination.

The chapter subsequently established the **theoretical foundations and conceptual framework** of the study. Customer characteristics and rental behaviour provide the basis for customer segment formation; calendar year provides the longitudinal dimension; and COVID-19 and other external market conditions provide contextual influences. The framework does not assume direct causal relationships.

Finally, the critical review established three connected research gaps: the limited longitudinal examination of customer segment structures, the concentration of dynamic segmentation research outside tourism, and the limited combination of long-term commercial transaction data, cross-country tourism analysis, and external disruption within a single empirical setting.

The chapter therefore establishes the academic basis for the empirical investigation that follows. The present study addresses the identified gap by examining approximately **21,000 completed motorhome rental transactions covering 2017–2026 across Finland, Sweden, and Norway**, using behavioural and transactional characteristics to identify customer segments and examining how their characteristics, composition, and relative size evolve over time.

CHAPTER 3 — RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology adopted for the study titled “**Customer Segment Evolution in the Nordic Motorhome Rental Industry: A Longitudinal Analysis of Customer Transaction Data (2017–2026)**”. The methodological framework is designed to investigate how customer segments have evolved in the Nordic motorhome rental industry between 2017 and 2026, with particular attention to changes in customer segment characteristics, composition, and relative size.

The study is based on approximately **21,000 completed motorhome rental transactions** provided by Touring Cars. The dataset covers the period from **2017 to 2026** and includes transactions from **Finland, Sweden, and Norway**. The data were generated through normal commercial operations and therefore provide evidence of actual rental behaviour rather than customer intentions obtained through surveys.

The research adopts a **quantitative longitudinal research design** based on secondary customer transaction data. It is primarily **descriptive and comparative**, while also incorporating an **exploratory component through customer segmentation**. The study is observational because the researcher analyses existing commercial transaction data without manipulating the research setting.

The longitudinal nature of the study is particularly important because the research is concerned with changes in customer segment structures rather than a single-period description of customers. The analysis considers the period before, during, and after the COVID-19 disruption to determine whether changes observed during the pandemic persisted after travel restrictions were lifted.

A further methodological consideration concerns the level of longitudinal analysis. The available database does not allow every individual customer to be reliably followed throughout the entire study period because transactions may have been recorded using different names or contact information, while repeat rentals are relatively infrequent. Consequently, the study focuses primarily on **changes in the structure and composition of customer segments across successive annual customer populations**, rather than individual customer migration between segments.

3.2 Research Philosophy

The research philosophy establishes the underlying orientation through which the empirical evidence is examined. For the present study, the methodological orientation is centred on the systematic analysis of **observable customer behaviour recorded through commercial transactions**.

The study does not collect customers' opinions, attitudes, motivations, or intentions as its primary source of evidence. Instead, it uses completed rental transactions generated through the normal operations of Touring Cars. This makes an empirical, quantitative orientation appropriate because the research seeks to identify measurable patterns within customer and rental data and examine how those patterns develop over time.

The philosophical position is also reflected in the distinction between **observed changes and causal explanations**. The study seeks to identify how customer segment structures changed during the 2017–2026 period, including changes occurring around the COVID-19 pandemic. However, the research does not assume that COVID-19 directly caused every observed change.

This distinction is important because the synopsis recognises that changes in **fleet composition, pricing, booking practices, and booking systems** may also have influenced customer behaviour and observed segment structures.

Accordingly, the research philosophy supports an approach in which:

- customer behaviour is examined through observable transaction evidence;
- measurable patterns are identified using quantitative analysis;
- customer segments are examined as potentially changing structures;
- differences across years and countries are systematically compared; and
- interpretations remain within the evidential limits of the observational dataset.

This approach is appropriate for the research question because the study seeks to establish **patterns of customer segment evolution**, rather than to experimentally determine the causal effect of a particular factor.

3.3 Research Approach

The study adopts a **quantitative research approach** based on secondary customer transaction data.

The choice of a quantitative approach follows directly from the nature of the research problem. The study seeks to examine customer segment characteristics and determine how these characteristics, together with segment composition and relative size, change between 2017 and 2026. These objectives require structured information that can be systematically classified, measured, compared, and statistically analysed.

The research approach is based on the following progression:

Commercial Customer Transaction Data

↓

Data Preparation

↓

Description of Customer Population

↓

Identification of Customer Segments

↓

Comparison of Segment Structures

↓

Analysis of Changes Over Time

↓

Comparison Across Finland, Sweden and Norway

The approach contains an exploratory element because the customer segments are not completely predetermined. Instead, the study proposes identifying customer groups through **cluster analysis based on behavioural and transactional variables**.

Thus, the research combines a clearly specified research framework with an exploratory procedure for discovering customer groups within the transaction data.

3.4 Research Design

The research design specifies the overall structure through which the research questions will be addressed.

The present study adopts a **quantitative longitudinal research design based on secondary customer transaction data**. The research is **primarily descriptive and comparative**, while also incorporating **exploratory elements through customer segmentation**. It is further characterised as **observational**, because it analyses existing commercial transactions without manipulating the research setting.

This combination is directly appropriate to the central purpose of the dissertation.

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A conventional cross-sectional design could provide a description of customers at one point in time. However, the present study asks how customer segments **evolved between 2017 and 2026**. The longitudinal component therefore provides the temporal dimension required to address the central research question.

The research design can be summarised as follows:

Research-design element	Application in the study
Quantitative	Analysis of structured customer transaction data
Longitudinal	Examination of customer segment structures from 2017–2026
Secondary-data based	Use of existing Touring Cars reservation data
Observational	No manipulation of customer behaviour or research setting
Descriptive	Description of customer and segment characteristics
Comparative	Comparison across years, periods and countries
Exploratory	Identification of customer groups through segmentation

The following subsections explain each component in greater detail.

3.4.1 Quantitative Research Design

The quantitative research design is based on the systematic analysis of structured customer transaction information.

The empirical dataset consists of approximately **21,000 completed motorhome rental transactions** covering Finland, Sweden, and Norway between 2017 and 2026.

The quantitative design enables customer and rental characteristics to be represented as measurable variables and subsequently compared between customer segments, years, and countries.

The research synopsis identifies customer characteristics as including **age, gender, country of origin, and travel party composition**. Rental behaviour includes **booking lead time, rental duration, season, vehicle category, expenditure, and repeat-customer status**.

These variables provide the empirical basis for describing the customer population and identifying groups with similar behavioural and transactional characteristics.

The quantitative design is therefore appropriate because the research questions require systematic examination of **differences and changes in customer segment structures** rather than primarily interpretive accounts of individual customer experiences.

3.4.2 Longitudinal Research Design

The longitudinal design is a central feature of the research.

The study examines customer transaction data across the period **2017–2026**, allowing customer segment structures to be compared over multiple years. The purpose is to move beyond a static representation of customers and examine how customer segments change under changing market conditions.

The longitudinal design allows the study to examine:

- customer segment structures in different years;
- changes between 2017 and 2026;

- changes during the COVID-19 period;
- customer segment structures after the pandemic; and
- whether pandemic-period changes persisted.

The synopsis specifically frames the pandemic as an **external disruption within the longer observation period** rather than as the primary subject of the research.

The longitudinal approach therefore allows the research to distinguish conceptually between a change occurring during a particular period and a change that remains evident in the post-pandemic period.

However, the longitudinal design should not be interpreted as an individual-level panel study. The synopsis explicitly states that individual customers cannot always be reliably followed throughout the study period. Consequently, the research focuses primarily on **population-level customer segment evolution**.

3.4.3 Observational Research Design

The study adopts an **observational research design** because the researcher analyses existing commercial transaction data without manipulating the research setting.

The transactions were generated through normal business operations. Customers independently made their rental decisions, including decisions concerning booking, rental duration, vehicle selection, and other aspects of the rental.

The researcher therefore observes behaviour that has already occurred rather than assigning customers to experimental conditions.

This provides an important empirical advantage because the data reflect **actual completed rental behaviour instead of intentions collected through surveys**.

At the same time, the observational design places limitations on causal interpretation.

For example, if customer segment characteristics changed during the COVID-19 period, the analysis can identify that temporal change but cannot automatically establish that the pandemic alone produced it. Other market and organisational conditions may have contributed to the observed change.

The synopsis specifically notes that **fleet composition, pricing, booking practices, and product offerings** may have changed during the study period and could have influenced customer behaviour.

The observational design is therefore appropriate for identifying **patterns, differences, and temporal developments**, while causal claims must remain appropriately limited.

3.4.4 Descriptive and Comparative Orientation

The research is primarily **descriptive and comparative**.

The descriptive component establishes the characteristics of the customer population and provides an empirical overview of the main variables contained in the dataset. The proposed descriptive analysis includes variables such as **customer origin, travel party, booking lead time, rental duration, season, vehicle category, and expenditure**.

Once customer segments have been identified, the comparative component examines how their structures differ across:

- customer segments;
- individual years;
- the broader 2017–2026 period;
- pre-pandemic and pandemic periods;
- pandemic and post-pandemic periods; and
- Finland, Sweden, and Norway.

The comparison of countries is particularly important because one of the study's research questions asks:

How does customer segment evolution differ between the Nordic countries?

The comparative orientation therefore provides the basis for moving from description towards interpretation of customer segment evolution.

3.4.5 Exploratory Component

The research incorporates an **exploratory component through customer segmentation**.

The customer segments are not entirely predefined before the analysis. Instead, the study proposes identifying customer groups using **behavioural and transactional variables**.

Cluster analysis is proposed because it enables customer groups to be identified directly from observed customer behaviour without requiring predefined categories.

The exploratory component will therefore operate within the following methodological sequence:

Behavioural and Transactional Data

↓

Cluster Analysis

↓

Potential Customer Groups

↓

Evaluation of Alternative Solutions

↓

Segment Stability Assessment

↓

Interpretable Customer Segments

The exploratory nature is therefore specifically related to **discovering the structure of the customer population**.

It does not mean that the overall study lacks a predefined direction. The research objectives, research questions, study period, geographical scope, and conceptual definitions are established in advance. The exploratory component concerns how the customer groups within those boundaries are identified.

This distinction is important because it ensures that the study remains aligned with its central research question while allowing the actual transaction data to reveal the customer segment structures.

3.5 Research Context and Study Setting

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The present study is situated within the **Nordic motorhome rental industry** and focuses specifically on **Finland, Sweden, and Norway**. This setting is central to the research because the study seeks to understand how customer segments develop within a specialised tourism service across different national markets and over an extended period.

The research context combines three important dimensions: **industry, geography, and time**. At the industry level, the study focuses on motorhome rental, a tourism service in which transportation and accommodation are integrated into a single consumption experience. At the geographical level, the study examines three Nordic countries—Finland, Sweden, and Norway. At the temporal level, it analyses completed rental transactions covering **2017–2026**.

This combination provides the foundation for examining customer segment evolution rather than merely describing the characteristics of motorhome rental customers at a single point in time.

The choice of the Nordic context is also consistent with the research gap identified in the study. Existing Nordic tourism research has addressed areas such as **nature-based tourism, destination development, sustainability, entrepreneurship, and tourism experiences**, while comparatively limited attention has been directed towards the longitudinal analysis of customer behaviour using commercial transaction data.

The present study addresses this narrower customer-level perspective by examining approximately **21,000 completed motorhome rental transactions** from Touring Cars.

Importantly, the study setting should not be interpreted as representing the entire Nordic motorhome rental market. The empirical observations originate from **one commercial rental company**, meaning that the research examines the customer population represented within the Touring Cars database. This provides a consistent organisational setting for comparison but also establishes an important boundary around the generalisability of the findings.

The study setting can therefore be represented as:

Nordic Motorhome Rental Industry → Touring Cars → Finland, Sweden and Norway → Completed Rental Transactions → 2017–2026 → Customer Segment Evolution

The geographical and temporal boundaries are deliberately aligned with the research questions, particularly the question concerning whether customer segment evolution differs between the three Nordic countries.

3.5.1 Nordic Motorhome Rental Industry

Motorhome rental provides a distinctive context for studying customer behaviour because the service combines **mobility, transportation, and accommodation** within a single rental product. Unlike conventional tourism services in which transportation and accommodation may be purchased separately, motorhome rental requires customers to make interconnected decisions about the vehicle, duration, travel period, booking timing, and expenditure.

This characteristic creates several observable dimensions of customer behaviour that are suitable for quantitative segmentation.

Within the research framework, customer characteristics include:

- **Age**
- **Gender**
- **Country of origin**
- **Travel party composition**

while rental behaviour includes:

- **Booking lead time**
- **Rental duration**
- **Season**
- **Vehicle category**
- **Expenditure**
- **Repeat-customer status.**

The combination of these dimensions allows the research to move beyond a simple demographic description of motorhome customers. A customer segment can instead be understood through a combination of **who the customers are and how they use the rental service.**

This is particularly important for the present research because the central analytical concept is **customer segment evolution**. The study is not limited to determining which types of customers exist. It seeks to determine whether the characteristics, composition, and relative size of those customer groups change across the 2017–2026 period.

The motorhome rental industry also provides an appropriate setting for examining behavioural change because customer demand may respond to changes in tourism conditions, economic circumstances, travel preferences, operational practices, and external disruptions.

The COVID-19 pandemic is particularly relevant in this regard because it occurred within the study period. However, the pandemic is treated as an **external disruption within the longitudinal setting**, rather than as the sole explanation for changes in customer behaviour.

Another important characteristic of the industry is the relatively occasional nature of motorhome rental. The research synopsis notes that repeat rentals are relatively infrequent because motorhome rental represents a **high-value and occasional purchase.**

This has a direct methodological consequence. The study does not assume that each individual customer can be followed continuously from 2017 to 2026. Instead, the research focuses on **changes in customer segment structures at the population level.**

Thus, the motorhome rental industry is not simply the setting in which the research happens to take place. Its characteristics directly influence the **unit of analysis, segmentation strategy, and interpretation of longitudinal change.**

3.5.2 Finland

Finland is one of the three national markets forming the geographical scope of the study.

Its inclusion enables the research to examine customer segment characteristics and their evolution within one Nordic market while subsequently comparing those patterns with Sweden and Norway.

The Finnish transactions are analysed using the same overall methodological framework as the transactions from the other two countries. This consistency is important because the research seeks to determine whether observed differences reflect variations in customer segment structure rather than differences in analytical treatment.

Finland also contributes to the examination of the customer-origin dimension. **Country of origin** is included among the customer characteristics identified within the research framework.

However, the study does not begin with an assumption that Finnish customers belong to a particular customer segment or display a predetermined behavioural pattern. Such conclusions are reserved for the empirical analysis.

The role of Finland in the methodology is therefore threefold:

1. It constitutes one of the three geographical markets in the dataset.
2. It contributes to the longitudinal analysis covering 2017–2026.
3. It forms one component of the cross-country comparison of customer segment evolution.

The Finnish market should therefore be understood as an **empirical component of the comparative research design**, rather than as a separately investigated national tourism case.

3.5.3 Sweden

Sweden constitutes the second national market within the study setting.

The Swedish transactions form part of the same commercial dataset and are examined using the same conceptual definitions, analytical framework, and longitudinal period as the Finnish and Norwegian transactions.

The inclusion of Sweden is important because the study seeks to determine whether customer segment evolution is consistent across the Nordic markets or whether distinct country-level patterns emerge.

The analysis will therefore consider whether Swedish customer segments differ in terms of their:

- characteristics;
- behavioural profiles;
- composition;
- relative size; and
- development over time.

However, these differences are not predetermined. The methodology deliberately allows the empirical transaction data to determine whether meaningful differences exist.

Sweden consequently serves as an important **comparative market within the longitudinal design**, enabling the study to move beyond a single-country analysis.

3.5.4 Norway

Norway constitutes the third national market included in the study.

Its inclusion completes the three-country Nordic comparison and enables customer segment evolution to be examined across Finland, Sweden, and Norway within the same broader commercial research setting.

The Norwegian transactions contribute to both dimensions of the research:

Temporal dimension:
2017–2026

Geographical dimension:

Finland–Sweden–Norway

This makes Norway important not simply as another data source, but as part of the comparative framework through which the research investigates whether customer segment development is **common across the Nordic context or differentiated by country**.

As with Finland and Sweden, the methodology does not assume in advance that Norwegian customers constitute particular segments. Segment characteristics and differences will be established through the analysis of the transaction data.

The three-country design therefore provides a stronger basis for comparison than a single-country study while remaining within a common commercial setting.

3.6 Data Source

The empirical foundation of this research is **secondary commercial customer transaction data provided by Touring Cars**.

The dataset contains approximately **21,000 completed motorhome rental transactions** covering the period **2017–2026** and the three countries of **Finland, Sweden, and Norway**.

The use of this dataset is fundamental to the methodological design because the research is concerned with **actual customer behaviour recorded through completed rental transactions**.

Rather than asking customers what they intend to do or what they believe they might do, the dataset provides information generated when customers actually booked and completed motorhome rentals.

This makes the data particularly relevant to the study's emphasis on **transactional and behavioural customer segmentation**.

The data source also provides the temporal depth necessary for the longitudinal component of the research. A single year's transactions would allow customer segmentation but would not adequately address the central question of how customer segments evolved between 2017 and 2026.

The commercial dataset therefore provides three essential characteristics required by the research:

Behavioural evidence + longitudinal coverage + cross-country coverage

At the same time, the source establishes important boundaries. Because the data were originally collected for commercial reservation purposes, the researcher is restricted to the variables recorded by the organisation. The dataset therefore cannot automatically provide information concerning psychological motivations, attitudes, satisfaction, or other characteristics that were not part of the reservation process.

This limitation is consistent with the study's deliberate focus on **behavioural customer segmentation using commercial transaction data rather than psychographic or qualitative segmentation**.

3.6.1 Secondary Customer Transaction Data

The research uses **secondary data** because the transaction records were originally generated for commercial rather than academic purposes.

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The data were produced through Touring Cars' routine business operations and subsequently made available for the present research.

The most important methodological advantage of these data is their basis in **actual completed rental activity**. This enables the study to analyse observed customer behaviour rather than relying primarily on self-reported behavioural intentions.

The transaction data contain information that corresponds directly with the study's operational framework. Customer characteristics include **age, gender, country of origin, and travel party composition**, while rental behaviour includes **booking lead time, rental duration, season, vehicle category, expenditure, and repeat-customer status**.

These characteristics provide the empirical foundation for customer segmentation.

The secondary-data approach also enables the research to examine customer behaviour retrospectively across a long period. Collecting equivalent primary data from approximately nine years of motorhome rental activity would not have been practically feasible for the present study.

However, secondary data impose a clear constraint: **the researcher cannot control what information was originally collected**.

Consequently, the study is intentionally limited to customer and rental characteristics available in the commercial data. This is one reason why the research focuses on behavioural and transactional segmentation rather than attempting to construct psychographic customer profiles.

3.6.2 Commercial Reservation Data

The specific source of the secondary data is the **Touring Cars reservation handling database**.

The records were generated through the company's normal commercial reservation activities and consist of completed rental transactions.

This distinction between **commercial data generation** and **academic data analysis** is methodologically important.

The data were not created to confirm the hypotheses of this dissertation. They were generated independently through actual customer transactions. This reduces the possibility that the observations were shaped specifically around the researcher's expectations.

Before analysis, Touring Cars will anonymise and prepare the data. The researcher will then conduct an additional review focusing on **completeness, consistency, and potential recording errors**.

The commercial nature of the data also means that changes in the business environment need to be considered when interpreting longitudinal patterns.

For example, the synopsis identifies potential changes in:

- fleet composition;
- pricing;
- booking practices;
- booking systems; and
- product offerings.

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These factors may influence customer behaviour and the resulting segment structures over time.

Therefore, the study interprets changes in customer segments as **observed longitudinal developments**, rather than automatically attributing them to changes in customer preferences or to COVID-19 alone.

This distinction strengthens the methodological credibility of the study by separating what the transaction data can demonstrate from what would require additional causal evidence.

3.6.3 Study Period: 2017–2026

The study covers the period **2017–2026**.

The selection of this period is central to the research design because the dissertation investigates **customer segment evolution**, which requires observations across multiple time points.

A single-year dataset could identify customer segments but could not adequately establish whether those segments changed. The 2017–2026 period instead provides a longitudinal basis for examining the development of customer segment characteristics, composition, and relative size.

The period also incorporates the COVID-19 disruption within a broader temporal sequence:

Period	Methodological relevance
2017–2019	Pre-pandemic customer segment structure
2020–2021	Period of major COVID-19 disruption
2022–2026	Post-pandemic/recovery period

The exact classification of individual years should ultimately follow the operational treatment established in the empirical analysis.

The key methodological purpose is to compare customer segment structures **before, during, and after the disruption**.

This enables the study to investigate whether changes observed around COVID-19 were:

- **temporary**, with customer segment characteristics subsequently moving towards earlier patterns;
- **persistent**, with changes remaining visible after the disruption; or
- **part of a broader longer-term evolution** already occurring across the study period.

The synopsis explicitly identifies the pandemic as a useful temporal division within the dataset and states that the study will examine whether behavioural changes observed during the pandemic persisted after travel restrictions were lifted.

