Master Thesis

Service Quality and Customer Satisfaction in a Selected Company

Study programme:	N0413A050030 International Management
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Master Thesis Assignment Form

Service Quality and Customer Satisfaction in a Selected Company

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- EVANS, James Robert, 2014. *Quality and performance excellence: management, organisation, and strategy.* Australia: South-Western Cengage Learning. ISBN 978-1-133-95593-1.
- MALEYEFF, John, 2022. *Quality Service Management: A Guide to Improving Business Processes.* New York: Routledge. ISBN 978-1-032-05751-4.
- MEHTA, Nick; Dan STEINMAN a Lincoln MURPHY, 2016. *Customer Success: How innovative companies are reducing churn and growing recurring revenue.* New Jersey: Wiley. ISBN 978-1-119-16796-9.
- SOLEIMANI, Paria; Mohammad ERSHADI a Nafiseh NAJAFI, 2019. Measuring the impact of soft and hard total quality management factors on customer behaviour based on the role of innovation and continuous improvement. *TQM JOURNAL,* vol. 31, no. 6, s. 1093-1115. ISSN 1754-2731.

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Anotace

Diplomová práce je zaměřena na téma kvality služeb a spokojenosti zákazníků ve vybrané společnosti. Cílem této práce je prostřednictvím současné situace navrhnout možná řešení, která by zvýšila počet hodnocených tiketů. Teoretická část se zabývá základními pojmy kvality služeb a spokojenosti zákazníka. Praktická část je zaměřena na Knorr-Bremse, konkrétně Knorr-Bremse Services Europe se sídlem v Liberci. Představuje společnost jako takovou a přibližuje celkový proces a význam ticketového systému. V závěrečné kapitole této práce jsou uvedeny návrhy na zlepšení, které mohou přispět ke zvýšení celkového počtu hodnocených tiketů. Tyto návrhy byly učiněny na základě výsledků dotazníku.

Klíčová slova

Knorr-Bremse, kvalita služeb, měření zákaznické spokojenosti, modely kvality služeb, spokojenost zákazníků, ticketový systém

Service Quality and Customer Satisfaction in a Selected Company

Annotation

The diploma thesis is focused on the topic of service quality and customer satisfaction in a selected company. The aim of this thesis is to propose possible solutions that would increase the number of evaluated tickets. The theoretical part deals with the basic concepts of service quality and customer satisfaction. The practical part is focused on Knorr-Bremse, specifically Knorr-Bremse Services Europe, based in Liberec. It presents the company as such and brings the overall process and importance of the ticket system closer. The final chapter of this thesis presents suggestions for improvement that can help to increase the overall number of evaluated tickets. These suggestions were made following the results of the questionnaire.

Key Words

Customer satisfaction, Knorr-Bremse, measurements of customer satisfaction, service quality, service quality models, ticketing system

Acknowledgements

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List of abbreviations, marks, and symbols used

B2B   Business to Business

BPR   Business Process Responsible

BSC   Business Services Centre

CES   Customer Effort Score

CSAT   Customer Satisfaction Score

EBS   Electronic Braking System

HR   Human Resources

IP   Indirect Purchasing

IT   Information Technology

NPS   Net Promoter Score

TQM   Total Quality Management

TS   Ticketing System

TUL   Technical University in Liberec

Introduction

The importance of service quality and customer satisfaction in the current business environment cannot be overstated. These factors serve as indicators of organisational performance and significantly impact customer loyalty, brand reputation and, ultimately, financial results. In this context, effective management of customer feedback mechanisms becomes crucial for businesses trying to maintain a competitive advantage.

This thesis deals with the complex interaction between service quality, customer satisfaction and feedback mechanisms in the context of the selected company, Knorr-Bremse. The primary objective of this research effort is to assess strategies aimed at optimising the requirements resolution system within Knorr-Bremse, with the overall goal of enhancing the requirements evaluation rate. The goal of increasing user engagement and simplifying feedback collection processes is to create a culture of continuous improvement and reactivity within the enterprise.

The work is structured into three main parts. The first part provides a comprehensive overview of the theoretical foundations of service quality and customer satisfaction. Based on key literary sources and theoretical models, the discussion illuminates the main concepts, measurement methods and the importance of these constructs for managing organisational success. In the second part, the focus shifts to Knorr-Bremse, the company selected for this study. A detailed understanding of the company's history, operational context, and relevant industry dynamics provides a foundation for understanding the specific challenges and opportunities related to service quality and customer feedback management. In addition, the methodology section outlines the research approach, data collection techniques, and analytical frameworks used to meet the research objectives. The last part highlights this work, systematically evaluating the collected data and formulating action recommendations. Evidence-based recommendations are proposed to inform strategic decision-making and support tangible improvements in service quality and customer satisfaction within Knorr-Bremse.

The text was prepared using ChatGPT 4.0 for stylistic adjustments, Scite for literary research, and Grammarly for grammatical editing.

1   Service Quality

Defining service quality is most straightforwardly done by considering it as a service that meets the expectations and requirements of the consumer (Firdous and Farooqi, 2019). Evans (2014) highlights the importance of implementing basic principles and tools associated with quality and performance excellence to ensure that organisations effectively meet and exceed customer expectations. It can also be described as the perceived difference between what clients anticipate regarding the quality of a service and what they ultimately experience. Consequently, it represents a kind of attitude that compares expectations with actual performance. The pre-service expectations of customers are acknowledged to play a role in shaping their perception of the quality of the services they encounter (Zeithaml, Parasuraman, and Malhotra, 2000).

Zeithaml (1987) asserted that customers in the hospitality industry tend to attribute dissatisfaction to their choices. Employees need to recognise that dissatisfied customers might not voice their concerns, prompting them to identify sources of dissatisfaction and address them proactively. Additionally, Christian (1982) emphasised that service quality is the distinguishing factor among hospitality establishments, highlighting the absence of a precise definition for service quality (Jeyalakshmi and Meenakumari, 2016).

The determinant of service quality lies in the gap between customers' expectations and their evaluations of the services received. This link between service quality and customer satisfaction has become a crucial strategic concern (Cronin and Taylor, 1992). Companies that provide high-quality services can improve the effectiveness of service delivery, ultimately increasing corporate profitability. Furthermore, high-quality services can encourage repeat purchases and generate positive word-of-mouth (Taherikia and Shamsi, 2014). Service quality affects the end product or service and influences the production and delivery processes. Therefore, businesses must involve and commit their employees to redesign the process to shape the final products or services (Kumra, 2008). Hence, it's highly recommended for businesses to enhance the quality of their services.

Grönroos (2007) provides a different angle on examining service quality, introducing a model that compares customer service expectations with prior encounters with similar services. This concept is captured in "total perceived service quality." As articulated by Grönroos (1984), perceived service quality emerges from an evaluative process where consumers gauge how closely their expectations align with the service they receive.

1.1 Service quality models

The literature discusses two service quality models: the Nordic (European) and American. These models offer distinct perspectives thoroughly examined in academic research (Khader and Madhavi, 2017).

The American model often called the functional quality perspective, focuses on functional quality attributes. On the other hand, the European perspective, particularly the Nordic model, considers two additional components: technical quality and image (Kang and James, 2004). The Nordic model is known for universally accessible, publicly financed, and regulated high-quality welfare services, adapted to community issues focusing on health care, education, and social services. Additionally, the Nordic model is characterised by high tax and high public investment, which contrasts with the Anglo-Saxon model, highlighting the comprehensive and inclusive nature of the Nordic model in providing welfare services (Kang and James, 2004). The Nordic model of service quality is shown in Figure 1.
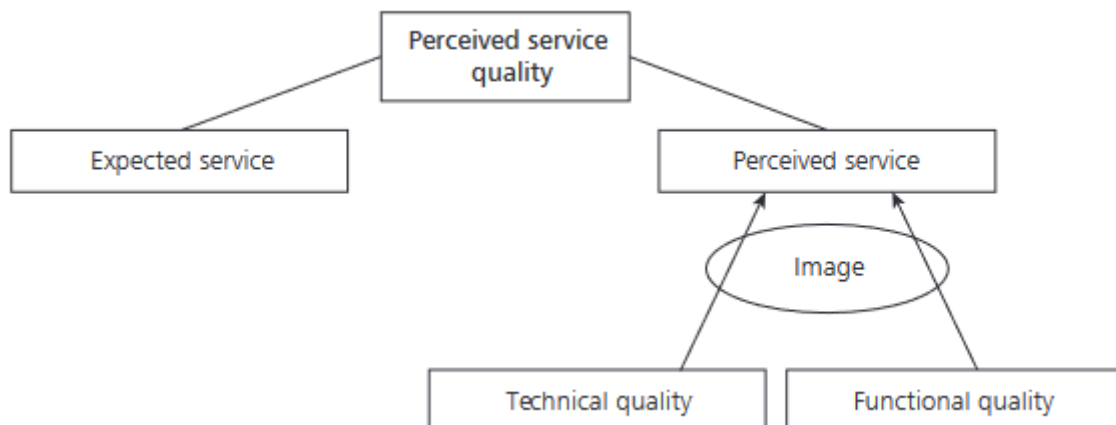
Figure 1: Nordic model of service quality
Source: Polyakova, Mirza (2015, p. 7)