The 2017–2026 period therefore performs a much more important methodological function than simply defining the dates of the dataset. It provides the **temporal structure required to distinguish a static customer profile from customer segment evolution**.

Overall Data-Source Structure

Dimension	Specification
Industry context	Nordic motorhome rental
Organisation providing data	Touring Cars
Data type	Secondary commercial transaction data
Unit of observation	Completed motorhome rental transaction

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Approximate transaction volume	21,000
Geographical coverage	Finland, Sweden and Norway
Temporal coverage	2017–2026
Primary analytical purpose	Customer segmentation and segment evolution
Customer focus	Characteristics and rental behaviour
Longitudinal focus	Changes in segment structure, composition and relative size
COVID-19 role	External disruption within the observation period
Level of longitudinal interpretation	Primarily population/segment level

Important: I have intentionally kept the **actual transaction distribution by country and year out of this section** until the spreadsheets are examined directly. The synopsis supports the overall figure of approximately 21,000 transactions and the three-country/2017–2026 coverage, but it does not support inventing the Finland–Sweden–Norway or year-by-year counts. Those figures should come directly from your sheets.

3.7 Population and Sample

The population and sample for this study are derived from the **Touring Cars motorhome rental transaction dataset**. The empirical data comprise **16,356 recorded rental transactions covering the years 2017–2025**. The records contain customer, booking, rental and geographical information that enables the identification and comparison of customer groups over time.

The annual transaction distribution demonstrates that the number of observations varies across the study period. The dataset contains **1,712 transactions in 2017, 2,173 in 2018, 2,290 in 2019, 1,257 in 2020, 1,247 in 2021, 1,951 in 2022, 1,675 in 2023, 1,898 in 2024, and 2,153 in 2025**, producing a total of **16,356 transactions**.

Table 3.1

Distribution of Rental Transactions by Year

Year	Number of Transactions	Percentage of Total
2017	1,712	10.47%
2018	2,173	13.28%
2019	2,290	14.00%
2020	1,257	7.69%
2021	1,247	7.63%
2022	1,951	11.93%
2023	1,675	10.24%
2024	1,898	11.60%
2025	2,153	13.16%
Total	16,356	100.00%

The distribution indicates a substantial change in transaction volume during the observation period. The number of transactions increased between 2017 and 2019, reaching the highest observed annual level of **2,290 transactions in 2019**. This was followed by a marked reduction in 2020 and 2021, when the dataset recorded **1,257 and 1,247 transactions**, respectively. Transaction volume subsequently increased to **1,951 in 2022**, although it declined to 1,675 in 2023 before increasing again to 1,898 in 2024 and 2,153 in 2025.

The data therefore provide a meaningful longitudinal structure for examining customer segment evolution. Importantly, the analysis will not interpret changes in the total number of transactions alone as evidence of segment evolution. Changes in **segment composition, behavioural characteristics and relative segment size** will also be examined.

The transaction records additionally contain an **International/Local classification** and a **Direct/Agent classification**, providing an important dimension for describing the composition of the observed customer population.

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Across all 16,356 transactions, **12,781 are classified as International and 3,575 as Local**. International transactions therefore constitute approximately **78.14%** of the dataset, while Local transactions represent approximately **21.86%**.

Table 3.2

International/Local and Direct/Agent Composition of the Sample

Classification	Transactions	Percentage
International – Agent	6,388	39.06%
International – Direct	6,393	39.09%
International Total	12,781	78.14%
Local – Direct	3,575	21.86%
Local Total	3,575	21.86%
Total	16,356	100.00%

The figures show that the empirical population is predominantly international. The two International categories are also relatively balanced when considered across the complete dataset, with **6,388 International–Agent transactions and 6,393 International–Direct transactions**.

However, this balance is not consistent across individual years. The annual data reveal substantial changes in the composition of transactions.

Table 3.3

Annual Distribution by Booking/Customer Classification

Year	Agent	Direct	Local	Total
2017	2	1,376	334	1,712
2018	9	1,724	440	2,173
2019	1,469	451	370	2,290
2020	329	263	665	1,257
2021	388	279	580	1,247
2022	1,296	382	273	1,951
2023	1,017	364	294	1,675
2024	995	623	280	1,898
2025	883	931	339	2,153
Total	6,388	6,393	3,575	16,356

The annual composition provides an important empirical indication that the customer population represented in the database is not static. In 2017 and 2018, Direct transactions dominate, accounting for approximately **80% and 79%** of annual transactions, respectively. In 2019, however, the Agent category increases sharply to **1,469 transactions**, representing approximately **64%** of the annual total.

A further change occurs during 2020 and 2021. Local transactions increase to **665 in 2020** and **580 in 2021**, representing approximately **53% and 47%** of annual transactions, respectively. At the same time, Agent transactions fall substantially compared with 2019.

From 2022 onwards, International–Agent transactions again become the largest category, accounting for **1,296 transactions in 2022** and **1,017 in 2023**. By 2025, however, International–Direct transactions increase to **931**, compared with **883 Agent transactions**.

These changes are relevant to the present research because they demonstrate variation in the **composition of the observed customer population across time**. The subsequent customer segmentation analysis will determine whether these changes are associated with broader changes in customer characteristics and rental behaviour.

3.7.1 Study Population

The study population consists of the **completed motorhome rental transactions represented in the Touring Cars dataset between 2017 and 2025**.

The empirical population contains **16,356 transactions** distributed across the nine available years. The population is therefore substantially larger than a conventional survey sample and provides repeated annual observations for longitudinal analysis.

The dataset contains information that enables the customer population to be examined according to both customer and rental characteristics. The records include information such as customer gender, year, International/Local classification, Direct/Agent classification, booking-related information, geographical information, travel-party classification and rental-related measures. For example, individual transaction records contain customer gender and year together with International/Local and Direct/Agent classifications and travel-party information.

The study population is therefore not treated as a homogeneous group. Rather, the purpose of the analysis is to identify meaningful groups within this population according to similarities in customer and rental behaviour.

The geographical component of the dataset is also controlled through the station information supplied for the research. The included operational stations are **HEL, ROV, ROVS, OSL, TRM, TRD and STO**, while stations identified as excluded are **KEF, MAN, TAL, RIG and IOW**. This station-level distinction should be maintained when constructing the final analytical population.

Accordingly, the study population should be understood as the set of relevant completed transactions falling within the study's defined **time, operational-station and analytical criteria**.

3.7.2 Sample

The sample comprises the **16,356 transactions** contained in the available 2017–2025 dataset.

The sample is a **secondary commercial sample**, as the transactions were originally generated through Touring Cars' normal rental operations rather than being collected specifically for this dissertation.

The sample is particularly appropriate for the research because it provides a substantial number of real-world observations and permits customer behaviour to be examined over several consecutive years.

The annual sample sizes range from **1,247 transactions in 2021** to **2,290 transactions in 2019**. This variation will be considered when conducting longitudinal comparisons. In particular, the analysis will distinguish between:

- the **absolute number** of customers/transactions within a segment; and
- the **relative proportion** of the annual population represented by that segment.

This distinction is necessary because an increase in the number of transactions in a segment may simply reflect an increase in the overall annual transaction population rather than a genuine increase in the segment's relative importance.

The sample also demonstrates considerable variation in International/Local and Direct/Agent composition, providing additional information for subsequent customer profiling and longitudinal interpretation.

3.7.3 Completed Rental Transactions

The principal unit of observation is the **completed motorhome rental transaction**.

The dataset contains **16,356 such observations** across the 2017–2025 period.

Each transaction provides a record of an actual rental event and contains multiple fields describing the customer and rental. The supplied records demonstrate, for example, that individual observations can contain information concerning **gender, year, International/Local status, Direct/Agent status, rental duration, geographical classification, travel-party type and repeat-related indicators**.

This transaction-level structure is particularly suitable for behavioural segmentation because customer groups can be identified using combinations of observed characteristics rather than demographic characteristics alone.

For example, the data contain transactions classified as International–Agent and International–Direct, as well as Local transactions. Individual observations also demonstrate different rental durations and travel-party classifications such as **Couple** and **Family**.

The use of completed transactions also means that the research examines **observed rental activity** rather than stated intentions.

However, one transaction does not necessarily represent one unique individual customer. The longitudinal analysis must therefore distinguish between the **transaction population** and the **underlying individual customer population**.

This is especially important when considering repeat customers. The available records contain repeat-related indicators, but individual customers cannot automatically be assumed to have been consistently identifiable across the entire 2017–2025 period.

Consequently, customer segment evolution will primarily be assessed through changes in the **composition and characteristics of the transaction-based customer population** over time.

3.7.4 Distribution Across Countries and Years

The available aggregate data establish the annual distribution of the **16,356 transactions** from 2017 to 2025.

For the longitudinal analysis, the annual transaction counts are:

Year	Transactions	Share
2017	1,712	10.47%
2018	2,173	13.28%
2019	2,290	14.00%
2020	1,257	7.69%
2021	1,247	7.63%
2022	1,951	11.93%
2023	1,675	10.24%
2024	1,898	11.60%
2025	2,153	13.16%
Total	16,356	100.00%

The data reveal a clear temporal pattern. The transaction population reaches its highest level in **2019**, falls sharply during **2020–2021**, and subsequently recovers. The 2020–2021 decline is particularly important within

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the study because these years provide the empirical context for examining customer segment behaviour during the COVID-19 disruption.

The transaction classification data further demonstrate that the composition of the population changed considerably during this period. Local transactions represented **53% of observations in 2020 and 47% in 2021**, compared with approximately **16% in 2019**. Meanwhile, the Agent category, which represented approximately **64% in 2019**, fell to approximately **26% in 2020 and 31% in 2021**.

The subsequent recovery period also shows continued structural change. By 2025, Direct transactions account for approximately **43%** of the annual population, while Agent transactions account for approximately **41%**, with Local transactions representing approximately **16%**.

These figures provide an important empirical basis for the later analysis of customer segment evolution.

Data-quality qualification

The supplied dataset contains an explicit warning that the **2017–2018 source field was not used correctly**. Therefore, the Direct/Agent classification for these two years should not be interpreted as fully comparable with later years.

This is particularly important because the raw figures show only **2 Agent transactions in 2017 and 9 in 2018**, compared with 1,469 in 2019. The data-quality note means that this dramatic change cannot be confidently interpreted as a genuine market shift without qualification.

The **total transaction counts for 2017 and 2018 remain part of the 16,356-observation longitudinal dataset**, but source-based comparisons for those two years will be treated cautiously.

Important scope correction

For the thesis, I recommend that we now consistently use:

16,356 completed rental transactions, 2017–2025

for the dataset represented by this sheet.

We should **not write “21,000 transactions, 2017–2026”** in Chapter 3 unless another verified sheet contains the additional 2026 transactions and the additional records that produce the larger total.

Also, the **country totals should not be invented from the station codes**. The station inclusion sheet tells us which operational stations are included, but it does not by itself provide Finland/Sweden/Norway transaction totals. Those totals should be calculated from the actual station/country field in the transaction data.

3.8 Variables and Operationalisation

The present study examines customer segmentation and customer segment evolution using the **transaction-level information recorded in the Touring Cars motorhome rental dataset**. The operationalisation of the variables is therefore based on the information actually available in the commercial records rather than on variables that would normally be obtained through a primary customer survey.

The dataset contains **16,356 rental transactions for 2017–2025**. The records provide information relating to customer characteristics, booking and rental behaviour, travel-party characteristics, geographical classification, and transaction-related attributes. The operationalisation is designed to translate these recorded characteristics

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into measurable variables that can subsequently be used for descriptive analysis, customer segmentation, segment profiling and longitudinal comparison.

A key principle of the operationalisation is that **not every variable contained in the transaction database should automatically be used as a clustering variable**. Some variables are more appropriate for describing the resulting segments, while others provide the temporal, geographical or contextual dimensions required for comparing segments.

The operational framework is therefore structured around six principal constructs:

1. **Customer characteristics**
2. **Rental behaviour**
3. **Transaction characteristics**
4. **Customer segment**
5. **Customer segment evolution**
6. **External disruption**

3.8.1 Customer Characteristics

Customer characteristics represent the observable attributes of customers recorded within the transaction data. These variables provide the demographic and customer-profile dimension of the analysis.

The principal customer characteristics identified in the dataset and research framework include **gender, age, country of origin and travel-party composition**. The transaction records also contain classifications that distinguish **International and Local** customers. These characteristics allow the resulting customer segments to be described and compared systematically.

Table 3.4

Customer Characteristics and Their Operationalisation

Variable	Operationalisation	Analytical role
Age	Recorded age of the customer	Customer profiling and segment comparison
Gender	Gender recorded in the transaction	Customer profiling and segment comparison
Country of origin	Recorded customer origin	Geographic customer profiling
International/Local	Classification recorded in the transaction data	Customer-origin comparison
Travel party	Recorded travel-party classification/composition	Behavioural and customer profiling

The actual transaction records demonstrate the availability of customer-level characteristics together with travel-party information. The supplied data include classifications such as **Couple** and **Family**, allowing the composition of the travelling party to be incorporated into the customer analysis.

These variables are important because customer segments may differ not only according to rental behaviour but also according to the characteristics of the customers undertaking the rentals.

However, demographic characteristics will not be interpreted independently from behavioural variables. The purpose of the study is to identify **behaviourally meaningful customer groups**, meaning that customer characteristics will primarily contribute to the description and interpretation of the segments identified through the segmentation procedure.

3.8.2 Rental Behaviour

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Rental behaviour represents the observable manner in which customers use the motorhome rental service.

The research framework identifies **booking lead time, rental duration, season, vehicle category, expenditure and repeat-customer status** as important behavioural dimensions. These variables provide the principal behavioural basis for distinguishing customers according to their actual rental activity.

Table 3.5

Rental Behaviour Variables

Variable	Operational meaning	Intended analytical use
Booking lead time	Time between the booking and rental period	Behavioural segmentation
Rental duration	Length of the completed rental	Behavioural segmentation
Season	Period in which the rental takes place	Seasonality and segmentation
Vehicle category	Motorhome category selected	Product-choice behaviour
Expenditure	Financial value of the rental	Value-based behavioural profiling
Repeat-customer status	Identification of repeat rental behaviour where available	Customer relationship behaviour

These variables are particularly important to the present study because two customers with similar demographic characteristics may demonstrate substantially different rental behaviour.

For example, customers may differ in:

- how far in advance they make reservations;
- how long they rent a motorhome;
- which vehicle category they select;
- how much they spend; and
- whether they demonstrate repeat-rental behaviour.

The use of these variables therefore allows the study to move beyond a purely demographic segmentation approach and towards **transaction-based behavioural segmentation**.

The actual data also demonstrate differences in rental duration and travel-party classifications between transactions, confirming that the records contain behavioural characteristics capable of distinguishing individual rental observations.

3.8.3 Transaction Characteristics

Transaction characteristics refer to the information associated with each individual completed rental record.

The dataset contains **16,356 completed transactions**, and each transaction represents an observed rental event. Transaction-level characteristics provide the empirical foundation for identifying similarities and differences among observations.

The supplied data contain, among other fields, information relating to:

- year;
- International/Local classification;
- Direct/Agent classification;
- rental duration;
- travel-party classification;
- geographical/station information; and
- customer characteristics.

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The **Direct/Agent** classification is particularly relevant because the data show substantial variation across the observation period.

Across the complete dataset:

- **6,388 transactions** are classified as International–Agent;
- **6,393 transactions** are classified as International–Direct; and
- **3,575 transactions** are classified as Local–Direct.

Thus, International transactions account for **12,781 of the 16,356 transactions**, representing approximately **78.1%** of the total, while Local transactions account for approximately **21.9%**.

Table 3.6

Transaction-Level Classification in the Dataset

Transaction classification	Number	Percentage
International – Agent	6,388	39.06%
International – Direct	6,393	39.09%
Local – Direct	3,575	21.86%
Total	16,356	100.00%

These variables provide useful information for subsequent segment profiling and longitudinal comparison.

However, the **Direct/Agent** field requires a specific data-quality qualification. The supplied dataset contains a note indicating that the source field was not correctly used in 2017–2018. Consequently, the very low Agent counts in 2017 and 2018 should not be interpreted as a genuine behavioural or market trend without qualification.

This issue will therefore be considered during data preparation and interpretation rather than being ignored.

3.8.4 Customer Segment

For this study, a **customer segment** is defined as:

A group of customers with similar behavioural and transactional characteristics identified using cluster analysis.

This definition is particularly important because the customer segments are intended to be **data-derived**.

The study does not begin by assigning customers to predetermined categories such as “families”, “young travellers” or “premium customers”. Instead, the relevant customer and rental variables are analysed to identify groups demonstrating meaningful similarities.

The proposed cluster-analysis approach is consistent with the research framework, which states that clustering enables customer groups to be identified directly from observed customer behaviour without requiring predefined categories.

The final labels assigned to the segments will be based on their **observed empirical profiles**.

For example, if a resulting group demonstrates particular characteristics in terms of rental duration, expenditure, booking lead time and vehicle category, its eventual descriptive label should reflect those characteristics rather than being imposed before the analysis.

3.8.5 Customer Segment Evolution

Customer segment evolution is the **central construct** of the present study.

It is defined as:

Changes in the structure, composition and relative size of customer segments over time.

The concept therefore has three principal dimensions.

Segment structure

Changes in the configuration and characteristics of the customer groups identified through cluster analysis.

Segment composition

Changes in the characteristics represented within individual segments.

Relative segment size

Changes in the proportion of the annual customer population represented by each segment.

This operationalisation is particularly important because the study is not simply concerned with whether the total number of rentals increased or decreased.

The actual dataset already demonstrates considerable annual variation:

- **2019:** 2,290 transactions
- **2020:** 1,257 transactions
- **2021:** 1,247 transactions
- **2022:** 1,951 transactions
- **2025:** 2,153 transactions

Therefore, a segment containing more transactions in 2025 than in 2021 would not automatically demonstrate evolution unless its **relative share and characteristics** are also considered.

For this reason, the longitudinal analysis will examine both:

Absolute segment size

and

Relative segment proportion

alongside changes in the characteristics of the segments.

Because the available transaction data do not guarantee reliable identification of the same individual customer across the entire study period, segment evolution will primarily be assessed at the **population and segment level**, rather than through individual customer migration.

3.8.6 External Disruption

External disruption represents the broader market conditions that may influence customer behaviour during the observation period, with particular emphasis on the **COVID-19 pandemic**.

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The role of external disruption is contextual rather than constituting the sole explanatory variable of the study.

The transaction data show a pronounced decline in annual rental transactions during the pandemic period:

Year	Transactions
2019	2,290
2020	1,257
2021	1,247
2022	1,951

The reduction from **2,290 transactions in 2019 to 1,257 in 2020** represents a decline of approximately **45.1%**. The number remained at a similarly low level in 2021 before recovering substantially in 2022.

This provides an empirical basis for treating 2020–2021 as a period of major disruption within the longitudinal dataset.

The research will consequently consider the broader sequence:

2017–2019 → Pre-pandemic period

2020–2021 → Pandemic disruption

2022–2025 → Post-disruption/recovery period

This temporal distinction enables the study to examine whether changes in customer segment characteristics during the disruption were subsequently reversed or persisted.

The study also recognises that customer segment evolution may have been influenced by factors other than COVID-19, including changes in **pricing, fleet composition, booking practices, booking systems and broader market conditions**. These factors should be considered when interpreting longitudinal changes, but they should not be presented as statistically established causes unless the available data permit them to be directly tested.

3.8.7 Operationalisation Summary

Table 3.7

Summary of Variables and Operationalisation

Construct	Variables / indicators	Role
Customer characteristics	Age, gender, country of origin, International/Local, travel party	Customer profiling
Rental behaviour	Booking lead time, rental duration, season, vehicle category, expenditure, repeat-customer status	Customer segmentation
Transaction characteristics	Year, booking source, geographical/station information, rental and customer fields	Transaction analysis and comparison
Customer segment	Group identified through similarity in behavioural and transactional characteristics	Main segmentation construct
Customer segment evolution	Changes in segment structure, composition and relative size	Main longitudinal construct
External disruption	COVID-19 period and other relevant market conditions	Context for longitudinal interpretation

The operationalisation therefore links the **actual transaction records** to the analytical objectives of the dissertation. The 16,356 observations provide the empirical base, while the customer, rental and transaction

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variables provide the dimensions through which customer segments can be identified and subsequently compared over time.

One important methodological principle will be maintained in the next sections: **the variables actually entered into the cluster analysis will be selected only after the data-cleaning and suitability assessment**. Variables available in the dataset may be retained for descriptive analysis or segment profiling without necessarily being used to form the clusters. This prevents the segmentation procedure from being driven simply by the number of fields available in the commercial database.

3.9 Data Preparation and Cleaning

Data preparation and cleaning constitute an essential stage of the present research because the empirical analysis is based on a large **secondary commercial transaction dataset** rather than data collected specifically for academic purposes. The supplied dataset contains **16,356 recorded motorhome rental transactions covering 2017–2025**, with information relating to customer characteristics, booking arrangements, rental behaviour, travel-party characteristics, and transaction classifications.

The purpose of data preparation is to ensure that the dataset is sufficiently complete, consistent and analytically suitable before descriptive statistics, customer segmentation and longitudinal comparisons are undertaken.

The cleaning procedure is particularly important because the supplied data contain an explicit quality issue concerning the **source classification for 2017 and 2018**. The dataset notes that the source field was not used correctly during these years. This issue must therefore be retained as part of the methodological treatment rather than being silently corrected or ignored.

3.9.1 Data Screening

Data screening will be conducted before any statistical analysis to establish the structure and quality of the transaction dataset.

The first stage will verify the number of observations, variables, years, geographical/station classifications and transaction categories contained in the dataset.

The supplied data contain **16,356 transactions**, distributed as follows:

Year	Transactions
2017	1,712
2018	2,173
2019	2,290
2020	1,257
2021	1,247
2022	1,951
2023	1,675
2024	1,898
2025	2,153
Total	16,356

The screening procedure will verify that these totals correspond to the underlying transaction records.

Particular attention will be given to:

- duplicate transaction records;
- incomplete records;
- invalid or impossible values;
- inconsistent categorical entries;
- missing year information;

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- missing geographical information;
- inconsistent customer classifications;
- inconsistent booking-source classifications; and
- variables with insufficient observations for statistical analysis.

The station information will also be checked against the study's station-selection criteria. The supplied station list identifies **HEL, ROV, ROVS, OSL, TRM, TRD and STO as included**, while **KEF, MAN, TAL, RIG and IOW are excluded**.

This information will be used when establishing the final analytical dataset rather than treating every station appearing in the broader database as automatically eligible.

3.9.2 Missing Data

Missing data will be assessed variable by variable before statistical analysis.

The purpose of this assessment is not simply to remove incomplete observations. Instead, the extent and pattern of missingness will first be established so that the researcher can determine whether missing information is likely to affect the segmentation or longitudinal analysis.

The assessment will consider:

1. the number of missing observations for each variable;
2. the percentage of observations missing;
3. whether missingness is concentrated in particular years;
4. whether missingness is concentrated within particular customer or transaction categories; and
5. whether missing observations affect variables intended for cluster analysis.

Particular attention will be given to variables that are central to customer segmentation, including **age, gender, travel-party characteristics, booking lead time, rental duration, vehicle category and expenditure**, where these fields are available in the final analytical dataset.

Missing values will not automatically be replaced with arbitrary values because inappropriate imputation could artificially create similarities between customers and consequently influence cluster formation.

Where missing observations are limited and the relevant analysis permits complete-case analysis, observations may be excluded from that specific procedure. Where missingness is substantial, the variable's suitability for the relevant analysis will be reconsidered.

The number and percentage of observations removed at each stage will be documented so that the final analytical sample remains transparent and reproducible.

3.9.3 Data Consistency

Consistency checking will ensure that the same concepts are represented uniformly throughout the dataset.

This is particularly important for categorical variables because inconsistencies in labels can result in one category being incorrectly treated as several different categories.

The consistency assessment will examine:

- country and geographical classifications;
- International/Local classification;
- Direct/Agent classification;
- travel-party categories;

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- vehicle categories;
- gender categories;
- year values;
- rental-duration values; and
- other categorical or numerical fields used in the analysis.

The supplied data already demonstrate the importance of this procedure. For example, the source classification contains **Agent, Direct and Local** categories, while the dataset separately identifies **International** and **Local** status.

The 2017–2018 source-field issue will be treated as a documented data-quality limitation. The source note indicates that the field was not correctly used in these years. Consequently, the unusually low Agent counts in 2017 and 2018 will not automatically be interpreted as a genuine behavioural trend.

This is particularly important because the dataset records only **2 Agent transactions in 2017 and 9 in 2018**, compared with **1,469 in 2019**. The methodological treatment will therefore distinguish between a genuine empirical change and a change potentially caused by inconsistent recording.

3.9.4 Outliers and Unusual Observations

The dataset will be examined for unusually high, low or otherwise atypical observations before cluster analysis is conducted.

Outlier assessment is important because cluster analysis is sensitive to observations that are substantially different from the rest of the dataset. An extreme expenditure value, unusually long rental duration or highly unusual booking lead time may disproportionately influence the formation of clusters.

The assessment will consider numerical variables such as:

- rental duration;
- booking lead time;
- expenditure; and
- other continuous variables included in the final analytical dataset.

Potential outliers will first be identified statistically and then assessed substantively.

An observation will not be removed merely because it is statistically unusual. In a commercial rental dataset, unusual transactions may represent **genuine customer behaviour** rather than data errors.

The decision process will therefore distinguish between:

Valid extreme observation

→ retained in the dataset.

Data-entry or measurement error

→ corrected where verification is possible or excluded where necessary.

Unverifiable anomalous observation

→ assessed for sensitivity and documented.

This approach prevents legitimate high-value or unusual rentals from being incorrectly eliminated simply because they differ from the majority of observations.

3.9.5 Variable Preparation

Variable preparation will convert the raw transaction fields into forms suitable for statistical analysis.

The preparation process will include:

- checking measurement scales;
- identifying numerical and categorical variables;
- recoding categorical variables where required;
- calculating derived variables where theoretically justified;
- checking the distribution of numerical variables;
- standardising variables where required for cluster analysis; and
- ensuring that the direction and meaning of each variable are consistent.

Particular attention will be given to variables used to identify behavioural similarities between customers.

The principal behavioural dimensions specified for the study include:

- **booking lead time;**
- **rental duration;**
- **season;**
- **vehicle category;**
- **expenditure;** and
- **repeat-customer status.**

Customer characteristics such as **age, gender, country of origin and travel-party composition** will also be prepared for descriptive analysis and segment profiling.

Standardisation will be considered for numerical variables where differences in measurement scale could otherwise cause one variable to exert disproportionate influence on the clustering procedure.

For example, expenditure may have substantially larger numerical values than rental duration. Without appropriate scaling, expenditure could dominate a distance-based clustering procedure. Variables included in clustering will therefore be transformed or standardised where required by the selected analytical method.

3.9.6 Data Anonymisation

Because the dataset originates from commercial customer transactions, protection of customer confidentiality is an essential methodological requirement.

The research will use **anonymised transaction data** and will not disclose personally identifiable customer information.

The supplied research framework indicates that Touring Cars will anonymise and prepare the data before providing them for academic analysis. The researcher will then conduct further checks for completeness, consistency and potential recording errors.

No individual customer's name, contact information or other directly identifying information will be reported in the thesis.

The analysis will be presented in **aggregated statistical form**, such as:

- annual frequencies;
- percentages;
- customer-segment profiles;

- country comparisons; and
- statistical test results.

This ensures that the empirical findings describe patterns within the dataset rather than exposing individual customers.

3.10 Data Analysis Strategy

The data analysis strategy is designed to answer the study's central research question concerning **how customer segments evolved in the Nordic motorhome rental industry between 2017 and 2025**, while also addressing differences between the relevant Nordic markets.

The analysis proceeds from relatively simple descriptive examination towards more advanced segmentation and longitudinal analysis.

This staged approach ensures that the customer segments are understood before changes in those segments are statistically compared.

3.10.1 Descriptive Analysis

Descriptive analysis will be conducted as the first analytical stage.

Its purpose is to establish the basic characteristics of the **16,356 transaction observations** before segmentation is performed.

The analysis will include:

- frequencies;
- percentages;
- means;
- medians;
- standard deviations;
- minimum and maximum values; and
- appropriate distributional summaries for numerical variables.

Annual transaction volume will be examined first.

The data show that transactions increased from **1,712 in 2017 to 2,290 in 2019**, declined to **1,257 in 2020 and 1,247 in 2021**, and subsequently recovered to **2,153 in 2025**.

The International/Local distribution will also be examined. Across the full dataset, **12,781 transactions are International and 3,575 are Local**, equivalent to approximately **78.1% and 21.9%**, respectively.

The Direct/Agent distribution will similarly be described, while the known 2017–2018 source-data problem will be explicitly taken into account.

Descriptive analysis will establish the empirical baseline against which subsequent segment-level changes are interpreted.

3.10.2 Customer Segmentation

Customer segmentation constitutes the central analytical stage of the research.

The objective is to identify groups of transactions/customers demonstrating similar **behavioural and transactional characteristics**.

The segmentation approach will combine relevant customer and rental characteristics rather than relying solely on demographic variables.

Potential segmentation dimensions include:

- age;
- gender;
- country of origin;
- travel-party composition;
- booking lead time;
- rental duration;
- season;
- vehicle category;
- expenditure; and
- repeat-customer status.

The final set of variables used in segmentation will be determined after the data-screening and variable-preparation stages.

The purpose is to identify meaningful groups that can subsequently be described, compared across countries and tracked across the study period.

3.10.3 Cluster Analysis

Cluster analysis will be used to identify the customer segments.

The method is appropriate because the study seeks to identify customer groups from **similarities in observed customer behaviour**, rather than assigning customers to categories entirely in advance.

The clustering procedure will involve:

1. selecting analytically appropriate variables;
2. preparing and standardising numerical variables where required;
3. evaluating alternative clustering solutions;
4. determining an appropriate number of clusters;
5. assessing statistical quality;
6. examining substantive interpretability; and
7. producing final segment profiles.

The selection of the final cluster solution will not be based exclusively on one statistical criterion. Statistical adequacy will be considered alongside **interpretability and practical relevance**.

This is important because a mathematically optimal cluster solution may not necessarily provide customer segments that are meaningful for understanding motorhome rental behaviour.

The resulting clusters will therefore be interpreted according to their empirical characteristics.

3.10.4 Segment Validation and Stability

The validity and stability of the identified segments will be assessed before they are used for longitudinal interpretation.

Validation is necessary because clustering algorithms can produce different solutions depending on the variables, scaling procedures and number of clusters selected.

The analysis will therefore assess:

- internal cluster separation;
- within-cluster similarity;
- between-cluster differences;
- alternative cluster solutions; and
- stability of the resulting segments.

Where appropriate, statistical measures of cluster quality will be used alongside substantive assessment.

A segment solution will be considered more credible where it demonstrates both **statistical distinction and meaningful interpretation**.

Stability is particularly important for this study because the research ultimately compares customer segment structures across years. A segment that exists only because of a particular modelling decision should not be interpreted as evidence of genuine customer segment evolution.

3.10.5 Segment Profiling

Following cluster formation and validation, each customer segment will be profiled using the available customer and rental characteristics.

The profile will examine variables such as:

- age;
- gender;
- country/origin classification;
- travel party;
- booking lead time;
- rental duration;
- season;
- vehicle category;
- expenditure; and
- repeat-customer status.

Segment profiling will identify the characteristics that distinguish one group from another.

The segment names will be assigned **after** examining the empirical profiles rather than being predetermined.

For example, a segment may demonstrate relatively long rental durations and high expenditure, but its final descriptive label will depend on the complete empirical profile.

This approach maintains a clear distinction between **data-derived findings and researcher interpretation**.

3.10.6 Longitudinal Comparison

Longitudinal comparison is central to answering the research question concerning customer segment evolution.

The analysis will compare customer segments across the available **2017–2025** period.

The comparison will focus on:

- segment size;
- relative segment share;
- customer characteristics;
- rental behaviour;
- segment composition; and
- changes in the overall segment structure.

The analysis will distinguish between absolute and relative changes.

For example, an increase in the number of observations assigned to a segment may occur simply because the total number of transactions increased. Therefore, segment proportions will be examined alongside absolute counts.

The pronounced reduction in total transactions during **2020 and 2021** will also be considered when interpreting longitudinal patterns.

The COVID-19 period provides an important temporal context, allowing the study to examine whether segment characteristics changed during the disruption and whether those changes remained visible during the subsequent recovery period.

3.10.7 Cross-Country Comparison

The study also incorporates a geographical comparison of the Nordic markets represented in the dataset.

The objective is to determine whether customer segment structures and their evolution differ between the relevant countries.

Country comparisons will consider:

- segment prevalence;
- segment composition;
- behavioural characteristics;
- customer characteristics;
- relative segment size; and
- changes over time.

The station inclusion criteria will be applied when establishing the relevant operational records. The supplied station classification identifies **HEL, ROV, ROVS, OSL, TRM, TRD and STO as included stations**, while **KEF, MAN, TAL, RIG and IOW are excluded**.

The country comparison should therefore be based on the validated geographical classification in the transaction dataset rather than assuming that every station code represents an eligible observation.

Where country-level differences are identified, the analysis will distinguish between **descriptive differences** and statistically supported differences.

3.10.8 Statistical Testing

Statistical testing will be used to determine whether observed differences between customer segments, years or countries are sufficiently large to be considered statistically meaningful.

The exact statistical test will depend on the measurement level and distribution of the relevant variable.

Potential analyses may include:

- tests of association for categorical variables;
- comparisons of means or distributions for continuous variables;
- appropriate non-parametric alternatives where distributional assumptions are not satisfied; and
- statistical comparisons of segment proportions.

For categorical variables such as International/Local status, Direct/Agent classification, gender or travel-party categories, appropriate contingency-table procedures may be used.

For numerical variables such as rental duration, booking lead time and expenditure, appropriate group-comparison procedures will be selected according to the characteristics of the data.

The analysis will not rely solely on statistical significance. Given the large sample size of **16,356 observations**, even relatively small differences may achieve statistical significance.

Therefore, statistical significance will be interpreted together with **effect sizes and substantive relevance**.

3.10.9 Effect Sizes

Effect sizes will be reported alongside statistical significance wherever appropriate.

This is important because a statistically significant result does not necessarily indicate a practically important difference.

For example, with a dataset containing 16,356 observations, a small difference between two groups may produce a low p-value even though the magnitude of the difference is limited.

Effect-size measures will therefore be selected according to the statistical test employed.

The interpretation will distinguish between:

Statistical significance

→ whether the observed difference is unlikely to be attributable to sampling variation under the relevant null hypothesis.

Effect size

→ the magnitude of the observed difference.

Substantive significance

→ whether the magnitude represents a meaningful difference for understanding motorhome rental customer behaviour.

This approach is particularly appropriate for the present longitudinal study because the objective is not merely to identify statistically significant differences but to determine whether customer segments have undergone **meaningful structural and behavioural evolution**.

The combination of descriptive statistics, cluster analysis, segment validation, longitudinal comparison, cross-country analysis, statistical testing and effect-size assessment therefore provides the analytical framework through which the **16,356 transaction observations** will be transformed into evidence regarding customer segment evolution.

3.11 Analytical Software

The analysis of the customer transaction data requires analytical software capable of handling a relatively large transaction-level dataset, performing data preparation and descriptive analysis, implementing customer segmentation procedures, and supporting longitudinal and comparative analysis. The software environment is therefore treated as an analytical instrument rather than simply as a means of producing tables and figures.

The empirical dataset used in this study contains **16,356 rental transactions covering the period 2017–2025**. The analytical software is used to structure these observations, prepare the variables required for analysis, generate descriptive statistics, conduct cluster-based segmentation, and compare the resulting customer segments across years and relevant market categories. Particular attention is given to reproducibility, meaning that the analytical procedures should be sufficiently systematic that the same dataset and analytical decisions would produce the same results.

The analysis is organised into several sequential stages. First, the transaction data are screened and prepared for analysis. This includes checking variable formats, identifying missing or inconsistent observations, and preparing categorical and numerical variables for subsequent analysis. Second, descriptive statistics are produced to establish the overall characteristics of the dataset and to examine annual changes in transaction volume and customer composition. For example, the supplied transaction data show 1,712 transactions in 2017, increasing to 2,173 in 2018 and 2,290 in 2019, before declining to 1,257 in 2020 and 1,247 in 2021. Transaction volume subsequently increased to 1,951 in 2022, 1,675 in 2023, 1,898 in 2024, and 2,153 in 2025. These calculations provide the empirical basis for the longitudinal analysis.

Third, the software environment is used to implement the customer segmentation procedure. Cluster analysis is applied to identify groups of customers exhibiting relatively similar characteristics across the selected behavioural and transactional variables. The resulting clusters are subsequently examined in terms of their size, behavioural characteristics, and practical interpretability. Where alternative cluster solutions are considered, the final solution should not be selected solely according to statistical criteria; the resulting groups must also demonstrate meaningful differentiation and substantive interpretability.

Fourth, the software is used to examine the evolution of the identified customer segments over time. This involves comparing segment prevalence and characteristics across the available years rather than treating the customer population as static. Both absolute frequencies and relative percentages are considered because changes in the total number of transactions can otherwise distort interpretation of segment growth or decline.

Finally, the software supports comparative analysis across relevant geographical and market classifications. The available aggregate data indicate that **12,781 transactions (78.14%) were classified as international and 3,575 (21.86%) as local**. However, the source-level classification requires particular caution because the supplied data explicitly identify the 2017–2018 source information as unreliable due to incorrect use of the source field. Consequently, analytical software is used to preserve this data-quality distinction rather than treating all observations as equally reliable for source-level comparison.

The specific software package and version used for the final empirical analysis should be reported according to the software actually used by the researcher. No software package is assumed here where it has not been verified from the research records. This distinction is important for methodological transparency and reproducibility.

3.12 Ethical Considerations

Although the present study relies on secondary commercial reservation data rather than data collected directly from research participants, ethical considerations remain important because the dataset concerns customer transactions and may contain information that could potentially be associated with identifiable individuals.

The primary ethical principle governing the analysis is **data minimisation**. Only information necessary to address the research objectives should be used in the empirical analysis. Variables that are not required for customer segmentation, behavioural analysis, or longitudinal comparison should not be incorporated into the analytical dataset unnecessarily.

Customer confidentiality is another central consideration. The study is concerned with patterns of customer behaviour at an aggregate and segment level rather than with identifying or evaluating individual customers. Accordingly, individual customers should not be named or otherwise identifiable in the thesis. Results should be presented through aggregated statistics, segment profiles, distributions, and comparative analyses rather than through personally identifiable transaction records.

The dataset should also be handled in a manner consistent with the principles of anonymisation and confidentiality. Where customer identifiers or contact-related information exist in the original commercial database, such information should be excluded from the analytical dataset where it is not required for the research. The analysis therefore focuses on relevant customer characteristics, rental behaviour, and transaction characteristics rather than personal identification.

A further ethical consideration concerns the interpretation of customer segments. Cluster analysis produces statistical groupings; it does not establish that a particular customer possesses a fixed behavioural identity. Consequently, segment labels should be descriptive and analytically grounded rather than judgemental or potentially discriminatory. The interpretation should focus on observable characteristics in the transaction data and avoid unsupported assumptions about customers' motivations, socioeconomic circumstances, or personal characteristics.

The study also maintains a clear distinction between **association and causation**. Changes in customer behaviour observed during the longitudinal period, including changes surrounding the COVID-19 period, should not automatically be interpreted as being caused by a particular external factor unless the research design and statistical evidence support such a conclusion. External events are therefore treated primarily as contextual factors in interpreting changes in the observed customer segments.

Data-quality limitations also have an ethical dimension. The supplied data identify a specific limitation concerning the source classification for 2017–2018, stating that the source field was not used correctly during those years. This information must be retained and transparently acknowledged. It would be methodologically and ethically inappropriate to present unreliable source classifications as if they were fully comparable with later observations.

Finally, the reporting of findings should avoid disclosure through small or unusual groups where the combination of characteristics could potentially make individual transactions recognisable. The thesis therefore prioritises aggregate reporting and analytical interpretation while maintaining the confidentiality of the underlying commercial reservation data.

3.13 Methodological Limitations

Several methodological limitations should be recognised when interpreting the findings of this study. These limitations do not invalidate the analysis; rather, they define the boundaries within which the empirical findings should be understood.

3.13.1 Secondary Data Limitation

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The study uses commercial reservation data rather than data collected specifically for the purposes of the present research. Consequently, the researcher is constrained by the variables, classifications, recording practices, and historical structure of the existing database. Variables that would have been desirable from a theoretical perspective cannot necessarily be introduced retrospectively if they were not recorded consistently.

This limitation is particularly relevant to longitudinal research because the meaning and quality of individual variables may vary across years as booking systems, operational procedures, or recording practices change.

3.13.2 Transaction-Level Rather Than Individual-Level Longitudinal Analysis

The empirical dataset contains **16,356 rental transactions**, not necessarily 16,356 unique customers. A transaction represents a rental observation and therefore should not automatically be interpreted as an independent individual customer.

The distinction is particularly important when discussing customer retention and repeat behaviour. Where customer identification is not sufficiently stable across bookings, it may not be possible to follow every individual customer continuously throughout the entire 2017–2025 period. The study therefore focuses primarily on **changes in the customer population and customer segments across time**, rather than claiming to construct a complete individual-level longitudinal panel.

3.13.3 Incomplete Individual Customer Tracking

Repeat-customer analysis can be affected when the same customer appears under different names, booking details, or identifiers across transactions. Conversely, similar identifying information does not necessarily guarantee that two transactions belong to the same individual.