In contrast, the American model has been associated with the SERVQUAL model, which focuses on customer expectations and perceptions of service quality. The SERVQUAL model emphasises the difference between customer expectations and actual perceptions of service and has been widely used to assess service quality in various industries, including the express delivery industry and airline services (Yang, 2023). The graphic concept is shown in Figure 2.
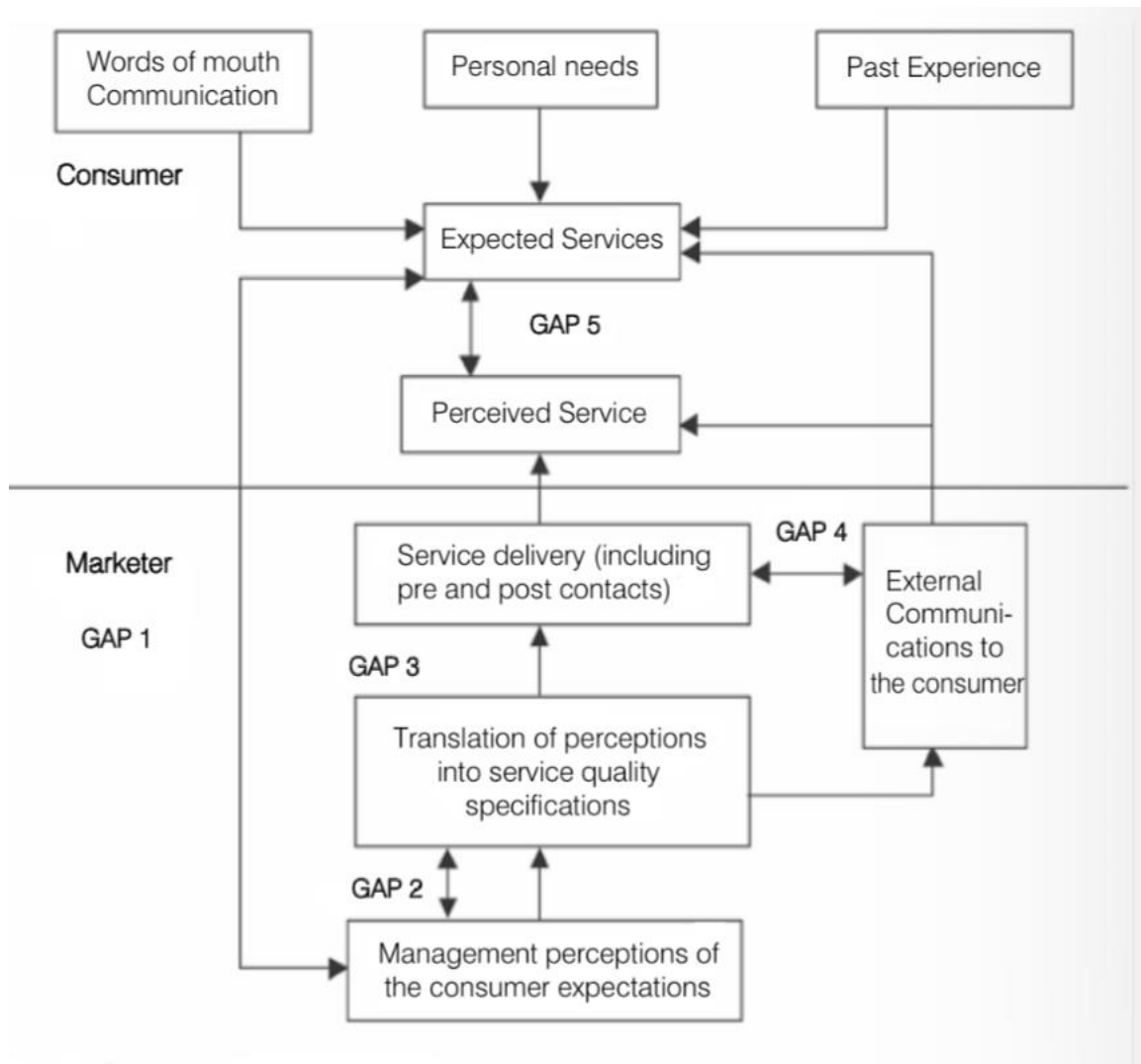
Figure 2: SERVQUAL model
Source: Parasuraman, Zeithaml, Berry (1985, p.44)

A more detailed analysis of individual gaps is described below.

Gap 1, the knowledge gap, refers to the difference between customer expectations and management's perceptions of those expectations. This gap can be addressed through market research and understanding customer needs.

Gap 2: the policy gap represents the contrast between management perceptions and service quality specifications. It emphasises the need for clear service quality standards and effective organisational communication.

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Gap 3: the delivery gap arises from the difference between service quality specifications and the actual service delivery. This highlights the importance of training, empowerment, and support for service personnel to meet the established service standards.

Gap 4: the communication gap reflects the contrast between service delivery and external communications about the service. It underscores the significance of accurate and realistic advertising and promotion of services to align with actual service delivery.

Gap 5: the customer gap is the disparity between customer expectations and perceptions of the service delivered. This gap emphasises the need for organisations to manage customer expectations effectively and ensure that the service meets or exceeds these expectations (Franěk, 2023).

Five distinct dimensions are recognised to assess the gaps that lead to customer satisfaction or dissatisfaction with the SERVQUAL service. These dimensions serve as the primary components of service quality. They include tangibles, empathy, assurance, reliability, and responsiveness. Tangibles encompass everything tangible and directly experienced by the customer, such as office facilities, company resources, staff, and communication channels, as outlined by (Franěk, 2023). These elements collectively provide customers with essential insights into the quality of the company's service and enhance the overall perception of the firm. Therefore, the tangibility dimension holds great importance for companies, necessitating substantial investments in establishing and maintaining physical facilities (Ramya, 2019). The Empathy dimension is a crucial element of service quality, encompassing the attentive and personalised care banks or service firms extend to their clientele. This dimension emphasises treating customers as unique and valued individuals, offering tailored services to meet their needs. Achieving this involves service providers being well-versed in customers' preferences, requirements, and desires (Ramya, 2019).

Meanwhile, the Assurance dimension, the third aspect of service quality, is defined by the knowledge, courtesy, and competence demonstrated by the firm and its employees in building customer trust and confidence. This dimension holds particular relevance in industries such as banking and insurance, where customers often grapple with uncertainty regarding outcomes. For instance, in sectors like insurance and stockbroking, firms seek to foster trust and loyalty through designated individuals like insurance agents or brokers, and in banking, through a designated "personal banker" as a primary point of contact. The Assurance dimension centres on attributes such as job knowledge, skill, accuracy, courtesy, and the security guaranteed by the firm (Ramya,

2019). Reliability refers to consistently and accurately delivering the promised service (Franěk, 2023). Reliability is characterised by the ability to consistently and accurately fulfil promised services. In a broader context, reliability encompasses a service firm's commitments related to delivery, service provisions, issue resolutions, and pricing. Customers prefer engaging with firms that consistently uphold their promises, making reliability a crucial factor influencing the perception of service quality and customer loyalty. Consequently, service firms must be aware of customer expectations regarding reliability. In banking services, the reliability dimension encompasses regularity, handling of complaints, proactive communication with customers, consistency, and adherence to procedures (Ramya, 2019). Responsiveness is the readiness to assist customers and deliver prompt service. This dimension centres on the attitude and prompt handling of customer requests, questions, complaints, and issues. It also emphasises qualities such as punctuality, presence, and professional commitment exhibited by employees or staff. Measuring responsiveness involves assessing the time customers wait for assistance or responses to their queries. Enhancing responsiveness conditions can be achieved by consistently evaluating the service delivery process and employees' attitudes towards customer requests (Ramya, 2019).

The conclusion is that in the growingly competitive market, particularly in the services sector, prioritising service quality is crucial for the survival and success of service firms. Service quality management enables organisations to uphold consistency in service delivery and adapt more efficiently and effectively to evolving customer expectations.

1.2   Measurement of service quality

Businesses often face challenges in measuring service quality. The primary objective of such measurement is to assess a company's profitability and gauge customer satisfaction levels. While the results may not offer direct guidance on achieving better outcomes, they can pinpoint areas requiring improvement. This insight is invaluable in guiding the company's initiatives to improve operations and guarantee customer satisfaction.

The subsequent chapter delves into the GAP model approach, detailing its definition, application, and measurement process.

The Service Gap Model

The gap model precedes the SERVQUAL model and evaluates service quality by identifying gaps. Built upon the expectation-confirmation theory, this framework explains how consumers consider quality, considering multiple variables that impact quality across different contexts. These variables encompass the quality customers anticipate from businesses and the quality they perceive after using a service, among others. The Gaps Model aims to identify potential factors contributing to the difference between expected and actual quality based on understanding quality as the ability to meet customer expectations. Also referred to as the "five gaps model" or the "customer service gap model," this approach tackles common communication challenges that can lead to discrepancies between customers' service expectations and their actual experiences. Moreover, it assists managers in gaining deeper insights into their clients' needs. Professionals can utilise this model to evaluate customer satisfaction and identify areas for improvement (Indeed, 2022). As Figure 3 of the Gap Model depicts, perception plays a significant role in customer satisfaction. Satisfaction occurs when customers perceive that a service has met their expectations, while dissatisfaction arises when they perceive a service to fall short. Businesses can improve customer service across five main areas: the knowledge gap, policy gap, delivery gap, communication gap, and customer gap (Fischler, 2022).
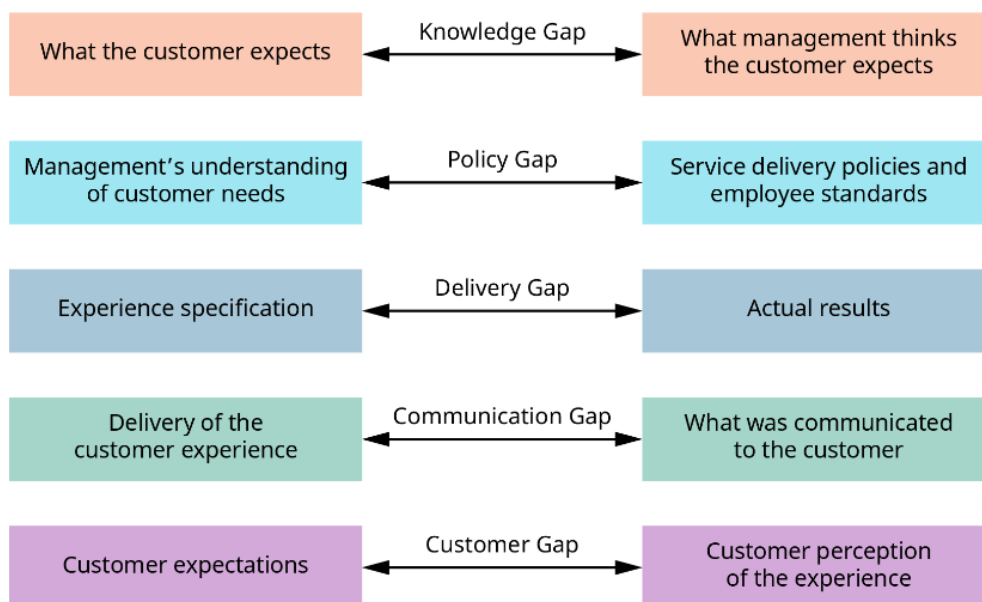
Figure 3: Five gap analysis
Source: OpenStax (2023)

The knowledge gap arises from the difference between customer expectations and the actual delivery of services by the company. This gap predominantly occurs due to management's limited understanding of customer expectations. Various factors contribute to this knowledge gap, including limited interaction between management and customers, insufficient communication between service staff and management, inadequate market research, a lack of focus on cultivating customer relationships and neglect to address customer feedback and complaints (Rajak, 2023).