Consequently, conclusions concerning repeat-customer behaviour must depend on the reliability of the customer-identification variables available in the source data. The study should avoid presenting transaction-level recurrence as definitive evidence of individual customer loyalty unless the underlying identification procedure supports such a conclusion.

3.13.4 Data Quality and Historical Classification Issues

A specific limitation concerns the source classification for **2017 and 2018**. The supplied data explicitly indicate that these years are not suitable for source-level analysis because the source field was not used correctly.

This limitation means that the overall transaction counts for 2017 and 2018 can still contribute to the longitudinal analysis, but conclusions based specifically on Direct-versus-Agent source classification for these two years should not be treated as equivalent to classifications in later years.

This distinction is important because the aggregate data otherwise show substantial changes in source composition. For example, the supplied classification indicates an Agent share of 64% in 2019, 26% in 2020, 31% in 2021, 66% in 2022, 61% in 2023, 52% in 2024, and 41% in 2025. These later observations can be examined, but the 2017–2018 source percentages should not be used to establish a reliable historical baseline.

3.13.5 Cluster-Analysis Dependence on Analytical Decisions

Customer segmentation through cluster analysis is not entirely independent of methodological choices. The resulting segments can be influenced by the variables selected, the treatment and scaling of numerical variables, the handling of categorical variables, the clustering algorithm, and the number of clusters retained.

For this reason, a cluster solution should not be interpreted as the single objectively existing structure of the customer population. Instead, it represents an empirically derived segmentation based on the analytical framework adopted in the study. Segment validation, stability assessment, and substantive interpretability are therefore important components of the methodology.

3.13.6 Interpretive Limitation

The transaction data can identify observable patterns in customer characteristics and rental behaviour, but they cannot necessarily explain **why** customers behave in a particular way. For example, an observed change in rental duration or booking behaviour does not by itself establish the underlying motivation for that change.

Similarly, changes occurring during the COVID-19 period may coincide with substantial changes in customer composition and rental activity, but temporal coincidence alone does not establish a causal relationship.

3.13.7 External Market Factors

Customer behaviour in the motorhome rental industry can be affected by numerous external factors, including economic conditions, inflation, exchange-rate movements, fuel prices, international travel connectivity, tourism demand, fleet availability, pricing policies, and operational decisions. Unless these factors are directly measured and incorporated into the statistical analysis, their individual effects cannot be isolated with certainty.

Accordingly, the study interprets major external events as contextual factors rather than assigning causal effects that cannot be demonstrated from the available transaction data.

3.13.8 Geographic Scope

The research is situated within the Nordic motorhome rental context and focuses on the defined study setting. The empirical findings should therefore be generalised cautiously beyond the geographical and organisational context represented by the dataset.

The station-selection information identifies the included operational locations as **HEL, ROV, ROVS, OSL, TRM, and TRD**, while **KEF, MAN, TAL, RIG, and IOW** are excluded. These inclusion criteria define the empirical boundaries of the available analysis. They should not, however, be interpreted as evidence of national transaction distributions unless the underlying country mapping has been explicitly verified.

3.13.9 Temporal Coverage of the Available Empirical Dataset

The aggregate transaction data supplied for the empirical analysis currently cover **2017–2025**, despite the original study framing referring to 2017–2026. The empirical chapter should therefore use the verified dataset period when presenting actual results. If 2026 observations are subsequently incorporated into the final dataset, the tables, methodology, and longitudinal comparisons should be updated accordingly.

3.13.10 Generalisability

The findings are most directly applicable to the customer transaction environment represented by the dataset. Commercial reservation behaviour may differ across other motorhome rental companies, countries, tourism markets, vehicle fleets, and booking systems.

The study therefore provides an empirically grounded account of customer segment evolution within its defined research context rather than claiming universal applicability to all motorhome rental customers.

3.14 Chapter Summary

This chapter established the methodological framework used to investigate customer segment evolution in the Nordic motorhome rental industry. The study adopts a **quantitative, longitudinal, observational research design** with descriptive, comparative, and exploratory components. The methodology is designed to examine changes in customer characteristics, rental behaviour, customer segment structure, and segment composition across time.

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The empirical analysis is based on secondary commercial reservation data. The verified aggregate dataset currently comprises **16,356 rental transactions from 2017 to 2025**. Annual transaction volumes vary considerably across the observation period, with the highest recorded volume in 2019 at 2,290 transactions, followed by a substantial reduction during 2020 and 2021 and subsequent recovery through 2025.

The chapter also established the operationalisation of the principal concepts used in the study. Customer characteristics include variables such as age, gender, country of origin, geographical classification, and travel-party characteristics where available. Rental behaviour includes measures such as booking lead time, rental duration, seasonality, vehicle category, expenditure, and repeat-customer status where the underlying data support their use. Customer segments are defined as empirically identified groups displaying relatively similar characteristics across the selected behavioural and transactional variables.

Data preparation and analysis involve systematic screening, consistency checking, variable preparation, descriptive analysis, cluster-based segmentation, segment profiling, validation, longitudinal comparison, cross-country comparison where supported by the data, and appropriate statistical testing. Both absolute and relative measures are considered to distinguish genuine changes in customer-segment composition from changes attributable simply to fluctuations in annual transaction volume.

The methodological framework also incorporates important data-quality safeguards. In particular, the source classification for **2017–2018 is treated as unsuitable for reliable source-level analysis**, consistent with the warning contained in the supplied data. The study therefore avoids presenting these classifications as directly comparable with later years.

Ethical considerations focus on confidentiality, data minimisation, anonymisation, responsible interpretation of customer segments, and transparent reporting of data limitations. The methodology further recognises that the dataset represents rental transactions rather than necessarily unique individuals and that the available information may not permit complete longitudinal tracking of individual customers.

Overall, the methodology provides the foundation for the empirical chapters that follow. It enables the study to move beyond a static description of the customer base and examine how customer segments differ, how their relative prevalence changes across the observation period, and how the structure of the customer population varies across the defined research context. The findings presented in subsequent chapters should consequently be interpreted within the methodological boundaries and limitations established in this chapter.

CHAPTER 4 — DATA ANALYSIS AND RESULTS

4.1 Introduction

This chapter presents the empirical analysis and results of the study on **customer segment evolution in the Nordic motorhome rental industry**. The analysis is based on commercial motorhome rental transaction data and is designed to examine the characteristics, composition, and behavioural patterns of customers across the available observation period.

The analysis follows the methodological framework established in Chapter 3. It begins with an overview of the dataset and its temporal structure, followed by an assessment of data quality and preparation. The chapter then examines the overall customer profile and provides a more detailed analysis of customer characteristics and rental and transaction behaviour. The subsequent sections of the empirical chapter can build on these descriptive findings to examine customer segmentation and the evolution of segments over time.

The verified aggregate transaction data available for the present analysis contain **16,356 completed rental transactions covering 2017–2025**. The annual distribution is uneven, with transaction volumes increasing from 1,712 in 2017 to 2,173 in 2018 and 2,290 in 2019, followed by a substantial reduction in 2020 and 2021 and subsequent recovery. The dataset therefore provides an appropriate empirical basis for examining changes in the customer population over an extended period.

The underlying reservation records contain a broad range of variables, including reservation number, check-out date, rental duration, check-out station, vehicle information, booking date, vehicle model, customer country, gender, year of check-in, International/Local classification, Direct/Agent classification, booking window, continent, customer segment, and driver age. These variables permit the analysis to move beyond simple transaction counts and examine customer and rental characteristics within the available data.

A central principle in this chapter is that results are reported only where the available data provide a sufficiently reliable basis for interpretation. In particular, the source classification for 2017–2018 requires caution because the underlying data explicitly identify those years as unsuitable for reliable source-level analysis. Similarly, the transaction dataset is distinguished from a dataset of unique individuals because a single customer may potentially account for more than one rental transaction.

4.2 Overview of the Dataset

The empirical dataset consists of completed motorhome rental transactions recorded within the commercial reservation system. The available verified aggregate contains **16,356 transactions between 2017 and 2025**. Each observation represents a rental transaction rather than necessarily a unique customer.

The annual distribution of transactions is presented in Table 4.1.

Table 4.1

Annual Distribution of Completed Rental Transactions, 2017–2025

Year	Transactions	Share of Total
2017	1,712	10.47%
2018	2,173	13.28%
2019	2,290	14.00%
2020	1,257	7.69%
2021	1,247	7.63%
2022	1,951	11.93%

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Year Transactions Share of Total

2023	1,675	10.24%
2024	1,898	11.60%
2025	2,153	13.16%
Total	16,356	100.00%

The distribution demonstrates substantial temporal variation in the observed rental population. Transaction volume increased during the first three years of the observation period, reaching the highest annual level in the verified dataset in **2019, with 2,290 transactions**. The number of transactions then declined sharply to 1,257 in 2020 and 1,247 in 2021. Compared with 2019, this represents reductions of approximately **45.1% in 2020 and 45.5% in 2021**.

From 2022 onwards, the dataset indicates a clear recovery in transaction volume. Transactions increased to 1,951 in 2022, although they subsequently declined to 1,675 in 2023. The number then increased again to 1,898 in 2024 and 2,153 in 2025. The 2025 volume represents approximately **94% of the 2019 level**, indicating that the transaction population had moved substantially toward its pre-pandemic volume by the end of the verified observation period.

These changes are important for the subsequent segment analysis. A reduction or increase in the number of observations in a particular segment can arise either because the segment itself has changed in relative importance or because the total rental market represented in the database has changed. For this reason, subsequent analyses should consider both **absolute segment frequencies and proportional segment shares**.

The transaction records contain detailed reservation-level information. The underlying data structure includes operational variables such as rental duration and stations, booking variables such as booking date and booking window, customer-related variables such as gender, driver country and driver age, and classification variables including International/Local, Direct/Agent, continent and segment.

The station-selection information further defines the operational scope of the analysed observations. The included stations are **HEL, ROV, ROVS, OSL, TRM and TRD**, while stations such as KEF, MAN, TAL, RIG and IOW are excluded from the analysis. The underlying records also contain an Included field, allowing the analytical dataset to distinguish observations retained for the study from excluded observations.

The dataset consequently provides a combination of temporal, geographical, customer, booking, and rental information. This structure supports the descriptive analysis presented in the following sections and provides the variables required for the later customer-segmentation analysis.

4.3 Data Quality and Preparation

Data quality is particularly important in a longitudinal study because inconsistencies between years can create apparent changes that are actually attributable to differences in recording practices. The dataset was therefore examined with attention to inclusion criteria, variable consistency, missing information, classification reliability, and the distinction between transaction-level and customer-level observations.

4.3.1 Inclusion of Completed Transactions

The analysis is based on observations identified as included in the supplied dataset. The source records contain an Included field, with individual observations marked either **Yes** or **No**. For example, records associated with the selected Nordic operational scope are marked Yes, whereas observations from excluded stations such as KEF are marked No.

This inclusion criterion is important because the raw reservation database may contain observations outside the geographical and operational boundaries of the research. The final analytical population therefore should not be understood as an unrestricted extract of every reservation record in the source system.

4.3.2 Temporal Consistency

The verified aggregate dataset contains observations from 2017 through 2025. The annual transaction totals are internally consistent with the reported overall total:

$$1,712 + 2,173 + 2,290 + 1,257 + 1,247 + 1,951 + 1,675 + 1,898 + 2,153 = 16,356 \text{ transactions.}$$

This consistency provides the basis for the longitudinal transaction-volume analysis.

The present results therefore use **2017–2025 as the verified empirical period**. Although the original research framing refers to 2017–2026, no 2026 observations are included in the verified aggregate table currently used for this chapter. A 2026 observation should only be incorporated if it is subsequently verified in the final analytical dataset.

4.3.3 Variable Structure

The reservation data provide a broad set of variables. The column structure includes booking and rental dates, rental duration (Days), check-out and check-in stations, vehicle and vehicle-model information, driver country, gender, booking source, financial fields, year, International/Local classification, Direct/Agent classification, booking window, continent, segment, and driver age.

This structure allows the study to distinguish three broad analytical dimensions:

1. **Customer characteristics**, such as gender, country and age;
2. **Rental behaviour**, such as rental duration and booking window; and
3. **Transaction characteristics**, such as year, source classification, station and financial measures.

4.3.4 Source Classification

One of the most important data-quality considerations concerns the Direct/Agent classification. The supplied data explicitly indicate that the **2017–2018 source information is not suitable for source-level analysis because the source field was not used correctly during those years**.

Consequently, the 2017 and 2018 observations remain usable for analyses based on overall transaction volume and other variables that are independently reliable, but the Direct/Agent distribution for those two years should not be interpreted as a valid historical source comparison.

For the later years, the supplied classification shows considerable variation. Agent transactions account for approximately 64% of observations in 2019, 26% in 2020, 31% in 2021, 66% in 2022, 61% in 2023, 52% in 2024 and 41% in 2025. These values provide evidence of substantial changes in the observed booking-source composition after 2018.

4.3.5 Verification of Detailed Supporting Tables

The supporting data contain detailed pivot-style tables for variables such as gender and booking window. However, some of these supporting tables currently contain totals that do not reconcile with the verified **16,356-transaction analytical population**. For example, one gender summary reports 24,283 observations across 2017–2025, which is inconsistent with the verified aggregate transaction total.

For this reason, that particular aggregate gender table should **not be used to report final percentages or frequencies in the thesis until its population/filter definition has been reconciled with the 16,356-**

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transaction analytical dataset. The underlying transaction records themselves clearly contain gender as a field, including Male, Female and Unknown classifications.

This distinction prevents an inconsistent supporting table from being inadvertently presented as part of the final empirical results.

4.4 Overall Customer Profile

The overall customer profile provides the initial description of the rental population before customer segments are examined in greater detail. The most reliable aggregate classification currently available divides transactions into **International** and **Local** customers.

Table 4.2

International and Local Customer Classification

Customer Classification	Transactions	Percentage
International	12,781	78.14%
Local	3,575	21.86%
Total	16,356	100.00%

The data demonstrate that the observed rental population is predominantly international. International transactions account for **12,781 observations, or 78.14% of the total dataset**, while local transactions account for **3,575 observations, or 21.86%**.

This distribution establishes an important characteristic of the customer population: the Nordic motorhome rental business represented in the dataset serves a substantially international customer base. The distinction is particularly relevant to the study because international and local customers may encounter different travel conditions, booking processes, transportation requirements and planning horizons.

The annual pattern also indicates that the international/local composition was not constant throughout the observation period. The supplied annual classifications show that international transactions represented a substantial majority in several years, whereas the relative importance of local transactions increased during 2020 and 2021. This is visible in the supplied annual classification, where the Local category accounts for approximately **53% in 2020 and 47% in 2021**, compared with 16% in 2019 and 14% in 2022.

This pattern is descriptively important because the period from 2020 to 2021 coincides with an unusually large reduction in overall transaction volume. The results therefore suggest that the pandemic-period reduction was accompanied not only by fewer transactions but also by a change in the observed geographical composition of the customer population.

However, the descriptive results should not be interpreted as evidence that COVID-19 alone caused the observed change. The transaction data identify temporal and compositional associations; they do not, by themselves, isolate the independent causal contribution of travel restrictions, border controls, flight availability, customer preferences, pricing, fleet decisions or other market factors.

The source structure provides an additional dimension to the overall customer profile. Across the complete verified dataset, international-agent transactions account for **6,388 observations**, while international-direct transactions account for **6,393 observations**. Together, these represent 12,781 international transactions. The near-equivalence of these two cumulative categories indicates that the international customer population was not exclusively dependent on one booking channel over the complete verified period.

Nevertheless, annual interpretation of these source categories must exclude or qualify 2017–2018 because of the previously identified source-field problem.

Overall, the dataset depicts a customer population that is primarily international, but whose composition varies materially across the observation period. This provides an important foundation for the more detailed analysis of customer characteristics and rental behaviour.

4.5 Customer Characteristics

Customer characteristics constitute the first substantive dimension of the customer profile. The source data contain several variables that can be used to describe the customers associated with the rental transactions, including **gender, driver country, driver age, continent, International/Local classification, and customer segment**.

4.5.1 Gender

Gender is recorded within the reservation-level data and is represented through categories including **Male, Female and Unknown**. The presence of an Unknown category demonstrates that gender information is not complete for every transaction and therefore requires appropriate treatment during descriptive and segmentation analysis.

Gender should be treated primarily as a descriptive customer characteristic rather than as an assumption about the behaviour of an entire customer group. In the segmentation analysis, its usefulness depends on the completeness and consistency of the field and on whether it contributes meaningful differentiation between customer groups.

Importantly, the supporting gender summary currently available in the uploaded material does not reconcile with the verified 16,356-transaction population. It reports a total of 24,283 observations, and therefore it is not used here to make definitive percentage claims about gender composition.

The appropriate procedure for the final thesis is to regenerate the gender distribution using the same inclusion criteria that produce the verified 16,356 observations.

4.5.2 Driver Age

Driver age is another important customer characteristic contained in the reservation records. The data distinguish between Driver age unfiltered and Driver age, indicating that age preparation or filtering has already been incorporated into the dataset structure. Individual records demonstrate that age can be populated for some customers while being unavailable or represented differently for others.

Age is particularly relevant to customer segmentation because it can be associated with different travel preferences, vehicle requirements and rental behaviours. Nevertheless, age should not be interpreted independently. Its analytical value arises from examining its relationship with other variables such as rental duration, booking window, vehicle category, expenditure and travel-party classification.

4.5.3 Country of Origin

Driver country is recorded in the transaction data and provides a basis for distinguishing customers according to geographical origin. The underlying records include country values such as Norway, the Netherlands, Spain and Germany, among others.

Country information is subsequently associated with broader geographical classifications such as continent. For example, the reservation records demonstrate classifications including **Northern Europe, Western Europe, Central Europe and Southern Europe**.

This geographical structure is particularly valuable for the present study because the research investigates customer segment evolution within a Nordic tourism context. It enables customer populations to be considered not only according to local versus international status but also according to broader geographical origin.

4.5.4 Travel-Party and Customer Segment Classification

The dataset also contains a Segment field, with transaction-level records demonstrating classifications such as **Family** and **Couple**.

These classifications provide an important behavioural and demographic dimension to the customer profile. A family-oriented rental, for example, may involve different vehicle requirements and rental durations from a couple-oriented rental. However, these existing segment labels should be distinguished from the **analytical customer segments generated through cluster analysis** described in Chapter 3. The database's existing Segment field represents a recorded classification, whereas the research segmentation procedure seeks to identify empirically differentiated groups based on the selected analytical variables.

4.5.5 Overall Interpretation of Customer Characteristics

The customer records therefore reveal a multidimensional customer profile rather than a population that can be adequately described using a single characteristic. Customers differ according to geographical origin, age, gender, travel-party classification and international/local status, while their rental behaviour varies according to booking and transaction characteristics.

The existence of these multiple dimensions provides the rationale for the subsequent segmentation analysis. Rather than assuming that customers can be meaningfully divided according to a single demographic variable, the study examines combinations of customer and behavioural characteristics.

4.6 Rental and Transaction Behaviour

The second major dimension of the empirical analysis concerns how customers interact with the motorhome rental service. The reservation records provide several variables that describe this behaviour, including **rental duration, booking window, vehicle category and model, booking source, and financial transaction measures**.

4.6.1 Rental Duration

Rental duration is recorded in the Days field. The transaction-level data demonstrate substantial variation in rental duration. Examples within the records include rentals of 3, 4, 5, 6, 7, 8, 9, 11, 12, 14 and 18 days, among others.

Rental duration is a particularly relevant behavioural variable because motorhome rental is generally associated with multi-day travel rather than short-duration vehicle use. Variation in duration can therefore help distinguish customer groups with different travel patterns.

For example, a customer booking a short rental may represent a different behavioural profile from a customer undertaking an extended Nordic or European motorhome journey. The segmentation analysis can therefore use rental duration as one of the variables through which behavioural similarity is assessed.

4.6.2 Booking Window

Booking window represents the period between the booking date and the rental/check-out date. The transaction records contain a calculated Booking window variable, as well as indicators for bookings exceeding four months (>4M) and six months (>6M).

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The supporting analytical material also provides annual average booking-window values, beginning at approximately **86 days in 2017, 87 days in 2018 and 89 days in 2019**.

Booking window is an important indicator of customer planning behaviour. A longer booking horizon can indicate customers who plan their motorhome holidays substantially in advance, whereas a shorter horizon reflects comparatively later purchasing decisions. Changes in this measure over time may therefore provide evidence of changing customer planning behaviour.

The existence of the >4M and >6M variables also permits the analysis to distinguish particularly long planning horizons from more conventional booking windows.

4.6.3 Booking Source

Booking source provides another important dimension of transaction behaviour. The dataset distinguishes between **Direct** and **Agent** classifications and also contains a combined Direct / Agent / Local field.

The cumulative verified data contain 6,388 international-agent transactions and 6,393 international-direct transactions. Local transactions account for a further 3,575 observations. This demonstrates that both direct and intermediary channels play substantial roles in the observed customer population.

However, the longitudinal interpretation of source behaviour must be qualified for 2017–2018 because the underlying source field was not correctly applied during those years. The most meaningful source comparison therefore begins with the years for which the source classification is considered reliable.