The policy gap represents the difference between management's understanding of customer needs and implementing those insights into service delivery policies and standards. While management may accurately grasp customer desires, there often is a lack of established performance standards to ensure employees demonstrate the appropriate behaviours (Indeed, 2022).

The delivery gap refers to the contrast between established service standards and policies and their execution. Frontline service workers may understand the necessary actions to satisfy customers but fail to implement them. This gap can arise due to inadequate training, lack of employee skills, reluctance to adhere to established service standards, or staffing shortages (Indeed, 2022).

The communication gap emerges between the promises made to customers in advertising and the fulfilment of those promises. This discrepancy may occur due to overpromising, separating external communications and internal processes, and insufficient communication between operations and advertising teams. Such gaps often lead to customer dissatisfaction, as they receive something different from what was advertised, and in severe cases, may drive customers to seek alternative suppliers (Rajak, 2023).

The customer gap represents the disparity between customer expectations and their actual perceptions. This discrepancy arises when customers may not fully comprehend the service's value or misinterpret the service's quality. Many organisations often overlook this gap, which can stem from one of the other four or simply from the customer's inaccurate perception of service quality. In a worst-case scenario, it could result in a business suddenly losing a significant portion of its customer base. Even if the company believes there is no gap, customers may wait for someone to address their perceived gap (Rajak, 2023).

In line with the Gap Model of Service Quality, addressing the customer gap can only be achieved by resolving the other four gaps within the model. The presence and extent of these four gaps directly

influence how much the perceived quality by customers deviates from their expectations. Directly closing this gap is not feasible for the company (Rajak, 2023).

1.3   Total Quality Management (TQM)

Total Quality Management (TQM) is a systematic approach to managing an organisation comprehensively, primarily focusing on enhancing the quality of its outputs, including goods and services. Through ongoing improvements to internal procedures, TQM oversees all necessary activities and tasks to uphold the desired level of excellence in business operations. This encompasses establishing quality policies, conducting quality planning and assurance, and implementing measures for quality improvement (Investopedia, 2024).

The aim of Total Quality Management within an organisation is to ensure that all employees are aligned with the shared objectives of improving product or service quality and refining production processes. TQM is characterised as a customer-centric process, striving for continual enhancement in the management of business operations and emphasising the collective accountability of all participants in delivering the overall quality of the final product or service (Investopedia, 2024).

Total Quality Management seeks to integrate quality as a critical component of the organisation by aligning processes and procedures with the company's vision, mission, and long-term plan. Companies can enhance efficiency, elevate customer satisfaction, and attain long-term success by adopting Total Quality Management (TQM) principles like prioritising customer needs, continual enhancement, adherence to processes, and engaging all organisational departments (Investopedia, 2024).

The measurement of performance through process innovation and improvement in the context of Total Quality Management (TQM) can include:

- Changing organisational relationships from task orientation to process orientation.
- Controlling organisational performance by measuring process innovations and improvements.
- Providing different communication channels for receiving customer opinions and incorporating them into product and service design.
- Paying attention to the response system and customer complaints.

- Implementing a process-oriented approach within the organisation (Soleimani and Ershadi, 2019).

Total Quality Management (TQM) offers numerous advantages. For example:

- **Reduced Product Defects:** TQM focuses on getting products and services right the first time, leading to fewer defects, reduced product recalls, lower customer support costs, and fewer resources needed for product repairs.
- **Increased Customer Satisfaction:** Consistently delivering high-quality products that meet customers' needs leads to higher satisfaction levels. Satisfied customers are more likely to remain loyal, resulting in increased market share, revenue growth from upselling, and positive word-of-mouth referrals.
- **Lower Costs:** With fewer product defects, companies save money across various areas such as customer support, product replacements, field service, and addressing product issues. These cost savings contribute to improved profit margins.
- **Establishment of Cultural Values:** Organizations adopting TQM cultivate core values focused on quality management and continuous improvement. This mindset influences various aspects of the organisation, including recruitment practices, internal processes, and product development (Gillis, 2023).

While TQM offers numerous benefits, there are also some drawbacks to consider, such as:

- **Resource Allocation:** Implementing TQM requires significant planning and allocation of resources over time to ensure its success.
- **Organizational Commitment:** Achieving continuous improvement under TQM necessitates a strong commitment from the entire organisation, from top management to frontline employees.
- **Increased Costs:** Adopting TQM may incur additional training, infrastructure development, and team building costs.
- **Time-Consuming:** It can take years for an organisation to fully realise the intended results of TQM, requiring patience and perseverance.
- **Risk of Partial Implementation:** Implementing TQM partially or inconsistently may lead to failure, as the effort involved requires a comprehensive and consistent approach to be effective (Gillis, 2023).

In conclusion, Total Quality Management (TQM) is a systematic approach to quality management that emphasises continuous improvement, customer focus, and organisational commitment. When effectively implemented, TQM can improve service quality by reducing product defects, increasing customer satisfaction, and fostering a culture of continuous improvement within the organisation. However, successful implementation of TQM requires careful planning, resource allocation, and organisational commitment at all levels. By embracing the principles of TQM and prioritising service quality, organisations can enhance their competitive advantage and achieve sustainable success in today's dynamic business environment.

2 Customer satisfaction

Customer satisfaction is a concept that is often ambiguous, abstract, and can be perplexing. The concept of customer success goes beyond traditional customer support to build strong relationships with customers and provide exceptional service (Mehta and Steinman, 2016). It pertains to the degree to which customers find contentment and delight in the products and services offered by a business. In simpler terms, satisfaction represents the mental state of an individual who has encountered a product or service performance that meets or exceeds their expectations. It is, therefore, a blend of the anticipated expectations and the perceived performance of the product or service (Saxena, 2017).

Despite the considerable amount of research conducted since Cardozo's influential work (1965), there has been a notable lack of attention given to defining consumer satisfaction. As a result, researchers have not reached a consensus on a universally accepted definition. This has led to various conceptual and operational definitions of consumer satisfaction in the literature. Below, we present several conceptual definitions of consumer satisfaction:

Table 1: Conceptual and operational definitions of consumer satisfaction

Literature source	Conceptual definition	Focus
Westbrook and Oliver (1991)	A post-choice evaluative judgment concerning a specific purchase selection (Day 1984) (p. 84).	Specific purchase selection
Fornell (1992)	An overall post-purchase evaluation (p.11).	Post-purchase perceived product performance compared with pre-purchase expectations
Oliver (1992)	Examined whether satisfaction was an emotion. Satisfaction is a summary attribute phenomenon coexisting with other consumption emotions (p. 242).	Product attributes
Mano and Oliver (1993)	(Product satisfaction) is an attitude – like post- consumption evaluative judgment (Hunt 1977) varying along the hedonic continuum (Oliver 1989; Westbrook and Oliver 1991) (p. 454).	Product
Halstead, Hartman, and Schmidt (1994)	A transaction-specific affective response resulting from the customer's comparison of product performance to some pre-purchase standard (e.g., Hunt 1977; Oliver 1989) (p. 122).	Product performance compared to some pre-purchase standard
Oliver (1997)	The consumer's fulfillment response. It is a judgment that a product or service feature, or the product or service itself,	Product or service

	provided (or is providing) a pleasurable level of consumption-related fulfilment, including levels of under- or over-fulfilment (p. 13)	

Source: Saxena (2017)

Based on the information presented in Table 1, it is evident that specific definitions found in the consumer satisfaction literature differ fundamentally from one another. In other instances, definitions share overlapping components but are only partially distinct. In summary, when viewed holistically, for researchers, "customer satisfaction is a response that occurs at a specific moment and is the outcome of a series of comparisons between product and service performance and expectations" (Saxena, 2017).

Among other things, it is also about building trust between customers. Trust is essential for building long-term relationships with customers and increasing their loyalty. Trust can be built by consistently delivering on promises, being transparent and honest in interactions, and showing empathy for customer needs and interests. By building trust, businesses can improve customer experience and create a solid foundation for successful customer relationships. Trust plays a key role in customer service because it fosters a sense of reliability, trustworthiness and mutual respect between the business and the customer. It can lead to increased customer satisfaction, repeat business, positive word-of-mouth referrals and, ultimately, a loyal customer base (Dasu and Chase, 2013).

2.1 Models of customer satisfaction measurement

In today's competitive business landscape, understanding and measuring customer satisfaction is paramount for organisations striving to thrive in their respective markets. Customer satisfaction reflects the quality of products or services and is a crucial indicator of customer loyalty, retention, and overall business success. Businesses deploy various models and methodologies tailored to their specific industry, target audience, and organisational objectives to gauge and enhance customer satisfaction. These models of customer satisfaction measurement encompass a diverse array of approaches, ranging from traditional surveys to advanced data analytics and sentiment analysis. Understanding these models is essential for businesses seeking to optimise their customer experience, strengthen brand reputation, and drive sustainable growth in an increasingly customer-centric environment.

The following chapters focus on four selected measurement models and their use in practice.

2.1.1 Kano model

The Kano Model (pronounced "Kah-no"), also known as the „Customer Delight vs. Implementation Investment" approach, is a method for prioritising features on a product roadmap based on their potential to satisfy customers. Product teams evaluate the satisfaction level of a feature against its implementation costs to determine its strategic viability for inclusion on the roadmap (ProductPlan, 2024).

To grasp the functionality of the Kano reaction graph, it's crucial to comprehend the concepts of satisfaction and functionality. These two aspects are represented as measurement scales within the model, aiding in assessing the customer's reaction to a feature. Kano devised a satisfaction scale that ranges from 'Delighted' (reflecting high satisfaction or excitement) to 'Frustrated' (indicating low or no satisfaction) (Goldstein, 2024). The scale is shown in Figure 4.
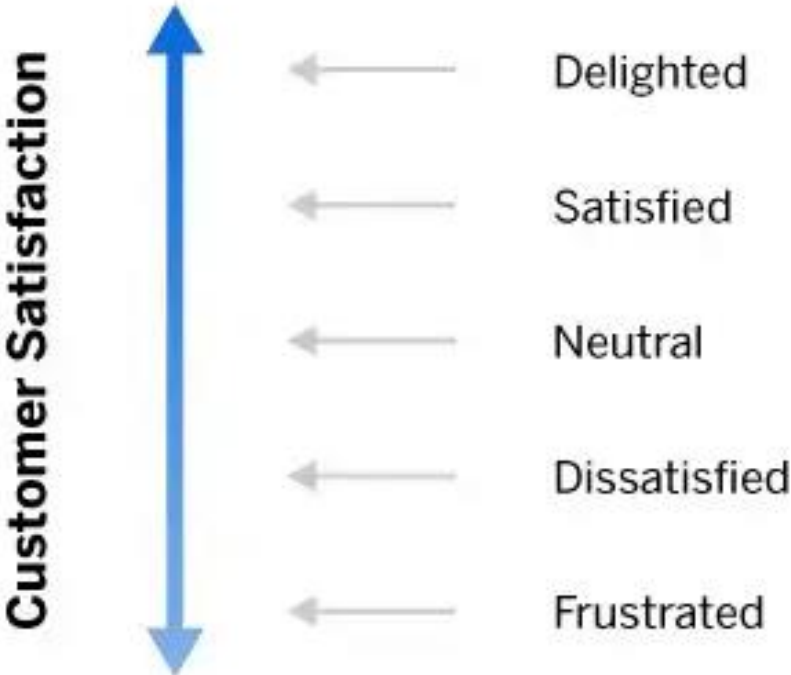
Figure 4: Satisfaction scale Kano Model
Source: Goldstein (2024)

Moreover, Kano developed a functionality scale (alternatively referred to as the Investment, Sophistication, or Implementation scale) that spans from 'None' to 'Best'. This scale indicates the

perceived level of functionality the customer associates with a feature. Has the feature been implemented to its fullest extent? How emotionally impactful is this feature for the customer? This scale is shown in Figure 5.
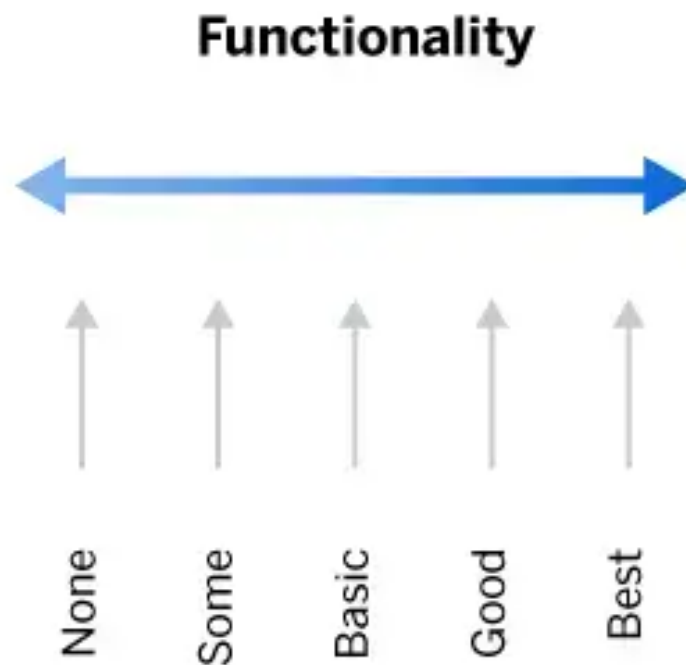
Figure 5: Functionality scale of the Kano Model
Source: Goldstein (2024)

Based on responses from the kano questionnaire, features can be plotted on the kano reaction graph based on their satisfaction and function level:
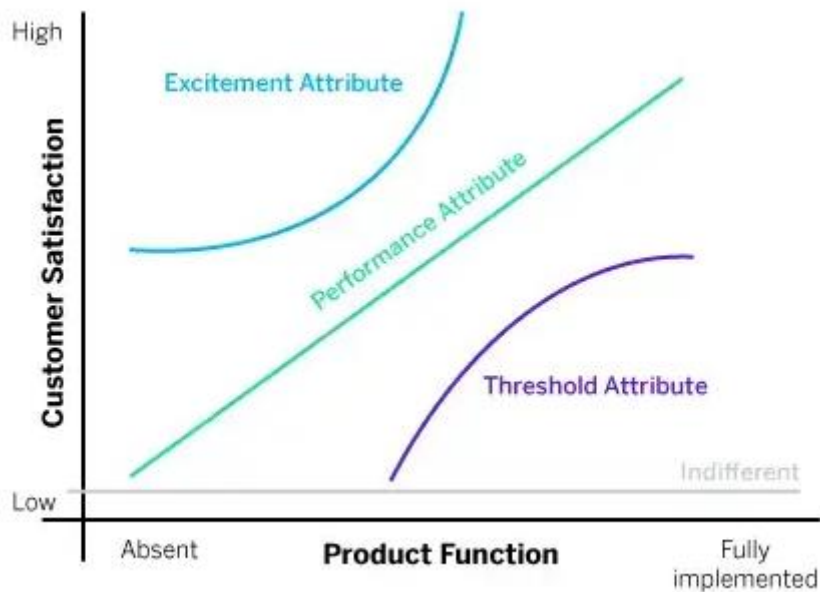
Figure 6: Reaction graph of the Kano Model
Source: Goldstein (2024)

Understanding the measurement scales for each feature, the subsequent step involves exploring the feature categories. There exist five categories of features that correspond to five potential customer responses to a feature:

- Must-be features
- Performance features
- Attractive features
- Indifferent features
- Reverse features

Must-be features are associated with the Threshold Attribute line on the Kano graph. These are the essential features that customers expect a product or service to have. These are deemed fundamental features customers anticipate being included in the product or service as standard. When these features are present, customers are likely to hold a neutral stance towards them. Their presence is unlikely to contribute significantly to overall satisfaction. However, their absence will result in customer dissatisfaction (ProductPlan, 2024).

Aligned with the Performance Attribute line on the Kano graph, **performance features** represent desired functionalities that customers seek to enhance their product or feature experience. When numerous performance features are present, customer satisfaction tends to rise accordingly. Kano

characterises performance features as 'one-directional,' as they consistently elevate satisfaction and functionality (Goldstein, 2024).

Connected with the Excitement Attribute axis on the Kano graph, **attractive features** evoke excitement or delight among customers, distinguishing your product or service from competitors. While attractive features bring customers satisfaction, their absence does not lead to dissatisfaction since they are not inherently anticipated to be part of the product or service (Goldstein, 2024).

Linked to the Indifferent Attribute axis on the Kano graph, **indifferent features** are those perceived by customers as neither particularly beneficial nor detrimental. These may include features deemed unimportant by the customer, such as the font-face type used in a product's logo. Indifferent features neither generate satisfaction nor dissatisfaction. They are aspects that customers scarcely notice and do not significantly impact their experience (Goldstein, 2024).

While not directly represented by any lines on the Kano graph, **reverse features** possess the ability to influence levels of satisfaction. Reverse features can instigate dissatisfaction and may be perceived as undesirable by specific individuals. For instance, inconsistencies in visual formatting within an instruction manual can lead to dissatisfaction among customers who prefer a straightforward text-based format (Goldstein, 2024).

To optimise customer satisfaction, a product team should prioritise the incorporation of must-be, performance, and attractive features while endeavouring to minimise the inclusion of indifferent and reverse features.

Employing the Kano model offers several key benefits. Firstly, it saves time and money by preventing wasted resources on developing features that fail to appeal to target customers. Additionally, the model helps identify priority areas within a product's features that require immediate attention to rectify any under-performance. Moreover, the Kano model facilitates the organisation of feature ideas into a clear development plan, prioritising enhancements based on performance improvement and customer satisfaction levels. Ultimately, utilising this model leads to increased customer satisfaction by avoiding feature development on ideas that do not contribute to enhancing the overall customer experience, allowing businesses to better meet the needs and preferences of their customers in a timelier manner.

However, it is essential to acknowledge the drawbacks associated with utilising this tool. Firstly, the results obtained from the questionnaire tend to lean predominantly towards quantitative (numerical) data, lacking depth in understanding the underlying reasons behind the responses. This limitation necessitates further research to explore the 'why' behind the data, potentially requiring additional time and resources. Additionally, the interpretation and application of the results demand analytical skills and knowledge. Furthermore, manual administration of surveys can be challenging to manage, consuming valuable time and making comparisons between data sets cumbersome. A preferable solution would involve employing a technology-driven approach that automates the process, streamlining data collection and integration with existing systems for more efficient management (Goldstein, 2024).