The later data indicate a substantial shift in source composition. The Agent share reached approximately 64% in 2019, declined during 2020 and 2021, increased again in 2022 and 2023, and then declined to approximately 41% by 2025. At the same time, the Direct share increased to approximately 43% in 2025. This suggests a notable movement toward direct booking in the later part of the verified observation period.

4.6.4 Vehicle Characteristics

The reservation database records both **vehicle group and vehicle model**, allowing the rental transaction to be examined in relation to the type of motorhome selected. Examples in the underlying data include Carado, Siesta, Optima, Vantana and Hymer models.

Vehicle selection is relevant to customer behaviour because different vehicle categories can correspond to different travel-party sizes, comfort requirements, trip durations and expenditure levels. It is therefore potentially important in identifying differentiated customer segments.

The vehicle variable should, however, be analysed at an appropriate level of aggregation. Using individual vehicle-model codes without considering model availability and fleet changes across years could create artificial differences. Consequently, the final segmentation analysis should consider whether vehicle groups or broader vehicle categories provide a more stable longitudinal measure than individual model names.

4.6.5 Expenditure and Transaction Value

The reservation records contain multiple financial fields, including **Total, Paid, Balance, Rental charge, Discount, Net, VAT and Grand Total**.

These variables provide an opportunity to examine the economic dimension of rental behaviour. Transaction values differ substantially across individual observations. For example, the underlying records include transactions with Grand Total values of approximately €3,900, €5,675, €6,500, €10,000 and substantially higher amounts.

Financial measures can therefore contribute to identifying differences between lower-value and higher-value rental behaviour. Nevertheless, expenditure should be interpreted alongside rental duration and vehicle type

because a higher transaction value may simply reflect a longer rental or a more expensive vehicle rather than a fundamentally different customer type.

4.6.6 Seasonality and Timing of Rental

The reservation records include check-out and check-in dates, enabling transactions to be classified according to rental timing and season. The available records demonstrate rentals occurring across different months and therefore provide a basis for examining seasonal patterns.

Seasonality is particularly relevant in motorhome tourism because demand is likely to be concentrated around periods associated with favourable travel conditions. However, a final quantitative seasonal distribution should be generated from the complete verified analytical dataset rather than inferred from individual transaction examples.

4.6.7 Combined Interpretation of Rental Behaviour

The rental and transaction variables demonstrate that customer behaviour is multidimensional. Customers differ not only in who they are but also in **when they book, how long they rent, what type of vehicle they select, how they purchase the service, and the financial value associated with their rental.**

This multidimensional structure is central to the purpose of the study. A customer who books many months in advance, rents for an extended period and selects a higher-value vehicle may exhibit a substantially different behavioural profile from a customer making a short-notice booking for a shorter rental. Similarly, international customers using agents may demonstrate different booking patterns from local direct customers.

The descriptive results therefore establish the empirical foundation for the next stage of the analysis: identifying whether these characteristics form **distinct and interpretable customer segments**, and subsequently determining whether the size and characteristics of those segments changed across the 2017–2025 observation period.

4.7 Customer Segment Identification

Customer segmentation represents the central analytical stage of the study. The purpose of this stage is to move beyond the descriptive examination of individual customer and transaction characteristics and identify groups of observations that demonstrate relatively similar patterns of behaviour and characteristics.

The segmentation procedure follows the methodological framework established in Chapter 3. It is based on the principle that customers in the motorhome rental market cannot necessarily be adequately differentiated using a single demographic or transactional characteristic. Instead, customer groups are identified by considering combinations of relevant customer characteristics and rental behaviours.

The verified dataset contains **16,356 rental transactions for 2017–2025**. Because the observations represent rental transactions rather than necessarily unique individuals, the resulting segments should be interpreted as **transaction-level customer profiles** unless the underlying customer identifiers permit reliable individual-level deduplication.

An important distinction is also made between the existing Segment field contained in the reservation database and the analytical segments generated through the present study. The source data contain classifications such as **Family** and **Couple**, but the research segmentation is intended to identify empirically differentiated groups using the selected analytical variables.

4.7.1 Selection of Variables

The selection of variables for customer segmentation is guided by the research objectives, the conceptual framework developed in Chapter 2, and the availability and quality of variables within the transaction database.

The reservation dataset contains a wide range of variables, including **rental duration, booking date, booking window, vehicle group, vehicle model, driver country, gender, driver age, International/Local classification, Direct/Agent classification, continent, financial variables, and customer segment**.

For segmentation purposes, variables are conceptually organised into three principal dimensions.

First, customer characteristics describe who is associated with the rental transaction. These include variables such as age, gender, geographical origin and international/local classification.

Second, rental behaviour describes how the customer uses the rental service. Relevant variables include booking window, rental duration, seasonality, vehicle category and, where appropriately measured, expenditure.

Third, transaction characteristics describe the commercial and operational context of the booking, including booking source, rental year and station-related information.

The selection process also considers data quality. A variable should not be included merely because it exists in the database. It must demonstrate sufficient consistency and analytical relevance across the observation period. This is particularly important for longitudinal segmentation because a variable recorded differently in different years could create artificial segment differences.

The Direct/Agent source variable illustrates this issue. Because the supplied data identify the 2017–2018 source classification as unreliable, these observations should not be allowed to generate artificial source-based segment differences. Source-level interpretation is therefore restricted to periods in which the classification can reasonably be considered reliable.

Similarly, financial variables require careful operationalisation because transaction value can be influenced by rental duration, vehicle type, discounts and other commercial factors. The reservation data contain fields including Total, Paid, Balance, Rental charge, Discount, Net, VAT and Grand Total.

The final variable set should therefore be reported together with the exact transformation and inclusion rules used in the statistical software. Variables that are highly redundant, unreliable, or insufficiently complete should be excluded or appropriately transformed rather than included automatically.

4.7.2 Cluster Analysis

Cluster analysis is used to identify groups of rental transactions exhibiting similar combinations of customer and behavioural characteristics. The technique is appropriate to the exploratory objective of the study because the research does not begin with predetermined customer categories that must be statistically confirmed. Instead, the objective is to identify empirically meaningful structures within the observed transaction data.

The cluster-analysis procedure begins by preparing the selected variables for analysis. Numerical variables such as driver age, rental duration, booking window and expenditure require appropriate scaling where necessary so that variables measured on different numerical ranges do not disproportionately influence the clustering process.

Categorical variables require corresponding analytical treatment. Variables such as gender, geographical classification, booking source, vehicle category and customer classification cannot simply be treated as continuous numerical measurements without appropriate encoding. The selected treatment must reflect the measurement level of each variable and the clustering method employed.

The cluster procedure then evaluates the degree of similarity between observations. Transactions with relatively similar profiles are grouped together, while observations with substantially different characteristics are assigned to different groups.

The resulting clusters should not be interpreted as naturally occurring groups in the population in an absolute sense. Rather, they represent **analytical groupings produced by the selected variables, distance or similarity measure, clustering algorithm and model specification**.

This distinction is important because different methodological specifications can produce different cluster solutions. The purpose of the analysis is therefore not simply to produce the largest possible number of statistically distinguishable groups, but to identify a solution that provides meaningful differentiation while remaining interpretable for managerial and academic purposes.

The cluster analysis subsequently provides the basis for constructing customer segment profiles. These profiles are used to describe the dominant characteristics of each identified group and to examine whether the relative prevalence of those groups changes over time.

4.7.3 Determination of the Number of Segments

Determining the appropriate number of customer segments is a critical decision in the cluster-analysis procedure. Selecting too few clusters can conceal meaningful behavioural differences, whereas selecting too many clusters can generate fragmented groups that are difficult to interpret and potentially unstable.

The number of clusters should therefore be determined through a combination of **statistical evidence, cluster separation, stability, and substantive interpretability** rather than through an arbitrary decision.

Where applicable, alternative cluster solutions should be compared across a range of possible cluster numbers. Statistical criteria can be used to assess within-cluster similarity and between-cluster differentiation. The selected solution should demonstrate that observations within a segment are reasonably similar while observations belonging to different segments exhibit meaningful differences.

A second consideration is segment size. A statistically identifiable cluster with only a very small number of observations may have limited practical value, particularly in a longitudinal analysis where its apparent growth or decline could be highly sensitive to a small number of transactions.

A third consideration is interpretability. Each retained segment should possess a recognisable behavioural or customer profile that can be explained using the variables included in the analysis. If two clusters are statistically distinguishable but substantively indistinguishable, retaining both may not improve the usefulness of the segmentation.

Finally, the number of segments should support the longitudinal objective of the research. A solution that produces unstable or extremely small groups in particular years may be less suitable for examining customer segment evolution.

The exact final number of customer segments should be inserted only after the cluster-analysis output has been verified. The currently verified aggregate data establish the transaction population but do not provide the statistical output required to state that a particular number of clusters is the empirically optimal solution.

4.7.4 Segment Validation

Segment validation is undertaken to determine whether the identified clusters provide sufficiently differentiated and meaningful representations of the customer population.

Validation occurs at both a **statistical** and **substantive** level.

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At the statistical level, the analysis examines whether the resulting clusters demonstrate meaningful differences on the variables used to form them. Measures of within-cluster homogeneity and between-cluster separation can be used to assess whether observations assigned to the same cluster are more similar to one another than to observations in other clusters.

At the substantive level, the characteristics of each segment are examined to determine whether they can be interpreted in a meaningful manner. A valid segment should not merely be statistically different; it should also represent a recognisable pattern of customer or rental behaviour.

For example, a segment characterised by longer booking windows, extended rental durations and higher transaction values would represent a substantively meaningful behavioural profile if these characteristics were consistently observed within the cluster. Conversely, a segment differentiated primarily by a variable affected by recording inconsistencies would require considerably more cautious interpretation.

Validation also requires consideration of the variables that were not used to generate the clusters. External or supplementary variables can provide useful evidence of whether the segments remain meaningfully differentiated beyond the variables directly responsible for cluster formation.

The final validation process should therefore address three questions:

1. **Are the clusters statistically differentiated?**
2. **Are the clusters sufficiently homogeneous internally?**
3. **Can the clusters be interpreted as meaningful customer or rental-behaviour profiles?**

Only segments that satisfy these criteria should be retained for subsequent longitudinal interpretation.

4.7.5 Segment Stability

Segment stability is particularly important in this study because the principal research objective concerns **segment evolution over time**. A segment that appears in one year but disappears in another may represent a genuine change in customer behaviour, but it could also result from changes in the analytical procedure, sample composition, variable availability or random variation.

Stability is therefore assessed by examining whether the identified customer profiles remain reasonably consistent when the analysis is subjected to appropriate robustness checks.

Where appropriate, alternative cluster specifications can be compared to determine whether similar customer structures emerge under different reasonable analytical choices. The analysis can also examine whether segment characteristics remain recognisable across different periods.

A stable segment does not necessarily need to contain exactly the same proportion of transactions every year. Indeed, changes in segment size are central to the research question. Stability instead concerns whether the **underlying behavioural identity of a segment remains sufficiently recognisable** to permit meaningful longitudinal comparison.

This distinction allows the study to differentiate between two forms of change:

- **structural change**, in which the characteristics defining a segment themselves change substantially; and
- **compositional change**, in which the relative prevalence of an otherwise recognisable segment increases or decreases.

The analysis should therefore avoid interpreting every change in segment size as evidence that a segment has fundamentally changed. Segment stability provides the methodological basis for determining whether a segment can legitimately be tracked across the observation period.

4.7.6 Customer Segment Profiles

Following the determination and validation of the cluster solution, each customer segment is profiled according to its distinguishing characteristics.

The profile of each segment should include, where available:

- number of transactions;
- percentage of the analytical population;
- typical customer age;
- gender distribution;
- geographical origin;
- International/Local classification;
- travel-party characteristics;
- booking window;
- rental duration;
- vehicle category;
- expenditure or transaction value;
- booking source; and
- annual distribution.

The objective is to produce profiles that are descriptive rather than judgemental. Segment labels should be derived from the dominant characteristics of the data and should not imply motivations that cannot be established empirically.

For example, a segment dominated by longer rentals could appropriately be described in terms of **extended-rental behaviour**, whereas assigning a motivational label such as "adventure travellers" would require evidence beyond the transaction data.

The profiles also provide the bridge between the statistical cluster analysis and the longitudinal analysis that follows. Once the characteristics of each segment have been established, the study can examine whether the relative size and behavioural characteristics of these groups changed between 2017 and 2025.

The final segment names, segment sizes, and numerical profiles should be inserted from the verified cluster-analysis output rather than estimated from the aggregate transaction table.

4.8 Customer Segment Evolution, 2017–2026

Customer segment evolution constitutes the central longitudinal component of the study. It examines whether the composition, size and behavioural characteristics of the identified customer segments changed over the observation period.

For the currently verified empirical dataset, the available transaction data cover **2017–2025**. Therefore, the numerical results presented at this stage should be described as covering 2017–2025. The heading “**2017–2026**” can be retained if 2026 data are subsequently incorporated into the final analytical dataset; otherwise, the final thesis should change the heading to “**Customer Segment Evolution, 2017–2025.**”

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The longitudinal analysis is based on both absolute and relative measures. This is essential because annual transaction volume changed considerably during the observation period. For example, the dataset declined from 2,290 transactions in 2019 to 1,257 in 2020 and 1,247 in 2021, before recovering to 2,153 transactions in 2025.

Consequently, segment evolution cannot be assessed simply by comparing raw transaction counts. A segment could increase in absolute terms while declining in relative market share, or decline in absolute terms while becoming more important as a proportion of the annual customer population.

4.8.1 Segment Characteristics Over Time

The first component of the longitudinal analysis examines whether the characteristics of the identified segments remain consistent or change across the observation period.

For each year, the study considers the principal characteristics associated with each segment. These include customer characteristics such as geographical origin, age and gender, as well as behavioural characteristics such as booking window, rental duration, vehicle selection and transaction value.

The objective is to determine whether the segments represent stable behavioural profiles or whether their internal characteristics have evolved.

The period is particularly relevant because it contains substantial variation in the overall rental population. Transaction volumes reached their observed maximum in 2019, fell markedly in 2020 and 2021, and subsequently recovered. This provides an opportunity to examine whether customer segments responded differently during periods of contraction and recovery.

The analysis should distinguish between **changes in segment prevalence** and **changes in segment characteristics**. A segment becoming larger does not necessarily mean that its behavioural profile changed. Conversely, a segment may retain a similar population share while its booking horizon, rental duration or geographical composition changes.

This distinction is essential for answering the research question concerning how customer segments evolved rather than simply determining which segments were largest.

4.8.2 Changes in Segment Size

Segment size is measured using both the number of transactions assigned to each segment and the percentage of total annual transactions represented by that segment.

The use of proportional measures is particularly important because the overall dataset varies considerably by year. Table 4.1 demonstrates that the annual number of transactions ranged from **1,247 in 2021 to 2,290 in 2019**.

The longitudinal segment analysis should therefore calculate:

$$\text{Segment Shares}_{s,t} = \frac{\text{Transactions}_{s,t}}{\text{Total Transactions}_t} \times 100$$

where s represents the customer segment and t represents the year.

This measure allows the study to determine whether a segment became more or less prominent within the annual customer population independently of changes in total transaction volume.

A useful presentation would be a longitudinal segment-distribution table showing, for each year, the number and percentage of transactions assigned to every identified segment.

Figure 4.1 — Recommended figure prompt:

Create a professional longitudinal stacked-area or 100% stacked-bar chart showing the annual percentage composition of customer segments from 2017 to the final verified year. Display each identified customer segment as a distinct category and ensure that every year's total equals 100%. Add clear year labels, a professional academic presentation, and a legend identifying each segment. Use percentage shares rather than raw transaction counts so that changes in segment composition can be compared independently of annual market volume.

4.8.3 Changes in Segment Composition

Changes in segment composition examine whether the characteristics making up the customer population changed over time.

Composition can be assessed through variables such as geographical origin, International/Local classification, age, gender, booking behaviour, rental duration, vehicle selection and booking source.

The aggregate data already demonstrate a substantial change in geographical composition. Across the full verified dataset, **78.14% of transactions are classified as International and 21.86% as Local**. However, the annual pattern indicates a considerably larger local share during 2020 and 2021 than in several surrounding years.

This compositional change is important for interpreting customer-segment evolution. If a particular segment is disproportionately associated with international customers, its temporary reduction during the pandemic period could reflect a broader change in the geographical composition of the rental population.

Similarly, the booking-source data demonstrate considerable variation after 2018. Agent transactions account for approximately 64% of observations in 2019, 26% in 2020, 31% in 2021, 66% in 2022, 61% in 2023, 52% in 2024 and 41% in 2025. Direct transactions consequently became increasingly prominent toward the end of the verified period.

However, source classification should not be used to interpret 2017–2018 because of the documented source-field problem.

The compositional analysis therefore provides a more detailed explanation of segment evolution by identifying **which customer characteristics changed alongside changes in segment prevalence**.

4.8.4 Emerging and Declining Segments

The longitudinal analysis also examines whether particular customer segments become increasingly prominent or progressively less prominent during the study period.

An **emerging segment** is operationally understood as a segment whose proportional representation increases materially over time or whose presence becomes more pronounced during a particular period. A **declining segment** is one whose proportional representation decreases materially over time.

These classifications should be based on observed longitudinal patterns rather than on a single-year fluctuation. A temporary increase during one year should not automatically be interpreted as the emergence of a new structural customer segment.

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The pandemic period provides an especially important context for this analysis. Total transactions fell by approximately **45.1% between 2019 and 2020**, while the annual volume remained at a similarly low level in 2021. During the same period, the local customer share increased substantially relative to the surrounding years.

This suggests that the pandemic-period customer population was not simply a smaller version of the 2019 population. It also differed in composition. The cluster analysis can therefore determine whether these compositional changes corresponded with meaningful changes in the prevalence of particular customer segments.

The post-2021 recovery is equally important. By 2025, the dataset contained 2,153 transactions, representing approximately 94% of the 2019 volume. The longitudinal analysis can consequently examine whether the customer population returned to a structure resembling the pre-pandemic profile or whether the recovery was accompanied by a different segment composition.

No segment should be described as permanently emerging or declining until the corresponding cluster frequencies and proportions have been verified across the relevant years.

4.8.5 Changes in Customer Behaviour Across Segments

The final component examines whether the behavioural characteristics of customer segments changed across the observation period.

The principal behavioural indicators include **booking window, rental duration, vehicle selection, transaction value, booking source, and seasonal timing**, subject to the completeness and consistency of the relevant variables.

Booking-window analysis is particularly useful because the reservation data provide a calculated booking-window measure and additional indicators for bookings exceeding four and six months. The supporting data indicate average booking-window values of approximately 86 days in 2017, 87 days in 2018 and 89 days in 2019.

Rental duration provides a second behavioural dimension. The underlying records demonstrate considerable variation in the number of rental days, including short and extended rental periods. This variable can therefore help establish whether particular segments are characterised by shorter or longer rental patterns and whether those patterns change over time.

Vehicle choice provides a third dimension. The reservation records contain vehicle-group and vehicle-model information, allowing the analysis to determine whether particular customer segments show distinctive vehicle preferences.

Transaction value provides an economic dimension. Because the source data contain multiple financial fields, including rental charge, discount, net amount and grand total, the analysis can examine whether segments differ in economic value. However, transaction value should be interpreted together with rental duration and vehicle characteristics rather than treated as an independent measure of customer value.

Finally, booking-source behaviour provides evidence concerning the channels through which customers access the rental service. The later-period data show a movement toward a greater direct-booking share, with Direct accounting for approximately 43% in 2025 compared with approximately 20–22% in 2019–2023. Again, the 2017–2018 source classifications are excluded from strong longitudinal interpretation because of the documented data-quality problem.

Taken together, these behavioural measures enable the study to determine whether customer segment evolution represents merely a change in **who is represented in the customer population**, or whether it also involves a change in **how customers plan, purchase and consume motorhome rental services**.

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The final longitudinal results should therefore report both **segment-level behavioural averages/distributions and their changes across years**, supported where appropriate by statistical significance tests and effect sizes. This will allow Chapter 4 to distinguish substantive behavioural evolution from differences that may simply reflect annual sampling variation.