2.1.2   Customer Satisfaction Score (CSAT)

The Customer Satisfaction Score (CSAT) is a pivotal metric for assessing customer satisfaction levels. Its primary objective is to gauge the extent of customer contentment with various aspects such as services, products, business operations, or customer service interactions. Through the CSAT, customers provide feedback regarding their satisfaction levels, which are then quantified as a percentage ranging from 0 to 100 %. A higher percentage denotes a greater level of satisfaction experienced by the customers (CFI Team, 2024). Based on the questionnaires, the respondents chose five proposed answers: very unsatisfied, unsatisfied, neutral, satisfied and very satisfied. The scale is shown in Figure 7.
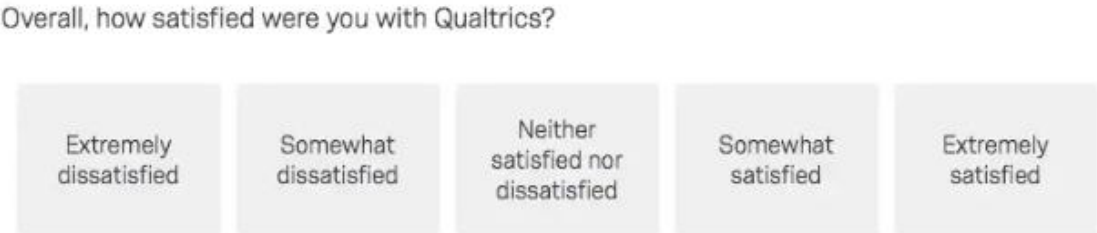
Figure 7: Example of a question in CSAT
Source: Qualtrics (2024)

The prevailing method for gathering feedback is through a customer satisfaction survey, which can take various forms such as a conventional questionnaire, an ident, popup, or persistent form on a website, within an app, through SMS, or other methods (Qualtrics, 2024). Customer satisfaction surveys are vital in understanding customers' perceptions of product or service quality, which is a crucial aspect of customer satisfaction management. These surveys should align with performance

metrics, with each question corresponding to a specific performance dimension. However, designing effective surveys can be challenging. Poorly designed or lengthy surveys can discourage participation and yield ineffective results. It's essential not to delegate survey development to those unfamiliar with satisfaction surveys, as this can lead to biased or ambiguous data. Combining marketing and satisfaction surveys can also pose challenges. Such surveys may be longer, reducing participation and failing to provide relevant insights to both quality and marketing managers (Maleyeff, 2022).

To calculate the CSAT score is used the following formula:

$$\frac{number\ of\ satisfied\ customers\ (responds\ satisfied\ and\ very\ satisfied)}{number\ of\ survey\ responses} * 100$$

It has been shown that using the two highest values on feedback surveys is the most accurate predictor of customer retention.

The advantages of utilising the CSAT method are multifaceted. Firstly, it offers ease of measurement, as CSAT data can be captured through a single question employing a straightforward rating scale format. This simplicity facilitates quick and efficient administration across various channels. Additionally, the CSAT question is user-friendly, requiring minimal customer effort due to its brevity and simplicity. This reduces the likelihood of customer fatigue, mainly when the question is posed multiple times. Moreover, CSAT yields user-friendly numerical data, simplifying processing and analysis through various statistical tests. Furthermore, CSAT's widespread recognition as a standard measure enables businesses to benchmark their performance against others while also allowing them to leverage high scores for marketing and promotional purposes (Qualtrics, 2024).

The drawbacks of employing the CSAT method encompass several aspects. Firstly, it heavily relies on self-reporting, which is susceptible to biases. Even with a seemingly straightforward CSAT questionnaire, responses can be influenced by factors such as individual mood or recent life events, potentially skewing the data. Moreover, CSAT provides limited depth and detail, offering a simplistic measure of positivity or negativity without capturing nuances or intricacies of experiences. Additionally, CSAT is designed for individual responses, which may pose limitations when individuals are responding on behalf of a group, such as a family, team, or entire business utilising the product or service. Lastly, CSAT is subject to response bias, as respondents are more likely to

participate if they have either highly positive or negative experiences, potentially leading to an incomplete representation of customer sentiment (Qualtrics, 2024).

2.1.3   Customer Effort Score (CES)

The Customer Effort Score (CES) is a singular measurement that evaluates the level of effort required by a customer to address a concern, fulfil a request, complete a purchase/return, or obtain a response to a query. CES surveys commonly inquire, "On a scale ranging from 'very easy' to 'very difficult,' how effortless was your interaction with [company name]?" The underlying concept is that customers tend to exhibit greater loyalty towards products or services that offer ease of use (Qualtrics, 2024). The graphic scale is shown in Figure 8.
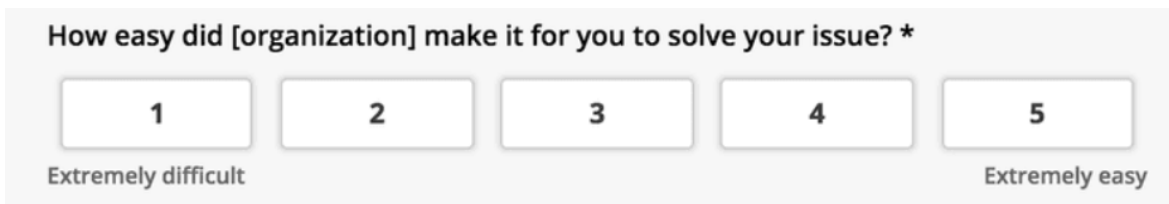
Figure 8: Example of a question for CES
Source: Dossetto (2022)

CES data is gathered by surveying customers immediately following a singular action (e.g., completing a purchase) or interaction (e.g., receiving assistance from the support team) with a business. This survey can manifest directly on a webpage or be dispatched via email promptly upon action completion. Customers are commonly prompted to assess the ease of their experience using a numeric scale, typically ranging from 1 to 5 or 1 to 7. However, more innovative and visually engaging approaches may incorporate emoticon scales ranging from anger to happiness. Subsequently, the collected responses are averaged to provide insight into the level of effort customers require for a particular process (Dossetto, 2022).

A high CES score indicates that your company delivers a seamless customer experience. In contrast, a low CES suggests that individuals perceive your processes as cumbersome or your customer support as inadequate. In such cases, it becomes imperative to implement improvements to avoid potential customer loss and maintain a high churn rate (Dossetto, 2022).

2.1.4   Net Promoter Score (NPS)

The Net Promoter Score (NPS) is the standard customer loyalty and satisfaction metric. It is particularly effective in evaluating satisfaction at various customer journeys. The Net Promoter Score (NPS) is determined based on customer responses to a survey question asking, "How likely is it that you would recommend (a particular product, service, or company) to a friend or colleague?" Customers indicate their likelihood to recommend by rating their experiences on a scale from 0 (unlikely to recommend) to 10 (very likely to recommend) (Atlassian, 2024).

1. Promoters are characterised by scores of 9 or 10, representing enthusiastic and loyal customers.
2. Passives, with scores of 7 or 8, indicate users who are content with your product but lack the enthusiasm to promote it actively.
3. Detractors, with scores ranging from 0 to 6, are unhappy customers who are unlikely to make future purchases and may even discourage others from choosing your product (ProductPlan, 2024).

Net Promoter Score scores have a range from -100 (indicating all detractors and no promoters) to 100 (signifying all promoters and no detractors). The higher the score, approaching 100, the better the evaluation. Businesses may bring subjective perspectives to their net promoter scores, making them open to interpretation. However, a helpful rule of thumb is as follows:

- 70 or more: considered outstanding
- 50 to 69: considered strong
- 49 or less: indicates a need for improvement
- Below 0: raises a red flag (ProductPlan, 2024).

Reichheld (2003) and his colleagues recommend incorporating the Net Promoter question into a company's customer satisfaction surveys. According to Satmetrix (2021), the likelihood to recommend is the most influential metric for businesses to understand the state of their customer relationships. Recommending a company to friends or colleagues is considered the clearest indicator of customer loyalty and financial success.

2.2 Difference between CES, CSAT and NPS

The Customer Satisfaction Score (CSAT) evaluates customers' satisfaction with a product or service, whereas the Net Promoter Score (NPS) measures their loyalty towards the organisation. Meanwhile, the Customer Effort Score (CES) assesses the ease or difficulty customers encounter when completing tasks with the company (Qualtrics, 2024).

CSAT captures immediate reactions to specific interactions, products, or events but may not effectively measure a customer's ongoing relationship with the company. However, its versatility allows for application across various contexts, such as evaluating satisfaction with specific aspects of the customer experience, like telephone service quality or the assistance received during a delivery (Qualtrics, 2024).

In contrast, NPS focuses on customers' broader perceptions of the brand or product, using a single-question loyalty measure that gauges the likelihood of recommending the organisation, product, or service to others. This approach emphasises customers' intentions rather than their overall satisfaction level (Qualtrics, 2024).

CES complements CSAT and NPS by providing additional insights into the customer experience, helping to predict future loyalty. CES employs a single-question metric with various response options (Qualtrics, 2024).

2.3 Connecting customer satisfaction and service quality

The relationship between customer satisfaction and service quality is a fundamental aspect of business operations. Service quality, focusing on service delivery components, plays a crucial role in shaping customer satisfaction (Nguyen, 2022). This connection is further explored in the literature, with varying perspectives on the interplay between service quality and customer satisfaction. Some studies suggest that service quality acts as a precursor to customer satisfaction, emphasising the importance of delivering high-quality services to enhance customer experiences (Fida et al., 2020). Conversely, other research highlights customer satisfaction as a driver of service quality, indicating a cyclical relationship between the two factors (Kumar and Samtani, 2021).