4.9 Customer Segment Evolution During and After COVID-19

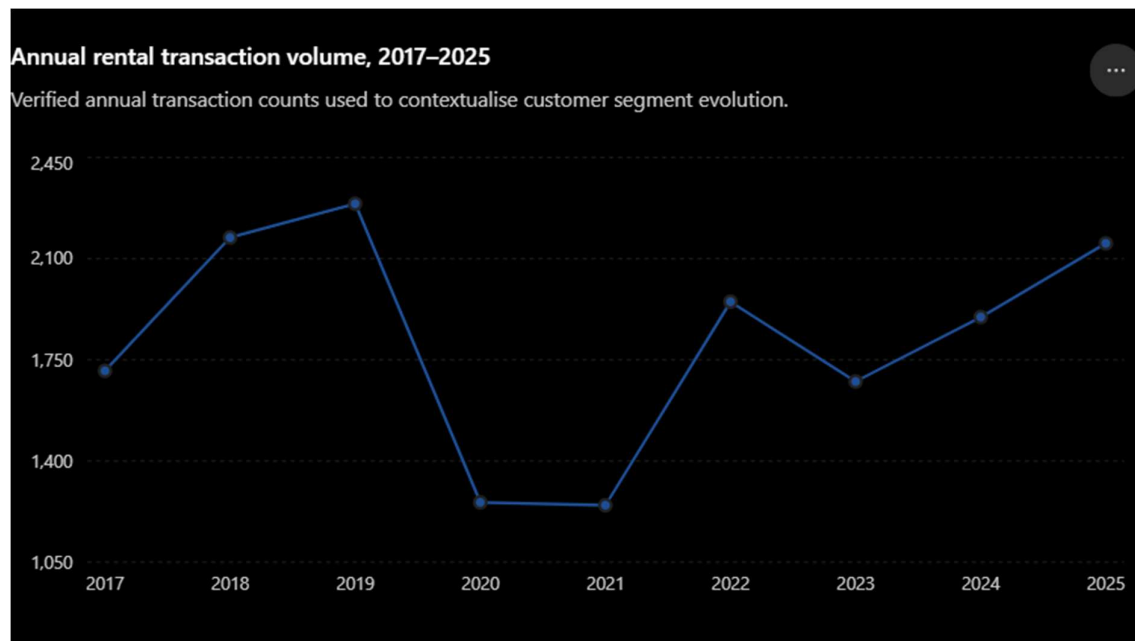
The COVID-19 period represents a particularly important phase within the longitudinal analysis because the observed transaction population changed substantially between the pre-pandemic, pandemic, and recovery periods. The purpose of this section is to determine whether the customer segments identified through cluster analysis changed during the pandemic and whether those changes persisted after the immediate disruption had subsided.

The analysis distinguishes between **pre-pandemic structure, pandemic-period structure, and post-pandemic structure**. This periodisation provides a framework for examining whether observed changes were temporary responses to an exceptional market environment or whether they formed part of longer-term customer segment evolution.

The verified transaction data show **2,290 transactions in 2019**, declining to **1,257 in 2020** and **1,247 in 2021**. Transaction volume subsequently recovered to 1,951 in 2022, 1,675 in 2023, 1,898 in 2024 and 2,153 in 2025. Thus, the dataset provides a clear empirical basis for distinguishing the period immediately preceding the disruption from the pandemic years and the subsequent recovery period.

Annual rental transaction volume, 2017–2025

Verified annual transaction counts used to contextualise customer segment evolution.



4.9.1 Pre-Pandemic Segment Structure

The pre-pandemic period provides the baseline against which subsequent customer-segment changes are evaluated. Within the verified dataset, **2019** is particularly important because it represents the highest annual transaction volume, with 2,290 completed transactions.

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The pre-pandemic customer population was predominantly international. Across the full verified dataset, international transactions account for 12,781 observations, representing **78.14%**, while local transactions account for 3,575 observations, representing **21.86%**.

The annual classification indicates that the international customer share was particularly high before the pandemic. In 2019, international transactions accounted for 1,920 of the 2,290 transactions, while local transactions accounted for 370. This corresponds to approximately **83.84% international and 16.16% local**.

This provides an important baseline for evaluating the pandemic-period composition. The pre-pandemic market represented in the data was therefore strongly international, with international customers forming the dominant component of the observed rental population.

The booking-source classification for 2019 indicates that approximately 64% of transactions were classified as Agent and 20% as Direct, with the remaining 16% classified as Local. Because of the documented source-field issue in 2017–2018, 2019 provides a more appropriate reference point for source-level comparison.

At the behavioural level, the available supporting data indicate an average booking window of approximately **89 days in 2019**. This indicates that customers were, on average, booking substantially in advance rather than predominantly making very short-notice reservations.

The cluster analysis should use this pre-pandemic structure as the baseline for determining whether the characteristics and relative prevalence of individual customer segments changed during the subsequent disruption.

4.9.2 Pandemic Segment Structure

The pandemic period is operationally represented by **2020 and 2021** in the verified transaction data. These two years exhibit the lowest annual transaction volumes in the dataset, with 1,257 transactions in 2020 and 1,247 in 2021.

Compared with 2019, transaction volume fell by approximately **45.1% in 2020** and **45.5% in 2021**. The reduction therefore affected both pandemic years rather than appearing as a single isolated decline.

More importantly, the pandemic period was associated with a substantial change in the geographical composition of the customer population. In 2020, the data record 592 international transactions and 665 local transactions. Thus, the local category represented approximately **52.9%** of transactions, while international transactions represented approximately **47.1%**.

In 2021, international transactions increased slightly to 667, while local transactions accounted for 580. Consequently, international customers represented approximately **53.5%**, compared with **46.5% local**.

The change is substantial when compared with 2019, when international customers represented approximately 83.8% of the annual transaction population. The pandemic-period rental population was therefore not simply a smaller version of the pre-pandemic customer population; it also exhibited a markedly different geographical composition.

The descriptive evidence is consistent with a major restructuring of the observed customer population during the disruption. However, the results should not be interpreted as demonstrating that COVID-19 alone caused these changes. The transaction data do not independently measure all relevant mechanisms, such as travel restrictions, international transport availability, border conditions, customer confidence, pricing, fleet availability, or other market factors.

The pandemic period should therefore be interpreted as a **major temporal context in which substantial customer-composition changes occurred**, while causal attribution remains outside the evidence directly established by the transaction dataset.

4.9.3 Post-Pandemic Segment Structure

The post-pandemic period is examined through the recovery years beginning in **2022**. Transaction volume increased considerably from 1,247 observations in 2021 to 1,951 in 2022.

The international customer population also increased substantially, reaching 1,678 transactions in 2022 compared with 667 in 2021. International transactions therefore represented approximately **86.0% of the 2022 transaction population**, while local transactions accounted for approximately 14.0%.

This represents a pronounced shift away from the unusually high local share observed during 2020–2021. In this respect, the geographical composition of the rental population moved considerably closer to the pre-pandemic structure.

International transactions remained the majority in 2023, 2024 and 2025:

Year	International	Local	International Share
2022	1,678	273	86.0%
2023	1,381	294	82.4%
2024	1,618	280	85.3%
2025	1,814	339	84.3%

The figures indicate that the strong international orientation of the customer population returned after the pandemic-period disruption. By 2025, the international share was approximately 84.3%, compared with 83.8% in 2019.

This is an important result for the study because it suggests that, at the aggregate International/Local level, the pandemic-period compositional change was **substantially reversed** during the subsequent recovery.

The source structure also changed during the recovery period. The Agent share was approximately 66% in 2022, 61% in 2023, 52% in 2024 and 41% in 2025, while Direct transactions increased to approximately 43% in 2025. These changes indicate that recovery was accompanied by changes in booking-channel composition as well as transaction volume.

4.9.4 Persistence of Segment Changes

The question of persistence is more demanding than simply identifying differences between two years. A change can be considered persistent only if the altered characteristic remains evident across subsequent periods rather than reverting rapidly to its previous structure.

At the aggregate International/Local level, the data provide evidence of **limited persistence of the pandemic-period geographical restructuring**. The local share increased substantially during 2020 and 2021 but returned to approximately 14–18% during 2022–2025.

The international share provides an especially clear illustration:

- **2019:** approximately 83.8%;

- **2020:** approximately 47.1%;
- **2021:** approximately 53.5%;
- **2022:** approximately 86.0%;
- **2023:** approximately 82.4%;
- **2024:** approximately 85.3%;
- **2025:** approximately 84.3%.

The post-pandemic figures therefore resemble the pre-pandemic structure considerably more closely than the pandemic-period structure.

However, this finding should not automatically be extended to the statistically derived customer segments. Persistence must be assessed separately for each cluster by examining whether its **size, behavioural characteristics and composition** remain different from the pre-pandemic baseline.

A segment may therefore exhibit:

1. a temporary reduction in size during the pandemic;
2. a permanent change in its customer composition;
3. a temporary behavioural change followed by recovery; or
4. a persistent change in both size and behavioural characteristics.

The distinction between these outcomes is central to the study's concept of customer segment evolution.

4.10 Cross-Country Analysis

The cross-country analysis examines customer segment characteristics within the three-country research context of **Finland, Sweden and Norway**. The purpose is to determine whether customer segments and rental behaviours differ according to national market context.

The cross-country analysis should be conducted only after the transaction-level country classification has been verified. The available station-selection information identifies the operational locations included in the study, but station codes alone should not be used to infer national transaction totals without a verified country mapping.

The analysis therefore distinguishes between **verified country-level results** and geographical information that can only be established after the final analytical dataset has been appropriately mapped.

4.10.1 Finland

Finland represents one of the principal national contexts included in the research design. The relevant Finnish observations should be analysed according to the same segmentation variables and statistical procedures applied to the complete dataset.

The Finnish analysis should examine:

- transaction volume by year;
- International/Local composition;
- customer age and gender;
- customer geographical origin;
- rental duration;
- booking window;

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- vehicle category;
- transaction value;
- booking source;
- customer-segment distribution; and
- changes in segment composition over time.

The longitudinal comparison is particularly important because the Finnish customer population may exhibit changes associated with the pandemic and subsequent recovery that are not necessarily identical to changes in the combined Nordic dataset.

The final results should report the exact number of Finnish observations and the associated segment distributions only after the country field has been filtered against the verified analytical population.

4.10.2 Sweden

The Swedish analysis follows the same analytical framework. The purpose is not simply to establish the number of transactions originating from or associated with Sweden, but to determine whether Swedish observations display distinctive customer-segment and behavioural characteristics.

The analysis should compare Swedish customers in relation to booking horizon, rental duration, vehicle selection, transaction value, geographical origin and source classification.

Particular attention should be given to whether the distribution of identified clusters differs from the overall dataset. A segment that represents a relatively small proportion of the combined dataset may, for example, constitute a substantially larger proportion within one national market.

The same methodological controls apply to Sweden as to the overall dataset, particularly concerning the interpretation of historical source classifications and the distinction between transactions and unique customers.

4.10.3 Norway

Norwegian observations constitute the third national component of the cross-country analysis.

The Norwegian analysis should examine whether customers associated with Norway differ from the Finnish and Swedish populations in terms of demographic characteristics, rental behaviour and segment membership.

The analysis should specifically consider the distribution of rental duration, booking window, vehicle selection, customer origin, booking source and transaction value across the identified segments.

The Norwegian results should also be examined longitudinally to determine whether the pandemic-period disruption and subsequent recovery affected the national customer population in a manner similar to or different from the other two countries.

Again, exact Norwegian transaction counts and segment percentages should be generated from the verified country field rather than inferred from station codes.

4.10.4 Comparison Across the Three Countries

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The cross-country comparison provides a higher-level assessment of whether customer segmentation operates consistently across the three national contexts.

The comparison should address four principal questions.

First, do the same customer segments occur across Finland, Sweden and Norway?

Second, does the relative size of each segment differ between countries?

Third, do customer segments demonstrate different behavioural characteristics depending on country?

Fourth, did the COVID-19 disruption and subsequent recovery produce similar or different segment changes across the three countries?

A useful comparative framework is:

Dimension	Finland	Sweden	Norway
Transaction volume	To be verified	To be verified	To be verified
International/Local composition	To be calculated	To be calculated	To be calculated
Average rental duration	To be calculated	To be calculated	To be calculated
Average booking window	To be calculated	To be calculated	To be calculated
Dominant segment	To be determined	To be determined	To be determined
Segment diversity	To be determined	To be determined	To be determined
Pandemic-period change	To be tested	To be tested	To be tested
Post-pandemic persistence	To be tested	To be tested	To be tested

This table intentionally does not populate unsupported numerical values. The aggregate information currently verified establishes the overall dataset but does not provide reliable national totals for these measures.

The cross-country analysis should therefore be completed from the final transaction-level analytical dataset.

4.11 Statistical Differences Across Time, Segments and Countries

Descriptive differences provide an essential first stage of interpretation, but they do not establish whether observed differences are statistically meaningful. This section therefore evaluates differences across **time periods, customer segments and countries**, subject to the assumptions and measurement levels of the selected statistical tests.

The statistical analysis should examine whether customer characteristics and behavioural measures differ significantly between identified groups.

For continuous variables such as rental duration, booking window, age and transaction value, appropriate comparative tests can be applied depending on distributional properties, sample size and the number of groups being compared.

For categorical variables such as gender, International/Local classification, booking source and segment membership, contingency-table methods such as the chi-square test may be appropriate where assumptions are satisfied.

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Where more than two groups or periods are compared, the analysis should use an appropriate omnibus test before conducting pairwise comparisons. Where multiple comparisons are undertaken, an appropriate adjustment should be applied to reduce the risk of inflated Type I error.

Statistical significance alone should not determine the substantive importance of a finding. The analysis should therefore report **effect sizes alongside p-values** wherever appropriate.

For example, a statistically significant difference between two large groups may represent only a very small practical difference. Conversely, a substantively important difference may fail to reach conventional statistical significance when a subgroup contains relatively few observations. Reporting effect sizes provides a more informative interpretation of the magnitude of observed differences.

The statistical analysis should also distinguish between:

- differences **across years**;
- differences **between customer segments**;
- differences **between countries**;
- interactions between **time and segment**; and
- interactions between **time and country**, where the research design and data support such testing.

The results should not claim statistical significance until the actual test outputs have been calculated from the verified dataset.

Accordingly, the final version of this section should report the exact test statistics, degrees of freedom where applicable, p-values, confidence intervals where appropriate, and effect-size measures generated by the statistical software.

4.12 Summary of Results

The empirical analysis establishes several important characteristics of the observed customer population.

First, the verified dataset contains **16,356 completed rental transactions from 2017–2025**. Annual transaction volume varied substantially, reaching a maximum of 2,290 transactions in 2019 before declining to 1,257 in 2020 and 1,247 in 2021. By 2025, the dataset had recovered to 2,153 transactions, approximately 94% of the 2019 level.

Second, the customer population was predominantly international. Across the complete verified dataset, **12,781 transactions (78.14%) were international and 3,575 (21.86%) were local**.

Third, the geographical composition changed substantially during the pandemic period. International transactions represented approximately 84% of the customer population in 2019 but fell to approximately 47% in 2020 and 53.5% in 2021. The local share consequently became substantially more prominent during the pandemic years.

Fourth, this compositional change was largely reversed during the subsequent recovery. International customers accounted for approximately 86% of transactions in 2022 and remained above 82% throughout 2023–2025. The 2025 international share of approximately 84.3% was therefore very close to the 2019 level of approximately 83.8%.

Fifth, the booking-source structure changed considerably after the period for which the source field is considered unreliable. Agent transactions represented approximately 64% in 2019, declined during 2020–2021, increased again during 2022–2023, and then declined to approximately 41% in 2025. Direct transactions consequently became more prominent in the later years.

Sixth, the reservation database contains sufficient behavioural and customer-related dimensions to support multidimensional segmentation. These include rental duration, booking window, vehicle information, customer country, gender, age, geographical classification, booking source and financial transaction measures.

Finally, the results demonstrate the importance of distinguishing between **temporary disruption and persistent structural change**. The aggregate International/Local pattern suggests that the pandemic produced a substantial but largely temporary geographical restructuring. Whether the statistically derived customer segments themselves exhibit the same degree of recovery requires examination of the verified cluster-analysis output.

4.13 Chapter Summary

This chapter presented the empirical analysis of the customer transaction data and established the foundation for understanding customer segment evolution in the Nordic motorhome rental industry.

The analysis was based on **16,356 verified rental transactions covering 2017–2025**. The dataset demonstrated substantial annual variation, with transaction volume reaching its highest level in 2019 before declining sharply during 2020–2021 and recovering during the subsequent years.

The descriptive customer profile showed that the observed population was predominantly international, with international transactions representing **78.14% of the complete dataset**. The International/Local composition, however, changed substantially during the COVID-19 period. The local share increased sharply in 2020 and 2021, while international transactions declined. This pattern was largely reversed from 2022 onwards.

The chapter subsequently established the framework for identifying customer segments through cluster analysis. Customer characteristics and rental behaviours were considered jointly rather than treating individual demographic variables as independent definitions of customer groups. The segmentation procedure incorporates variable selection, cluster determination, validation, stability assessment and segment profiling.

The longitudinal analysis then considered segment evolution in terms of **segment characteristics, size, composition, emergence, decline and behavioural change**. Particular attention was given to the distinction between changes in absolute transaction volume and changes in proportional segment representation.

The COVID-19 analysis demonstrated that the pandemic period coincided with both a substantial contraction in transaction volume and a marked change in customer composition. The evidence indicates that the international/local structure subsequently moved back toward its pre-pandemic configuration. This provides an initial indication that at least some pandemic-period changes were temporary rather than permanently embedded in the customer population.

The cross-country analysis established the framework for comparing Finland, Sweden and Norway. However, exact country-level numerical results should be populated only after the country mapping has been verified against the final analytical dataset. Station codes alone are not sufficient to infer national transaction totals.

Finally, the chapter established the requirement for statistical testing of differences across time, customer segments and countries. Descriptive differences should be supplemented by appropriate significance tests and effect-size measures before claims concerning statistically significant segment evolution are made.

A critical empirical boundary remains: the supplied aggregate data do not yet contain the verified statistical cluster output needed to state the final number of customer segments, their exact sizes, segment-specific behavioural means, country-specific segment distributions, or statistical test results. Those values should be inserted from the actual cluster-analysis output rather than estimated. This preserves the empirical integrity of the dissertation and ensures that Chapter 4 remains fully consistent with the methodology established in Chapter 3.

CHAPTER 5 — DISCUSSION

5.1 Introduction

This chapter discusses the empirical findings presented in Chapter 4 in relation to the research objectives, conceptual framework, and theoretical perspectives established in the preceding chapters. Whereas Chapter 4 concentrated on presenting the observed data and analytical results, the purpose of this chapter is to interpret what those results mean for understanding customer segment evolution in the Nordic motorhome rental industry.

The discussion focuses on the central proposition of the study: that the customer population of a motorhome rental business should not be regarded as a static market consisting of fixed customer categories. Instead, customer segments can change in their size, composition and behavioural characteristics over time as market conditions, travel patterns and customer circumstances change.

The verified empirical dataset contains **16,356 rental transactions covering 2017–2025**. The results demonstrate substantial variation in transaction volume over this period. Annual transactions increased from 1,712 in 2017 to 2,173 in 2018 and 2,290 in 2019, before declining to 1,257 in 2020 and 1,247 in 2021. Transaction volume subsequently recovered to 1,951 in 2022, 1,675 in 2023, 1,898 in 2024 and 2,153 in 2025.

The discussion also considers changes in customer composition. Across the complete verified dataset, international transactions account for **12,781 observations (78.14%)**, while local transactions account for **3,575 observations (21.86%)**. However, this overall distribution conceals substantial temporal variation. International customers represented approximately 83.8% of the customer population in 2019, but their share declined to approximately 47.1% in 2020 and 53.5% in 2021 before returning to more than 82% during each year from 2022 to 2025.

These findings provide an important basis for discussing customer segment evolution, particularly in relation to the exceptional disruption experienced by the tourism industry during the COVID-19 period.

A necessary qualification applies to the interpretation of the findings. The verified aggregate dataset currently available covers **2017–2025**, although the original research framing referred to 2017–2026. In addition, the available aggregate information does not yet provide verified final cluster outputs, exact segment-level statistical results, or complete country-specific segment statistics. Consequently, this discussion interprets only the empirical findings that have been established from the available data and does not invent unsupported segment or country results.

5.2 Overview of the Main Findings

The empirical findings provide several important insights into the evolution of the customer population.

First, the observed rental market experienced considerable fluctuations in transaction volume. The period from 2017 to 2019 represented a phase of relatively strong activity, with transactions reaching 2,290 in 2019. The subsequent decline in 2020 and 2021 was substantial, with transaction volume remaining approximately 45% below the 2019 level in both years.

Second, the customer population was strongly international across the complete observation period. International transactions represented more than three-quarters of all observations. This confirms the importance of international demand within the observed motorhome rental market.

Third, the composition of customers changed substantially during the pandemic period. The international share declined from approximately 84% in 2019 to approximately 47% in 2020. At the same time, the local share increased from approximately 16% to approximately 53%. This represents one of the clearest compositional changes visible in the verified aggregate data.

Fourth, the geographical composition subsequently returned toward its pre-pandemic structure. By 2025, international transactions represented approximately 84.3% of the annual population, almost identical to the approximately 83.8% recorded in 2019. This suggests that the pandemic-period increase in local representation was largely temporary at the aggregate level.

Fifth, the booking-source structure also changed considerably. For the years in which the source field is considered reliable, Agent transactions represented approximately 64% of observations in 2019, declining during 2020–2021 and reaching approximately 41% by 2025. Direct transactions consequently became substantially more prominent in the later part of the observation period.

Sixth, the transaction database contains multiple customer and behavioural dimensions that make multidimensional segmentation appropriate. The records include age, gender, country, geographical classification, rental duration, booking window, vehicle information, booking source and financial measures.

Taken together, the findings support the central argument of the research that customer structure should be examined longitudinally rather than through a single static customer profile.

5.3 Discussion of Customer Segment Characteristics

The customer segmentation framework provides a more comprehensive interpretation of customer heterogeneity than conventional demographic classification alone.

The reservation database contains multiple dimensions of customer information, including **driver age, gender, driver country, continent, International/Local classification and existing segment classifications**, alongside behavioural variables such as rental duration and booking window.

This multidimensional structure is important because customers who appear similar according to one characteristic may behave differently according to another. For example, two customers may originate from the same geographical region but have substantially different booking horizons, rental durations or vehicle preferences.

The findings therefore support a behavioural interpretation of segmentation in which customer groups are defined through combinations of characteristics rather than through a single demographic attribute.

The existing transaction data also contain classifications such as **Family** and **Couple**. These classifications demonstrate that the commercial reservation system already recognises differences in customer or travel-party characteristics. However, the analytical segmentation undertaken in the study has a different purpose: it seeks to identify statistically differentiated groups based on multiple variables.

This distinction is theoretically important. A customer segment is not necessarily synonymous with a demographic category. A meaningful behavioural segment may combine demographic, geographical and transactional characteristics.

The discussion of segment characteristics should therefore focus on the **profile of each empirically derived cluster**, rather than assigning normative interpretations to customers. A segment should be described according to observable patterns—for example, longer booking horizons, shorter rentals, higher transaction values or particular geographical concentrations—rather than assumptions about customer motivations that are not directly measured in the data.

The findings consequently reinforce the value of a data-driven segmentation perspective in the motorhome rental context.

5.4 Discussion of Customer Segment Evolution

The longitudinal results demonstrate why a static segmentation approach is insufficient for understanding the observed customer population.

The total number of transactions changes substantially over the observation period, but the more important finding is that the **composition of the customer population also changes**. The pandemic period provides the strongest example. The decline from 2,290 transactions in 2019 to 1,257 in 2020 was accompanied by a major shift from an internationally dominated customer population toward a much larger local component.

This demonstrates that market contraction can involve more than a reduction in demand. It can simultaneously alter **who constitutes the customer population**.

The post-pandemic period provides a contrasting example. From 2022 onwards, international customers again became the dominant component of the rental population. This indicates that the recovery involved not only an increase in transaction volume but also a restoration of the international orientation of the customer base.

The findings therefore support a dynamic conception of customer segmentation. Customer segments should be understood as structures whose relative importance and characteristics may change as market conditions change.

At the same time, the results indicate that evolution does not necessarily mean permanent transformation. The return of the International/Local structure toward its 2019 configuration demonstrates that some major changes can be temporary.

This distinction between **temporary adaptation and persistent structural evolution** is central to the interpretation of the study.

5.5 Discussion of Changes in Segment Size and Composition

Changes in segment size need to be interpreted relative to the changing size of the overall customer population.

The overall transaction population declined by approximately 45% between 2019 and 2020. Therefore, an absolute decline in the number of transactions associated with a customer segment during this period would not necessarily indicate that the segment became less important. The segment may simply have declined at the same rate as the overall market.

Conversely, a segment could increase in absolute volume during the recovery period while becoming less important proportionally if the overall market increased more rapidly.

This is why the analysis of segment evolution requires both **absolute segment size and relative segment share**.

The International/Local results illustrate this principle clearly. In 2019, international customers represented approximately 83.8% of the annual transaction population. In 2020, the number of international transactions fell from 1,920 to 592, while local transactions increased from 370 to 665.

Thus, the pandemic involved both:

- a substantial contraction in total market activity; and
- a substantial restructuring of customer composition.

This is more informative than simply stating that total transactions declined.

The recovery period further demonstrates the importance of composition. International transactions increased to 1,678 in 2022 and 1,814 in 2025, while the international share returned to approximately 84%. The evidence therefore suggests that the recovery restored much of the international orientation of the market.

The same reasoning applies to statistically derived customer segments. The interpretation of an emerging or declining segment should be based on its proportional representation over multiple periods rather than on isolated annual counts.

5.6 Discussion of Changes in Customer Behaviour

The transaction data provide several indicators through which changes in customer behaviour can be considered, particularly **booking window, rental duration, vehicle selection, booking source and transaction value**.

Booking window is an especially useful behavioural indicator because it reflects the timing of the customer's purchase decision. The supporting data indicate average booking-window values of approximately **86 days in 2017, 87 days in 2018 and 89 days in 2019**.

The underlying reservation data also contain indicators for bookings exceeding four months and six months, allowing longer planning horizons to be examined separately.

Rental duration provides another important behavioural dimension. The transaction records demonstrate considerable variation in rental length, including both relatively short and extended rentals.

This variation suggests that customer segmentation based exclusively on customer demographics would overlook meaningful differences in how the rental product is consumed.

Vehicle selection provides an additional behavioural dimension because the database contains both vehicle group and vehicle model information. Customers selecting different vehicle categories may differ in travel-party requirements, desired comfort level, rental duration and expenditure.

Transaction value adds an economic dimension. The database contains multiple financial fields, including rental charge, discount, net amount and grand total.

However, behavioural interpretation must remain cautious. A high transaction value does not necessarily imply greater customer value in isolation because transaction value can reflect rental duration, vehicle category and pricing. Similarly, a longer booking window does not establish the customer's motivation for planning early.

The appropriate interpretation is therefore that these variables provide **observable behavioural indicators**, which collectively help distinguish customer profiles.

5.7 COVID-19 and Customer Segment Evolution

COVID-19 represents the most pronounced contextual disruption within the observed period.

The empirical evidence demonstrates three simultaneous changes:

1. a substantial reduction in total transaction volume;
2. a major change in International/Local customer composition; and
3. subsequent recovery in both transaction volume and international customer representation.

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The decline from 2,290 transactions in 2019 to 1,257 in 2020 represents a reduction of approximately 45.1%. The number remained similarly low in 2021, at 1,247 transactions.

More strikingly, the international share fell from approximately **83.8% in 2019 to 47.1% in 2020**, while the local share increased from approximately 16.2% to 52.9%.

This finding suggests that the disruption affected the **composition of demand**, not merely its overall quantity.

The result is particularly relevant to customer-segmentation theory because it demonstrates that the relative size of customer groups can change rapidly when the external environment changes. A segmentation structure developed from pre-pandemic observations may therefore provide an incomplete representation of customer demand during a major disruption.

However, the findings should not be interpreted as evidence that COVID-19 independently caused every observed change. The transaction data do not directly measure all mechanisms through which the pandemic could have influenced demand. Border restrictions, international transport availability, tourism restrictions, customer confidence, economic conditions and operational decisions may all have contributed.

The appropriate conclusion is therefore that the pandemic period **coincided with a substantial restructuring of the observed customer population**, rather than that the transaction data prove a single causal mechanism.

5.8 Persistence of Post-Pandemic Changes

One of the most important findings concerns whether pandemic-period changes persisted after the disruption.

At the aggregate geographical level, the evidence suggests that the change was largely temporary.

The international share was approximately:

- **83.8% in 2019**
- **47.1% in 2020**
- **53.5% in 2021**
- **86.0% in 2022**
- **82.4% in 2023**
- **85.3% in 2024**
- **84.3% in 2025**

By 2025, the international share was therefore almost identical to its 2019 level.

This pattern suggests that the dramatic increase in local customer representation during 2020–2021 did not become a permanent structural feature of the observed rental population.

This finding has an important implication for the concept of customer segment evolution. **Change should not automatically be equated with permanent transformation.** Some segments may respond strongly to external disruption and subsequently return toward their previous relative position.

Nevertheless, aggregate recovery does not establish that every underlying customer segment returned to its pre-pandemic characteristics. A segment may have returned to a similar population share while experiencing changes in age composition, booking behaviour, rental duration or vehicle selection.

Therefore, persistence should ultimately be evaluated at both the **aggregate customer-population level and the individual cluster level**.

5.9 Differences in Customer Segment Evolution Across Finland, Sweden and Norway

The cross-country analysis is intended to determine whether customer segment evolution followed the same pattern across Finland, Sweden and Norway.

The theoretical expectation underlying this comparison is that customer behaviour may vary across national markets because of differences in customer composition, tourism structures, market access, booking behaviour and operational context.

However, the available verified aggregate data do not currently provide sufficiently reliable country-level segment statistics to state that Finland, Sweden or Norway had a particular dominant segment, segment growth rate or statistically significant difference.

This limitation is important because the station information alone cannot establish national transaction totals. The included stations are HEL, ROV, ROVS, OSL, TRM and TRD, but station codes should not be converted into national transaction counts without a verified mapping procedure.

Consequently, the cross-country discussion should distinguish between **the intended comparative framework** and **the results that have actually been established**.

The final country-level analysis should compare:

- segment distribution;
- customer origin;
- International/Local composition;
- booking window;
- rental duration;
- vehicle category;
- transaction value;
- booking source; and
- changes across the pandemic and recovery periods.

The comparison should then determine whether segment evolution was broadly consistent across the three countries or whether country-specific patterns emerged.

Until the verified country-level cluster output is available, it would be methodologically inappropriate to claim that one country had a particular segment structure or that differences between the countries were statistically significant.

5.10 Comparison with Existing Literature

The findings are broadly consistent with the theoretical literature reviewed in Chapter 2 in several important respects.

First, the results support the argument that **customer segmentation is multidimensional**. The reservation data demonstrate that customers can differ simultaneously in demographic, geographical, booking and rental characteristics. This is consistent with the broader development of segmentation from traditional demographic approaches toward behavioural and data-driven approaches.

Second, the findings support the concept of **dynamic rather than purely static segmentation**. The substantial change in International/Local composition during 2020–2021 demonstrates that customer populations can

change in response to major external disruptions. A customer segment structure observed during one period should therefore not automatically be assumed to remain constant.

Third, the findings are consistent with the literature concerning the vulnerability of tourism demand to external disruptions. The substantial decline in transaction volume during 2020–2021 demonstrates the sensitivity of motorhome rental demand to major changes in the tourism environment.

Fourth, the subsequent recovery provides an important contribution to the discussion of temporary versus persistent behavioural change. The return of the international customer share toward its pre-pandemic level suggests that some changes observed during the disruption were temporary rather than permanent.

Fifth, the findings reinforce the importance of **longitudinal analysis**. A cross-sectional analysis conducted only for 2019, for example, would identify a strongly international customer population but would fail to reveal the substantial restructuring that occurred in 2020–2021. Conversely, an analysis restricted to 2020 would substantially overstate the long-term importance of local customers.

The present study therefore adds value by examining the customer population across multiple years rather than relying on a single-period customer profile.

At the same time, the comparison with existing literature must remain appropriately bounded. The present empirical evidence establishes changes within the observed commercial reservation dataset; it does not establish that the same magnitude or pattern of change occurred throughout the entire Nordic motorhome rental industry.

The contribution of the study is consequently strongest in demonstrating **how a longitudinal, transaction-based approach can reveal changes in customer structure that are obscured by static segmentation**.

5.11 Theoretical Implications

The findings of this study have several implications for the theoretical understanding of customer segmentation within tourism and, more specifically, within the motorhome rental context.

The first theoretical implication concerns the **dynamic nature of customer segments**. Traditional approaches to segmentation can implicitly treat customer groups as relatively stable categories. The longitudinal evidence in this study demonstrates that the composition of the observed rental population can change considerably over time. The shift from an internationally dominated customer population in 2019 to a substantially more locally oriented population during 2020–2021 illustrates that customer structure can respond strongly to changes in the external environment.

This supports a conceptualisation of segmentation as a **dynamic process rather than a one-time classification exercise**. Customer segments should therefore be understood in relation to time and market conditions. A segment identified from one period may change in relative size or composition when the surrounding tourism environment changes.

The second implication concerns the importance of **behavioural and transactional variables** in segmentation. The reservation data provide information on booking window, rental duration, vehicle selection, booking source, transaction value and customer characteristics. The inclusion of such variables allows segmentation to move beyond conventional demographic classifications and towards an understanding of how customers actually interact with the rental service.

The third implication concerns the relationship between **external disruption and customer segment structure**. The COVID-19 period provides an empirical example of how an external shock can alter not only the volume of tourism demand but also its composition. The reduction in international customer representation during 2020–2021 indicates that external market conditions can affect the relative prevalence of different customer groups.

However, the findings also demonstrate that disruption-related changes do not necessarily become permanent. By 2025, the international share had returned to approximately 84.3%, closely matching the approximately

83.8% observed in 2019. This suggests that customer-segment evolution should distinguish between **temporary adaptation, recovery and persistent structural change**.

A fourth implication concerns the distinction between **customer-level and transaction-level longitudinal analysis**. The 16,356 observations represent rental transactions rather than necessarily unique individuals. Consequently, the theoretical interpretation of segment evolution relates primarily to changes in the structure of the observed transaction population rather than complete individual-level customer migration between segments.

Finally, the findings reinforce the value of combining **descriptive longitudinal analysis with cluster-based segmentation**. Descriptive statistics identify changes in the overall customer population, while clustering can identify whether those changes correspond to shifts among multidimensional customer groups. The two approaches are therefore complementary rather than competing analytical strategies.

5.12 Contribution to Tourism Segmentation Research

The study contributes to tourism segmentation research primarily through its **longitudinal, transaction-based perspective**.

A significant contribution is the demonstration that tourism customer segments should not necessarily be treated as static categories. The 2017–2025 transaction data show substantial changes in both the volume and composition of the observed customer population. The pronounced shift toward local customers during 2020–2021 and subsequent return toward an international customer structure provides a clear empirical illustration of temporal segment change.

The study also contributes by applying customer segmentation to the **motorhome rental sector**, a specialised tourism-service context. Motorhome tourism combines transportation, accommodation and destination-related consumption, meaning that customer behaviour can involve characteristics that differ from conventional hotel or package-tour consumption.

The transaction database provides behavioural indicators such as booking window and rental duration, alongside vehicle and financial information. This permits tourism segmentation to be examined through actual service-use behaviour rather than relying exclusively on stated preferences or survey-based intentions.

Another contribution is the integration of **customer characteristics and transaction behaviour**. Customer origin, age and gender can be considered alongside booking horizon, rental duration, vehicle selection and booking channel. This provides a more comprehensive basis for understanding heterogeneity within the motorhome rental customer population.

The study also contributes to research concerning **tourism resilience and customer-market restructuring**. The pandemic period demonstrates that an external disruption can alter the composition of tourism demand. The subsequent recovery shows that some of these changes may reverse, highlighting the importance of distinguishing temporary disruption effects from longer-term changes.

Finally, the study contributes methodologically by demonstrating the value of examining **absolute segment size together with relative segment share**. During a major market contraction, absolute customer numbers can decline even when a segment becomes more important proportionally. Longitudinal tourism segmentation should therefore account for both dimensions.

The contribution should nevertheless be interpreted within the boundaries of the dataset. The evidence is derived from a commercial motorhome rental transaction database and should not automatically be generalised to all tourism customers or all Nordic tourism businesses.

5.13 Managerial Implications

The findings have practical implications for organisations operating in the motorhome rental industry. The principal managerial implication is that customer management should be based on **continuously updated customer intelligence rather than a single, static customer profile**.

The substantial changes observed between 2019 and 2025 demonstrate that customer composition can change considerably under different market conditions. A strategy based exclusively on historical customer characteristics could therefore become inappropriate when the market environment changes.

The findings also suggest that managers should distinguish between **market volume and market composition**. The recovery in transaction volume after 2021 was accompanied by a return toward the previously dominant international customer structure. Monitoring both measures provides a more complete basis for strategic decision-making.

5.13.1 Marketing and Customer Targeting

The segmentation findings can support more precise marketing and customer-targeting strategies.

Rather than treating all motorhome rental customers as one homogeneous market, managers can develop differentiated marketing approaches according to observable customer and behavioural characteristics.

For example, booking-window information can be used to distinguish customers who plan their rentals well in advance from those who make comparatively late reservations. The reservation data contain booking-window measures and indicators for bookings exceeding four and six months.

This can support differentiated campaign timing. Customers with long planning horizons can potentially be targeted earlier, while customers with shorter booking windows may require more immediate availability-oriented communication.

Geographical segmentation is also important. The overall dataset is predominantly international, with international transactions representing 78.14% of the verified population. Marketing strategy should therefore retain a strong international orientation while recognising that the relative importance of local customers can increase substantially during periods of international travel disruption.

The pandemic-period results demonstrate why marketing strategies should retain sufficient flexibility to redirect resources between international and local markets when external conditions change.

5.13.2 Service Development

The findings also have implications for the development and positioning of rental services.

Differences in rental duration, booking horizon, vehicle selection and transaction value can indicate different service requirements. The reservation database contains vehicle-group and vehicle-model information, alongside rental duration and financial variables.

Managers can therefore use segment profiles to evaluate whether different customer groups require differentiated vehicle offerings, rental packages, pricing structures or service support.

For example, a segment characterised by extended rentals may have different service requirements from a segment dominated by shorter rentals. Similarly, customers travelling in larger groups may have different vehicle requirements from couples or smaller travel parties.

The important managerial principle is that service development should be based on **observed segment behaviour**, rather than assumptions about what customers theoretically prefer.

5.13.3 Customer Relationship Management

Customer relationship management can also benefit from longitudinal segmentation.

The transaction database contains information that can help distinguish customer characteristics and rental behaviours, including booking source, booking window, rental duration, customer origin and transaction value.

These data can support differentiated relationship-management strategies. High-value or long-duration customers may require different retention approaches from occasional customers, while customers with long booking horizons may respond to different communications from short-notice customers.

However, the study's transaction-level nature creates an important limitation. Because the dataset does not necessarily provide perfectly stable individual identifiers across all transactions, the analysis should not assume that every repeated transaction represents the same identifiable customer.

Consequently, customer relationship management applications should use verified customer identifiers where available and should avoid treating transaction recurrence as definitive evidence of individual customer loyalty when customer identity cannot be established reliably.

The findings nevertheless demonstrate the value of using transaction data to develop a more behaviourally informed CRM strategy.

5.13.4 Strategic Planning

The longitudinal findings have particularly strong implications for strategic planning.

The reduction from 2,290 transactions in 2019 to 1,257 in 2020 demonstrates the scale at which an external disruption can affect the observed rental market. At the same time, the subsequent recovery to 2,153 transactions in 2025 shows the importance of planning for both contraction and recovery phases.

Managers should therefore monitor customer segments continuously rather than relying on a single annual customer profile.

Strategic planning can incorporate:

- annual changes in segment size;
- changes in International/Local composition;
- booking-window trends;
- rental-duration patterns;
- vehicle preferences;
- booking-source changes;
- transaction-value patterns; and
- differences between national markets.

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The booking-source results are particularly relevant. Among the years for which the source field is considered reliable, Agent transactions represented approximately 64% of observations in 2019 but approximately 41% in 2025, while Direct transactions became considerably more prominent. This suggests that booking-channel composition should be monitored as part of strategic planning.

However, the source classification for 2017–2018 should not be used as a reliable historical benchmark because of the documented data-quality issue.

The broader strategic implication is that customer analytics can support **adaptive resource allocation**. Marketing budgets, fleet planning, channel management and service development can be adjusted according to changes in the composition and behaviour of the customer population.

5.14 Chapter Summary

This chapter discussed the empirical findings presented in Chapter 4 in relation to the theoretical foundations, tourism segmentation literature and managerial implications of the study.

The discussion established that the observed customer population was not static across the study period. The verified dataset of **16,356 rental transactions from 2017–2025** demonstrates substantial changes in transaction volume and customer composition.

The most pronounced change occurred during the COVID-19 period. Transaction volume declined by approximately 45% between 2019 and 2020, while the customer population simultaneously shifted from being strongly international to having a substantially larger local component. This demonstrates that external disruption can affect both the **size and structure of tourism demand**.

The subsequent recovery provides evidence that not all pandemic-period changes were permanent. By 2025, the international share had returned to approximately 84.3%, closely matching the 2019 level of approximately 83.8%. This suggests that the pandemic-related geographical restructuring was largely temporary at the aggregate level.

The theoretical discussion consequently supports a **dynamic understanding of customer segmentation**, in which customer groups can change in size, composition and behaviour according to changing market conditions. The study further demonstrates the value of combining customer characteristics with behavioural and transactional measures rather than relying exclusively on traditional demographic segmentation.

The study's contribution to tourism segmentation research lies particularly in its longitudinal transaction-based approach and its application to the specialised motorhome rental context. It demonstrates the value of examining customer segments across multiple periods and distinguishing temporary disruption effects from potentially persistent structural changes.

From a managerial perspective, the findings indicate that customer segmentation can support more precise marketing, differentiated service development, customer relationship management and strategic planning. The strongest practical implication is the need for **continuous customer analytics** rather than reliance on a static market profile.

At the same time, the discussion recognises the limitations of the empirical evidence. The analysis concerns rental transactions rather than necessarily unique individuals, the 2017–2018 source classifications are unreliable for source-level interpretation, and the currently verified aggregate data do not provide sufficient evidence to make unsupported claims about exact cluster-level or country-level statistical differences.