Moreover, the impact of customer satisfaction on business profitability underscores the significance of prioritising both customer satisfaction and service quality (Syahzan et al., 2022). Studies have shown that satisfied customers are likelier to exhibit loyalty and engage in repeat business, emphasising the long-term benefits of fostering positive customer experiences through service excellence (Yadav and Kumar, 2015). Additionally, the mediating role of customer satisfaction in the relationship between service quality and customer loyalty further emphasises the intricate dynamics in the service industry (Warsito, 2015).

In summary, the amalgamation of research on customer satisfaction and service quality highlights the complex interplay between the two. By comprehending and efficiently addressing service quality to align with customer expectations, businesses can elevate customer satisfaction, foster loyalty, and ultimately thrive in today's competitive market environment.

In the Business-to-Business (B2B) sectors, the relationship between customer satisfaction and service quality is considered a critical factor influencing long-term success and competitiveness. Research by Kaura et al. (2015) highlights that customer satisfaction acts as a mediating variable between service quality and customer loyalty in B2B contexts. Moreover, studies such as those by Jamal and Naser (2002) emphasise that both core and relational dimensions of service quality are closely linked to customer satisfaction in B2B relationships.

Furthermore, in B2B sectors, customer satisfaction is often perceived as specific transactions, as Andaleeb and Conway (2006) noted. This transaction-specific view of customer satisfaction is intertwined with perceptions of service quality over time, as incidents of satisfaction contribute to overall evaluations of service quality. Additionally, studies like Mittal et al. (2021) identify strategic attributes essential for B2B customer satisfaction, underscoring the importance of tailored approaches in B2B service delivery.

Moreover, the impact of service quality on customer satisfaction and loyalty in B2B settings is a subject of ongoing research. Studies such as those by Naumovska-Saveska et al. (2021) confirm a significant connection between service quality and customer satisfaction in the B2B context. This relationship is further explored in research by Raychaudhuri and Farooqi (2013), which delves into the effects of service quality dimensions on customer satisfaction in the Indian IT hardware industry, mainly focusing on medium-sized B2B sectors.

Overall, in B2B sectors, the interplay between service quality and customer satisfaction is crucial for building strong relationships, fostering loyalty, and driving business growth. Understanding and effectively managing service quality to meet the unique needs of B2B customers are essential for enhancing customer satisfaction and ensuring long-term success in B2B markets.

3   Introduction of selected company

The preceding section of the thesis has elucidated theoretical concepts surrounding service quality and customer satisfaction. These concepts will now be applied in the practical segment of the thesis. The second part of the thesis focuses on research analysis, wherein data from the back-office department and an introduction to a selected international company will be scrutinised. Knorr-Bremse Business Services Europe has been chosen as the subject of analysis to fulfil this objective.

3.1   Knorr-Bremse Group

Knorr-Bremse is a globally renowned leader in braking systems and technology solutions for rail and commercial vehicles. Established in 1905, the company has consistently pushed the boundaries of innovation, safety, and efficiency in transportation. With its headquarters in Munich, Germany, Knorr-Bremse operates in over 30 countries and serves customers across six continents. A map of the localities is shown in Figure 9.
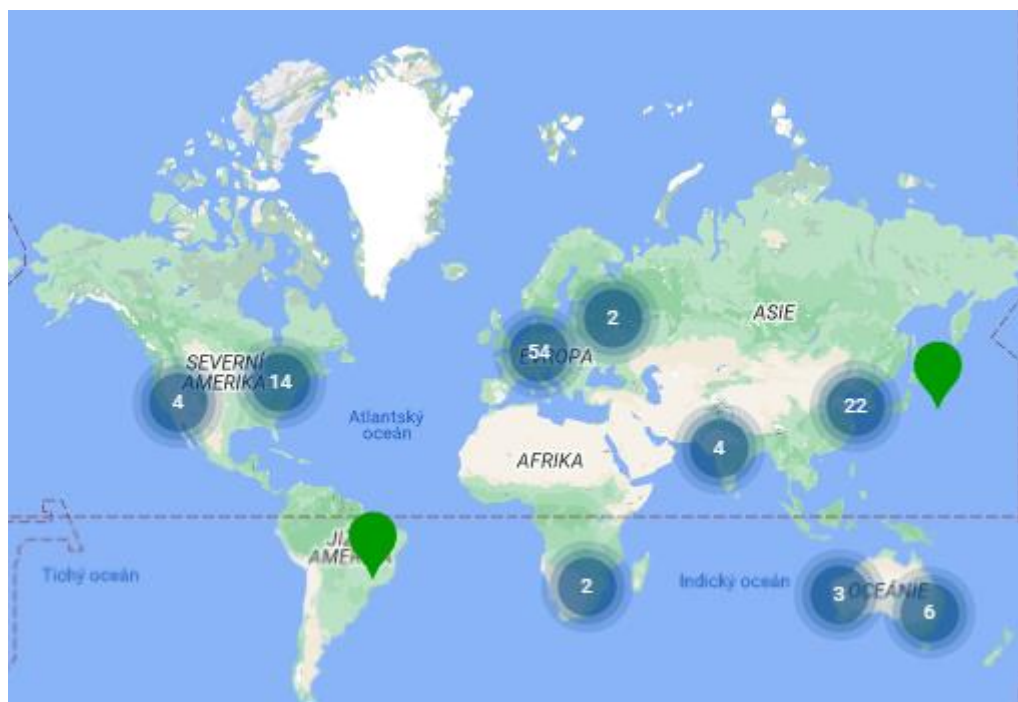
Figure 9: Overview of the location of Knorr-Bremse
Source: Knorr-Bremse (2024)

At the core of Knorr-Bremse's success lies a commitment to engineering excellence and customer satisfaction. The company's diverse portfolio encompasses a wide range of products and services

(figure 10), including braking systems, control systems, powertrain solutions, and aftermarket services. Whether it's trains, trucks, buses, or trailers, Knorr-Bremse provides tailor-made solutions that enhance performance, reliability, and sustainability across various industries.
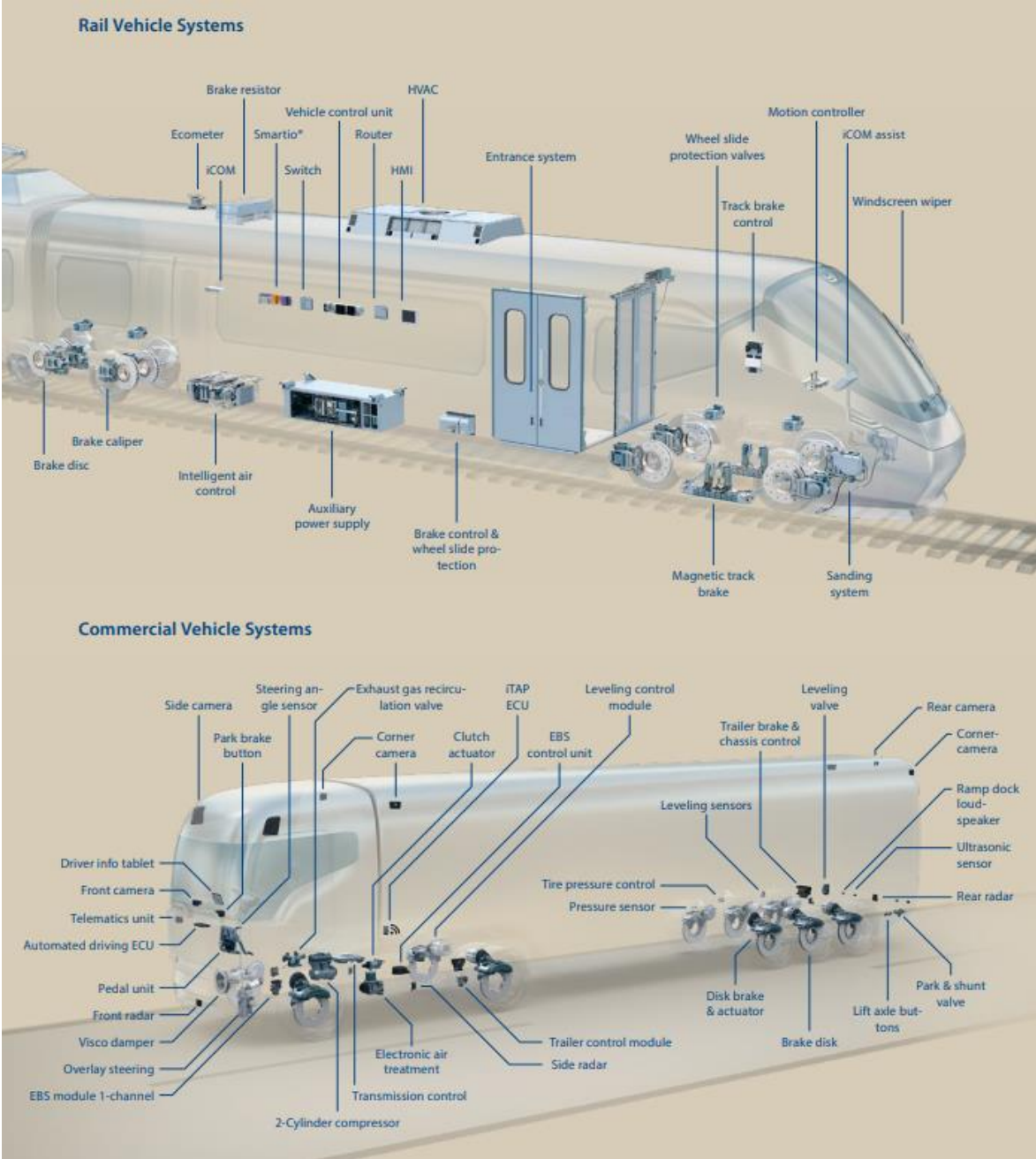
Figure 10: Product portfolio
Source: Knorr-Bremse (2024)

In the realm of railway technology (Rail), Knorr-Bremse is renowned for its cutting-edge products that ensure the safety and efficiency of rail transportation systems worldwide. From high-speed trains to freight locomotives, the company's innovative braking and control systems set the industry standard for precision and reliability. Moreover, Knorr-Bremse's advanced digital solutions enable

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predictive maintenance and optimisation, further enhancing operational efficiency and reducing lifecycle costs for rail operators.

In commercial vehicles (Truck), Knorr-Bremse's expertise extends to various applications, including trucks, buses, and trailers. By leveraging advanced technologies such as electronic braking systems (EBS), driver assistance systems, and vehicle dynamics control, the company empowers manufacturers and fleet operators to enhance vehicle safety, performance, and fuel efficiency.

Beyond its focus on product innovation, Knorr-Bremse is deeply committed to sustainability and corporate responsibility. The company continuously invests in research and development to develop eco-friendly solutions that minimise environmental impact and promote a greener future for transportation (Knorr-Bremse, 2024).

3.2   Knorr-Bremse and Sustainability

Knorr-Bremse's environmental and social responsibilities are committed to being fulfilled. Consequently, sustainable corporate governance has been dedicated to sustainability and anchored in corporate organisation and business processes. A group-wide sustainability strategy serves as the basis for this, and concrete fields of action and goals are formulated. Knorr-Bremse's commitment to sustainable development is founded on the Group's five core corporate values and internal guidelines, such as the Code of Conduct or the Human Rights Policy. On the other hand, the company's sustainability roadmap is based on internationally recognised principles and standards such as those found in the UN Global Compact, which sets out a code of conduct relating to human rights, labour, environmental protection, and the fight against corruption (Knorr-Bremse, 2024).

3.3   Financial report

The company's revenues show a somewhat fluctuating trend in the monitored period from 2018 to 2023. Revenues are graphically represented in Figure 11. After an annual increase of approximately 4.8% between 2018 and 2019, revenues peaked in 2019 with growth of roughly 4.9% to €6,936.5 million. Subsequently, in 2020, sales fell by approximately 11.2% to €6,156.7 million, which can be attributed to external factors such as the economic recession or global events such as the Covid-19

pandemic. However, since 2021, the company has experienced revenue growth that stabilised in 2022 and increased significantly by around 28.7% to €7,925.6 million in 2023, indicating renewed growth momentum.
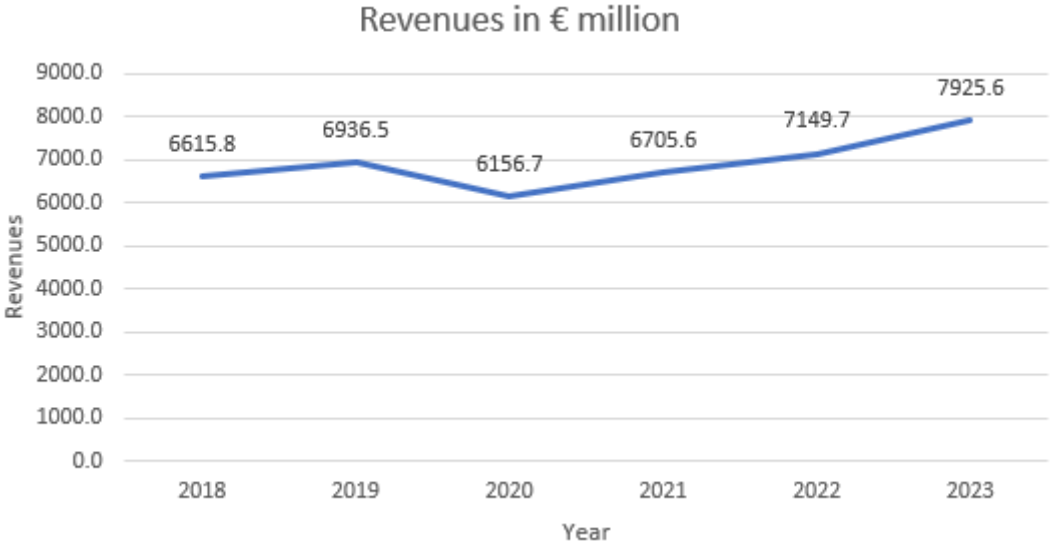
Figure 11: Revenues in € million
Source: Knorr-Bremse (2024)

The company's EBIT (earnings before interest and taxes) shows a change for the monitored period. After an annual increase of approximately 9 % in 2019, EBIT reached its peak in 2019 with growth of roughly 8.7 % to EUR 1,062.9 million. Subsequently, 2020 saw a decline in EBIT of approximately 23.4 % to €814 million. This decrease may be due to reduced revenues and increased operating costs. EBIT was recovering from 2021, but a decline was recorded in 2022. In 2023, EBIT increased again by around 20.3 % to €869.9 million, indicating the company's renewed profitability. EBIT is shown graphically in Figure 12.
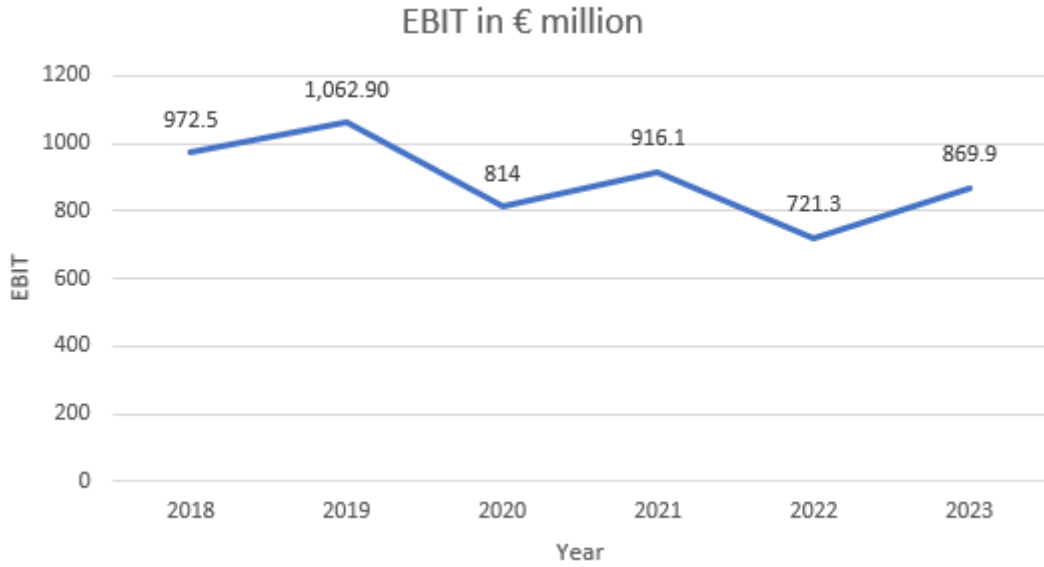
Figure 12: EBIT in € million
Source: Knorr-Bremse (2024)

The company's net profit (figure 13) shows a mixed trend in the monitored period. After a modest increase of around 0.4 % in 2019, net profit reached its peak in 2019 with growth of around 0.5 % to EUR 632 million. Subsequently, in 2020, net profit fell by approximately 15.8 % to EUR 532.2 million. This decrease may result from lower revenues and higher costs. 2022 saw a significant decline in net profit to €506.3 million, with a slight improvement to around 13.7 % to €576.2 million in 2023.
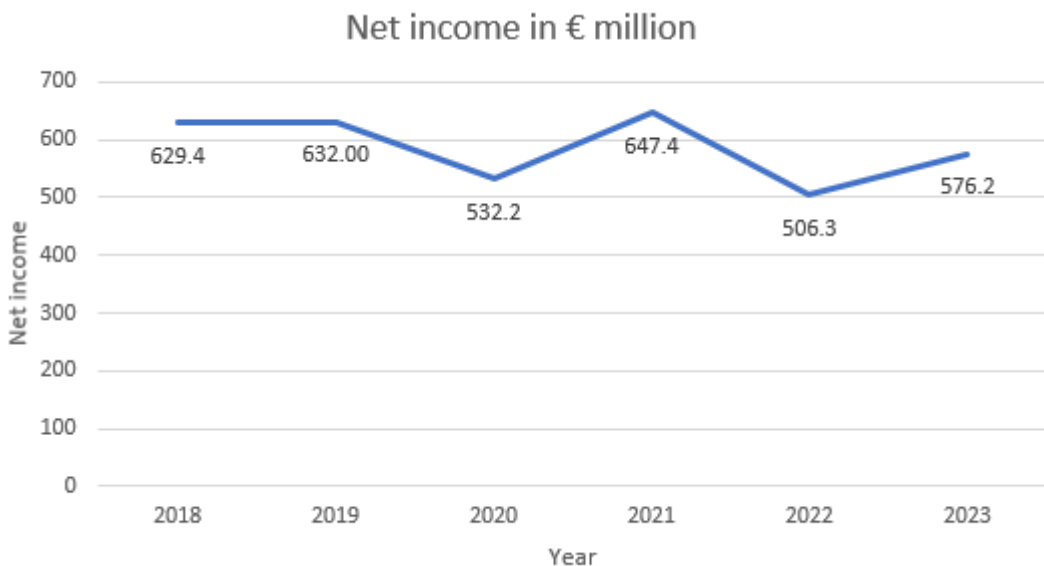
Figure 13: Net income in € million
Source: Knorr-Bremse (2024)