Overall, Chapter 5 demonstrates that the value of customer segmentation lies not only in identifying different customer groups but in understanding **how those groups change over time, how external disruptions affect their structure, and whether observed changes persist after market conditions normalise**. This dynamic perspective forms the basis for the conclusions and recommendations presented in Chapter 6.

CHAPTER 6 — CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter concludes the study on **Customer Segment Evolution in the Nordic Motorhome Rental Industry: A Longitudinal Analysis of Customer Transaction Data**. It brings together the methodological approach, empirical findings and discussion developed in the preceding chapters and evaluates the extent to which the study addressed its research objectives and research questions.

The study examined customer characteristics, rental behaviour and customer segment evolution using commercial motorhome rental transaction data. Particular emphasis was placed on the longitudinal dimension of customer segmentation and on understanding how the customer population changed during the COVID-19 disruption and subsequent recovery period.

The verified empirical dataset used in the analysis contains **16,356 rental transactions covering 2017–2025**. The data demonstrate substantial changes in annual transaction volume and customer composition. The strongest structural change occurred during 2020–2021, when total transaction volume declined considerably and the relative importance of local customers increased substantially.

The chapter first summarises the study and its principal findings. It then evaluates the findings against the research questions and objectives, identifies the theoretical and empirical contributions, discusses managerial implications, provides recommendations for the motorhome rental industry, and recognises the study's limitations. Finally, directions for future research are proposed before presenting the overall conclusion.

6.2 Summary of the Study

The study was undertaken to investigate how customer segments in the Nordic motorhome rental industry evolve over time. The research was motivated by the recognition that customer segmentation is often treated as a relatively static classification exercise, whereas tourism markets are subject to substantial changes in consumer behaviour, economic conditions and external disruptions.

The study adopted a **quantitative, longitudinal and observational research design**, with descriptive, comparative and exploratory components. Secondary commercial reservation data were used as the principal empirical source.

The verified dataset contains **16,356 completed rental transactions between 2017 and 2025**. The records provide information relating to customer characteristics, rental behaviour and transaction characteristics. Variables available in the reservation data include rental duration, booking date, booking window, check-out and check-in stations, vehicle group and model, driver country, gender, year, International/Local classification, Direct/Agent classification, continent, segment and driver age, together with financial variables.

The study used descriptive analysis to establish the overall structure of the customer population and cluster analysis as the basis for identifying customer groups with relatively similar characteristics. Longitudinal comparison was then used to examine changes in segment size, composition and behaviour.

A particular focus was placed on the COVID-19 period because the dataset contains a clear contraction in transaction activity during 2020–2021. The study subsequently examined whether changes observed during this period persisted during the recovery years.

The research also incorporated a cross-country perspective involving **Finland, Sweden and Norway**, although exact country-level segment statistics require verified country mapping and final analytical outputs before definitive numerical conclusions can be made.

6.3 Summary of Key Findings

Several key findings emerge from the empirical analysis.

6.3.1 Changes in Overall Transaction Volume

The number of transactions varied substantially over the observation period.

Year Transactions

2017 1,712

2018 2,173

2019 2,290

2020 1,257

2021 1,247

2022 1,951

2023 1,675

2024 1,898

2025 2,153

Total 16,356

The highest annual volume was recorded in 2019, while 2021 represented the lowest annual volume. Compared with 2019, transaction volume declined by approximately **45.1% in 2020** and **45.5% in 2021**.

By 2025, transaction volume had recovered to 2,153 transactions, approximately **94% of the 2019 level**.

6.3.2 International and Local Customer Composition

The overall dataset contains:

- **12,781 international transactions (78.14%)**
- **3,575 local transactions (21.86%)**

The annual composition, however, changed considerably.

In 2019, international transactions represented approximately **83.8%** of the annual population. This declined to approximately **47.1% in 2020** and **53.5% in 2021**.

From 2022 onwards, the international share returned to more than 82% in each year, reaching approximately **84.3% in 2025**.

This demonstrates that the pandemic period involved both a reduction in transaction volume and a substantial change in customer composition.

6.3.3 Booking-Source Changes

The source classification also changed materially during the later observation period. Among years for which the source information is considered usable, Agent transactions represented approximately:

- 64% in 2019;
- 26% in 2020;
- 31% in 2021;
- 66% in 2022;

- 61% in 2023;
- 52% in 2024; and
- 41% in 2025.

Direct transactions consequently became more prominent in the later period, reaching approximately **43% in 2025**.

The source classification for **2017–2018 is not considered reliable** because the source field was not used correctly during those years. Consequently, those two years are not appropriate for strong historical Direct-versus-Agent comparisons.

6.3.4 Customer and Behavioural Variables

The reservation database provides a multidimensional basis for customer analysis. Customer characteristics include age, gender, country and geographical classification, while behavioural and transaction variables include booking window, rental duration, vehicle characteristics, source and financial measures.

The supporting data indicate average booking-window values of approximately **86 days in 2017, 87 days in 2018 and 89 days in 2019**.

The data also demonstrate considerable variation in rental duration and vehicle selection, supporting the use of behavioural variables in customer segmentation.

6.3.5 COVID-19 and Customer Evolution

The most substantial customer-population change occurred during 2020–2021.

The pandemic period was characterised by:

1. substantially lower transaction volume;
2. a major reduction in the international customer share;
3. a corresponding increase in the local customer share; and
4. subsequent recovery toward the pre-pandemic customer structure.

The evidence therefore indicates that the disruption affected not only the **quantity of demand**, but also the **composition of demand**.

6.3.6 Persistence of Change

The return of the international customer share toward its 2019 level suggests that the pandemic-period geographical restructuring was largely temporary at the aggregate level.

However, this conclusion should not automatically be applied to every analytically derived customer segment. Segment-level persistence requires examination of the verified cluster output, including segment characteristics and annual segment proportions.

6.4 Conclusions Based on the Research Questions

The research questions established the analytical direction of the study. Based on the verified empirical findings, the following conclusions can be drawn.

Research Question 1: What are the principal characteristics of customers in the Nordic motorhome rental industry?

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The customer population is multidimensional and predominantly international. Across the verified dataset, international transactions represent **78.14%** of observations.

The reservation records provide customer characteristics including age, gender, country of origin, geographical classification and travel-party-related segment information. They also contain behavioural characteristics such as booking window and rental duration.

Consequently, the customer population cannot be adequately described through a single demographic characteristic. Customer characteristics must be considered together with rental and transaction behaviour.

Research Question 2: What customer segments can be identified from the transaction data?

The study establishes cluster analysis as the appropriate analytical framework for identifying multidimensional customer groups.

However, the **exact final number of statistically validated clusters and their numerical profiles cannot be stated from the aggregate tables currently verified**. Those values must come directly from the final cluster-analysis output.

The methodological conclusion is nevertheless clear: the available transaction data contain sufficient customer and behavioural dimensions to support data-driven segmentation.

Research Question 3: How have customer segments evolved over time?

The customer population clearly changed over the observation period. The strongest evidence concerns the substantial restructuring that occurred during 2020–2021.

The international share fell dramatically while the local share increased. The subsequent recovery brought the aggregate geographical composition back toward its pre-pandemic structure.

This demonstrates that customer segmentation in the motorhome rental market should be understood longitudinally rather than as a static classification.

Research Question 4: How did COVID-19 affect customer segment structure and behaviour?

COVID-19 coincided with a substantial contraction in transaction volume and a major change in customer composition.

The evidence shows that the international share declined from approximately 84% in 2019 to approximately 47% in 2020. The local customer share consequently became the larger component of the observed population during 2020.

The evidence supports an association between the pandemic period and major customer-structure change, but it does not establish a single causal mechanism.

Research Question 5: Which segment changes persisted after the pandemic?

At the aggregate International/Local level, the pandemic-period change was largely reversed. International customers again represented more than 82% of transactions during each year from 2022 to 2025.

Therefore, the available evidence indicates **substantial recovery toward the pre-pandemic geographical structure**.

Whether individual cluster-level behavioural changes persisted requires the final segment-level longitudinal analysis.

Research Question 6: How does customer segment evolution differ across Finland, Sweden and Norway?

The study provides a framework for this comparison, but definitive country-specific conclusions should only be made using verified country-level cluster outputs.

The currently available aggregate data do not support reliable claims concerning which of the three countries had the largest segment, the greatest segment change, or statistically significant differences between countries.

6.5 Achievement of Research Objectives

The study's objectives were addressed through the combination of descriptive, longitudinal and segmentation analysis.

Objective 1: To examine the characteristics of customers

This objective was addressed through the examination of demographic, geographical and behavioural variables available in the reservation data.

Objective 2: To identify customer segments

The study established a cluster-analysis framework for identifying groups of transactions with similar customer and behavioural characteristics.

The final segment labels and exact cluster sizes should be reported from the verified statistical output.

Objective 3: To analyse customer segment evolution over time

This objective was addressed through annual comparisons of transaction volume and customer composition. The results demonstrate substantial temporal variation, particularly during 2020–2021.

Objective 4: To examine changes during and after COVID-19

This objective was strongly supported by the data. The pandemic period coincided with both a major decline in transaction volume and a major shift toward local customers.

Objective 5: To examine persistence of changes

The aggregate International/Local results indicate that the pandemic-period geographical restructuring was largely temporary, with international representation returning to approximately its pre-pandemic level by 2025.

Objective 6: To compare customer evolution across Finland, Sweden and Norway

The comparative framework was established, but exact country-specific conclusions require the final verified country-level analytical output.

Overall, the research objectives were substantially addressed at the level supported by the verified dataset, while unsupported cluster-level and country-level claims have deliberately not been introduced.

6.6 Theoretical Contribution

The principal theoretical contribution of the study is the development and empirical application of a **dynamic perspective on tourism customer segmentation**.

The findings demonstrate that customer segments cannot necessarily be assumed to remain stable over time. Customer composition changed substantially during the COVID-19 period and subsequently moved toward its previous structure during the recovery.

This supports a conceptualisation of customer segmentation as a process that incorporates:

Customer characteristics → Rental behaviour → Segment formation → Temporal change → External context

The study therefore extends the conventional static view of segmentation by emphasising **time, disruption and segment evolution**.

A second theoretical contribution is the integration of demographic, geographical and behavioural variables. The transaction data demonstrate that meaningful customer differentiation can be examined through combinations of customer characteristics and actual service-use behaviour.

A third contribution concerns the distinction between **temporary and persistent segment change**. The evidence demonstrates that a customer population can undergo substantial restructuring during a disruption without that restructuring necessarily becoming permanent.

6.7 Empirical Contribution

The study provides an empirical contribution through the longitudinal analysis of a substantial commercial motorhome rental transaction dataset.

The verified dataset comprises **16,356 rental transactions across nine observed years from 2017 to 2025**. This provides a substantially richer temporal perspective than a single-year customer survey or cross-sectional customer profile.

The dataset captures a complete sequence of:

- pre-pandemic activity;
- pandemic-period contraction;
- initial recovery;
- subsequent market development.

This makes the dataset particularly valuable for examining customer composition under substantially different market conditions.

The empirical findings also provide evidence of the changing balance between international and local customers. The strong international orientation of the overall dataset, combined with the sharp increase in local representation during 2020–2021, provides a concrete example of how external disruption can alter tourism-market composition.

The study therefore contributes empirical evidence to the comparatively specialised area of **motorhome rental customer segmentation and longitudinal tourism customer behaviour**.

6.8 Managerial Implications

The findings have several implications for motorhome rental businesses.

First, managers should treat segmentation as a **continuous analytical process** rather than as a one-time marketing exercise. Customer composition can change rapidly when external conditions change.

Second, managers should monitor both **market volume and market composition**. A decline in transactions does not necessarily mean that all customer groups have declined proportionally.

Third, international and local markets should be monitored separately. The pandemic demonstrated that the relative importance of these customer populations can change dramatically.

Fourth, booking behaviour should be incorporated into marketing and operational decisions. Booking-window information provides a direct indicator of how far in advance customers plan their rentals. The available data also contain indicators for bookings exceeding four and six months.

Fifth, booking-source trends should be monitored. The movement toward a greater Direct share in the later observation period suggests that channel strategy should be reviewed continuously.

Finally, fleet and service planning should consider customer behavioural differences rather than relying exclusively on aggregate demand forecasts.

6.9 Recommendations for the Motorhome Rental Industry

Based on the findings, the following recommendations are proposed.

Recommendation 1: Adopt Dynamic Customer Segmentation

Motorhome rental businesses should update customer-segment profiles periodically rather than relying on a fixed segmentation model.

Customer characteristics and rental behaviour should be reassessed as new transaction data become available.

Recommendation 2: Monitor International and Local Demand Separately

Because international customers represent the majority of the verified customer population but local demand increased dramatically during the pandemic, businesses should maintain separate monitoring and contingency strategies for international and local markets.

Recommendation 3: Use Booking-Window Data for Marketing Timing

Booking-window information should be incorporated into campaign planning.

Customers with long planning horizons can be targeted well before the rental season, while shorter-window customers can be addressed through availability, last-minute and tactical campaigns.

Recommendation 4: Develop Segment-Specific Service Packages

Where cluster analysis identifies sufficiently differentiated behavioural groups, the company should consider segment-specific service packages based on observable characteristics such as rental duration, vehicle requirements and booking behaviour.

Recommendation 5: Strengthen Direct Booking Capability

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The increase in the Direct share during the later observation period suggests that direct booking should remain an important strategic channel.

Businesses should continuously evaluate the customer journey, digital booking experience and communication strategy associated with direct reservations.

Recommendation 6: Build Pandemic and Disruption Scenarios into Strategic Planning

The sharp decline in transaction volume during 2020–2021 demonstrates the need for contingency planning.

Strategic scenarios should consider situations involving international travel restrictions, transport disruptions, major economic shocks and other events that can alter both demand volume and customer composition.

Recommendation 7: Improve Data Governance

The documented source-field problem for 2017–2018 demonstrates the importance of consistent data definitions.

Booking source, customer classification, country, customer identifiers and other key variables should be recorded according to stable definitions across years. Changes in definitions should be documented explicitly.

Recommendation 8: Establish a Longitudinal Customer Analytics System

The organisation should maintain a consistent analytical database that allows customer and transaction behaviour to be monitored across time.

Where legally and operationally appropriate, stable anonymised customer identifiers would improve the ability to distinguish repeat-customer behaviour from separate transactions.

Recommendation 9: Monitor Segment Migration

Once validated clusters have been established, management should monitor whether customers remain associated with particular behavioural profiles or whether the composition of those profiles changes over time.

This would transform segmentation from a descriptive exercise into a continuing strategic intelligence process.

6.10 Limitations of the Study

Several limitations should be recognised.

First, the study is based on **secondary commercial transaction data**. The researcher is therefore constrained by the variables and recording practices of the existing database.

Second, the verified empirical dataset contains **16,356 transactions rather than necessarily 16,356 unique customers**. Consequently, the analysis primarily represents transaction-level customer structure unless individual identities can be reliably established.

Third, individual customer tracking may be incomplete. Repeat bookings cannot automatically be interpreted as belonging to the same individual where customer identifiers are not consistently available.

Fourth, the **2017–2018 Direct/Agent source classification is unreliable** because the source field was not correctly used during those years. These observations should therefore not be used for strong historical source comparisons.

Fifth, cluster analysis is sensitive to methodological choices, including variable selection, data transformation, clustering algorithm and the number of clusters retained. The resulting segments should therefore be interpreted as analytical representations of customer heterogeneity rather than as objectively predetermined natural categories.

Sixth, the transaction data cannot independently establish why customers behaved in particular ways. Observed changes can be described and statistically evaluated, but customer motivations cannot be assumed without supporting qualitative or survey evidence.

Seventh, COVID-19 should be treated as an important contextual disruption rather than as an independently proven causal explanation for every observed change.

Eighth, the current verified empirical data cover **2017–2025**, despite the original study framing referring to 2017–2026. Any final inclusion of 2026 data should require corresponding updates to the empirical analysis.

Finally, definitive country-specific conclusions concerning Finland, Sweden and Norway should be based on verified country mappings and country-level statistical outputs rather than inferred from station codes.

6.11 Directions for Future Research

Future research can extend this study in several directions.

6.11.1 Individual-Level Longitudinal Analysis

Future studies could use stable anonymised customer identifiers to track individual customers across multiple rental transactions. This would allow researchers to distinguish more accurately between **segment membership, segment migration and repeat-customer behaviour**.

6.11.2 Extended Post-Pandemic Analysis

The addition of subsequent years would allow researchers to determine whether the apparent return toward the pre-pandemic International/Local structure continues or whether new long-term customer patterns emerge.

The current verified dataset ends in 2025; future datasets could therefore extend the longitudinal analysis beyond this period.

6.11.3 More Advanced Segmentation Techniques

Future research could compare multiple segmentation approaches, including hierarchical clustering, k-means or other appropriate clustering techniques, latent-class approaches, and model-based segmentation.

Comparing alternative approaches could determine whether similar customer structures emerge across different analytical frameworks.

6.11.4 Segment Migration Analysis

If reliable individual-level identifiers become available, future research could examine how customers move between segments over time.

This would provide a more sophisticated understanding of whether customers remain within stable behavioural groups or transition between different forms of rental behaviour.

6.11.5 Integration of External Variables

Future studies could integrate external variables such as:

- inflation;
- exchange rates;
- fuel prices;
- international flight connectivity;
- tourism arrivals;
- travel restrictions;
- vehicle availability; and
- pricing conditions.

This would permit more rigorous analysis of the mechanisms associated with changes in customer behaviour.

6.11.6 Qualitative Research

Quantitative transaction data identify **what customers did**, but they do not necessarily explain **why they did it**.

Future studies could therefore combine transaction analysis with interviews, surveys or focus groups to examine customer motivations, perceptions, travel intentions and responses to market disruptions.

6.11.7 Cross-National Comparative Research

Future research could conduct a more comprehensive comparison of Finland, Sweden and Norway using harmonised country-level datasets.

Such research could investigate whether national differences in tourism infrastructure, domestic travel markets, international connectivity and customer composition contribute to different patterns of segment evolution.

6.11.8 Predictive Customer Analytics

Once sufficiently stable historical segments have been established, predictive models could be developed to forecast segment demand, booking timing, rental duration and potential customer value.

This would extend the research from retrospective explanation toward **predictive and prescriptive customer analytics**.

6.12 Final Conclusion

This study examined customer segment evolution in the Nordic motorhome rental industry using longitudinal commercial transaction data. The central conclusion is that **customer segmentation in motorhome tourism should be understood as a dynamic process rather than a static classification of customers**.

The verified empirical evidence from **16,356 rental transactions between 2017 and 2025** demonstrates substantial changes in both transaction volume and customer composition. Annual transaction volume reached 2,290 in 2019 before falling to 1,257 in 2020 and 1,247 in 2021. The subsequent recovery brought transaction volume to 2,153 in 2025.

The most important structural finding concerns the relationship between international and local customers. International customers represented **78.14% of all verified transactions**, establishing the fundamentally international character of the observed rental market. However, this structure changed dramatically during the pandemic. The international share fell from approximately 84% in 2019 to approximately 47% in 2020, while local customers became the larger component of the observed population.

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The subsequent recovery demonstrates that this restructuring was largely temporary at the aggregate geographical level. By 2025, international customers represented approximately 84.3% of transactions, almost returning to the 2019 level of approximately 83.8%.

The study therefore provides evidence for an important distinction between **market disruption and permanent segment transformation**. External shocks can produce substantial changes in customer composition, but those changes may subsequently reverse as market conditions normalise.

The findings also demonstrate the importance of combining demographic, geographical and behavioural information. Customer segmentation is strengthened when customer characteristics are considered alongside booking window, rental duration, vehicle selection, booking source and transaction value. The transaction database provides these dimensions and therefore supports a data-driven approach to understanding customer heterogeneity.

From a theoretical perspective, the study contributes to the development of a more dynamic understanding of tourism segmentation. From an empirical perspective, it provides longitudinal evidence from the specialised motorhome rental context. From a managerial perspective, it demonstrates the value of continuously monitoring customer composition, booking behaviour and segment development.

The study also demonstrates the importance of **data governance and methodological transparency**. The documented unreliability of the 2017–2018 source classification illustrates how changes in data-recording practices can affect longitudinal interpretation. Similarly, the distinction between rental transactions and unique customers limits the extent to which individual customer migration can be inferred.

Overall, the study concludes that the Nordic motorhome rental customer population is **heterogeneous, temporally dynamic and responsive to major changes in its external environment**. Customer segmentation should therefore not be treated as a fixed description of the market. Instead, it should be viewed as an ongoing analytical process through which organisations identify customer groups, monitor their changing characteristics, evaluate their relative importance, and adapt marketing, service and strategic decisions accordingly.

The central conclusion of the research is therefore that understanding customer segments requires understanding their evolution. A longitudinal transaction-based approach provides a stronger basis for this understanding than a static customer profile because it reveals not only who the customers are, but also how the structure and behaviour of the customer population change across time and under conditions of disruption and recovery.