The number of employees in the company (figure 14) gradually increased during the observed period. Starting from 28,452 employees in 2018 and reaching 33,319 employees in 2023, which indicates a positive growth trend for the company's employees, with a total increase of approximately 17.2 %. This increase may be associated with business expansion, new investments or improved operational efficiency.
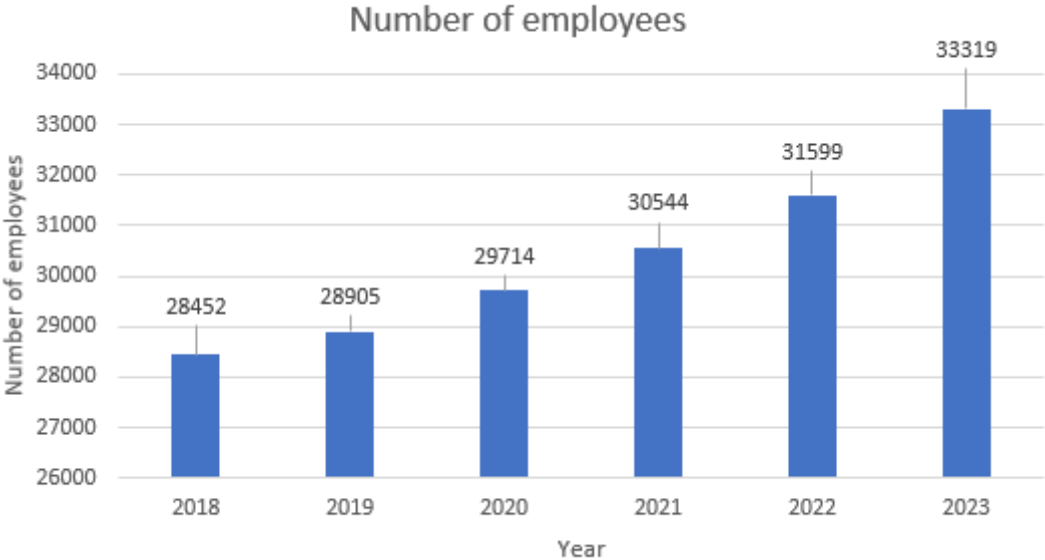
Figure 14: Number of employees
Source: Knorr-Bremse (2024)

In conclusion, the company's financial performance analysis from 2018 to 2023 reveals a dynamic trajectory marked by challenges and successes. Despite facing economic uncertainties and external disruptions, the company showcased resilience and adaptability, as evidenced by its recovery from a revenue dip 2020 to achieving record-high revenues in 2023. Similarly, EBIT and net income fluctuations underscore the company's ability to navigate through volatile market conditions while striving for profitability (Knorr-Bremse, 2024).

Furthermore, the steady increase in the number of employees reflects the company's commitment to growth and investment in human capital. This holistic analysis provides valuable insights for stakeholders, enabling informed decision-making and strategic planning for the future.

Continued vigilance and strategic agility will be imperative for the company to sustain its growth momentum, capitalise on emerging opportunities, and navigate potential challenges in an ever-evolving business landscape.

3.4 Knorr-Bremse Business Services Europe

Knorr-Bremse Services Europe s.r.o., an integral part of the Knorr-Bremse Group, was established in 2017 with operations based in Liberec. Specialising in IT, Accounting, HR, Indirect Purchasing, and Controlling & Reporting services, the company serves all Knorr-Bremse European locations with a commitment to excellence. With a dedicated team of over 300 professionals, the company focuses on enhancing production plant operations through continuous improvement initiatives, boosting productivity, and implementing "best practices" tailored to local requirements. The Business Services project has garnered unwavering support from the top management of the Knorr-Bremse Group since its inception in 2017 (Knorr-Bremse, 2024).

In total, there are five teams in Knorr-Bremse Europe Services, namely:

- **IT:** At Knorr-Bremse, IT is regarded as a fundamental discipline. The improvement of IT processes and services, as well as the provision of expert consultation and support, are undertaken by IT infrastructure and application specialists. They work on essential projects utilising the latest technology to ensure the efficient functioning of the Knorr-Bremse environment.

- **Accounting:** Accounting documents and other essential corporate paperwork for European production locations, as well as the Knorr-Bremse Group headquarters in Munich, are processed by Knorr-Bremse Services Europe simultaneously.

- **Indirect Purchasing:** Procurement focuses on identifying the best and long-term solution. Responsibility for the procurement of indirect materials and services from production sites is taken over by Knorr-Bremse Services Europe, enabling them to concentrate on production.

- **HR:** A new concept of the global HR system and a new operating model are currently being prepared. Connected to this is that Knorr-Bremse Business Services Europe will become international and will serve the entire HR agenda thanks to hubs in locations.

- **Controlling & Reporting:** In Liberec, data from all over the world is processed, and reports are prepared for the company's management at the headquarters in Munich.

For the thesis, the author collaborated with the back office team, which processes tickets worldwide. In the following chapters, the communication strategy during the ticket system's implementation and the current state's analysis are discussed in detail.

3.5 Ticketing System in Knorr-Bremse Services Europe

The vision for the ticketing system (TS) entails the creation of a transparent communication tool fostering efficient interactions between locations and the BSC. This tool will centralise all relevant information and provide comprehensive reports, streamlining communication processes. The primary mission is to eradicate email correspondence between locations and the BSC, replacing it with a streamlined ticketing system for all support tasks.

3.5.1 Communication of implementation of TS

The ticket system (TS) for indirect purchasing was implemented, taking into account the existing IT infrastructure where a similar system was already operating. These ticket systems were linked initially, but later, it was decided to separate them to better suit the specific requirements and processes associated with indirect purchasing. Communication during the implementation took place through an agreement between the BPR Knorr-Bremse. A detailed timeline can be seen in Figure 15.

Ticketing system for Indirect Purchasing

Timeline

Activity	Aug					Sep				
	31	32	33	34	35	36	37	38	39	40
Setup ticketing communication matrix for each location			▬▬▬▬▬▬▬							
Training Serviced locations					▬▬▬▬▬▬▬					
Training Accounting in BSC						▬▬▬▬▬				
Move To Production for serviced locations						▲ 01.09.2020				
Go-Live communication in serviced locations								▲ 14.09.2020		
Using TS in parallel with other form of requests (as currently in use)								▬▬▬▬▬▬▬		
Requests to BSC only via Ticketing System										01.10.2020 ▲

Figure 15: Timeline of implementation of TS
Source: Internal source, official presentation

The official email that the Indirect Purchase Ticketing system will be implemented was sent on August 11, 2020. It included information that the system was developed in close cooperation between the IT team, the IP Governance team, and the pilot sites in Hungary (Budapest, Kecskemét) and has been working on it since August 2020. As it is a ServiceNow platform that is already known

at Knorr, locations can create not only IT tickets but also tickets related to indirect purchases. Furthermore, the main topics that will be able to be solved with the help of the new ticket system are presented here. These are creating and maintaining vendor records, uploading and maintaining E-Cat (product catalogue), providing a help desk for indirect orders, uploading and maintaining contracts in xECM (Enterprise Content Management) and maintaining information records. This system aims to increase flexibility, efficiency, and visibility in cooperation with the BSC, provide a structured approach to various support requests, and monitor the performance of the BSC.

In the official email announcing the introduction of the Ticketing System for Indirect Purchase, among other important information, design principles were outlined. These principles were carefully chosen to ensure an efficient and user-friendly environment for working with the ticketing system. The following design principles were specified:

1) **Transparency:** Responsibilities are clearly defined, and approvals are visible, allowing requestors to always check their tickets' status. This transparency contributes to transparency and trust in the request resolution process.

2) **All in one:** Each case is centralised in one place, including requests, approvals, work notes, and other relevant information. Users no longer have to deal with searching for communication history in email inboxes or on paper notes; all necessary information is available in one place within the system.

3) **Performance and productivity:** The system allows for tracking when a task was received and when it was completed, enabling the measurement of individual performance and productivity. This traceability allows for identifying the speed of task execution and obstacles to overcome to achieve goals.

4) **Organized:** Ticket requests are neatly sorted for both requestors and processors, allowing them to clearly see which ticket they should work on and where additional information is pending. Additionally, the system's interface is customisable, allowing each user to tailor it to their needs.

5) **Well-defined:** The structure of tickets is carefully defined, and mandatory fields are highlighted, minimising the possibility of important information being omitted by the requestor. This ensures consistency and uniformity within the system.

These design principles were chosen with a focus on optimising the user experience, increasing process efficiency, and ensuring the quality of service provided in indirect procurement. Their

implementation brings users an intuitive and efficient environment for working with the ticketing system, ultimately contributing to achieving the organisation's goals.

The implementation of a ticket system for indirect purchasing provides the company with a modern tool for managing requirements and processes related to the purchase of goods and services, which contributes to the overall efficiency and transparency of business operations.

3.5.2 Communication of implementation of TS evaluation

In May 2021, a decision was made to introduce the evaluation of closed tickets as a new feature in the existing system. This decision was communicated to individual locations through email communication in the form of a one-page presentation called "one-pager" (figure 16). For personal data protection reasons, the names in the one-pager are blacked out. This presentation contained comprehensive information about the new evaluation process and its significance for overall efficiency and the quality of services provided.

The one-page presentation provided detailed insights to the locations, including instructions and potential collaboration requirements. Additionally, space was allocated for potential queries or remarks from users. This mode of communication facilitated a simple and clear dissemination of key information and ensured understanding and support from individual locations.

Moreover, a refresh training was provided for key users, who play a crucial role in the operation and management of the ticketing system at the local level. This training aimed at updating their knowledge and skills regarding the new evaluation of closed tickets, enabling them to effectively lead this process at their locations and provide necessary support to other users.

Figure 16: Onepager with the implementation of evaluation of TS
Source: Internal source, official e-mail communication

It is also important to note that there was no further communication regarding the importance of evaluating the ticket system. At most, the issue was repeated during regular Town Hall meetings, but no extensive reminders were provided.

In the current setting of e-mail messages related to tickets (figure 17), the link to the evaluation of the ticket is included in the text form of the e-mail without graphic processing and is located directly below the status of the given ticket.
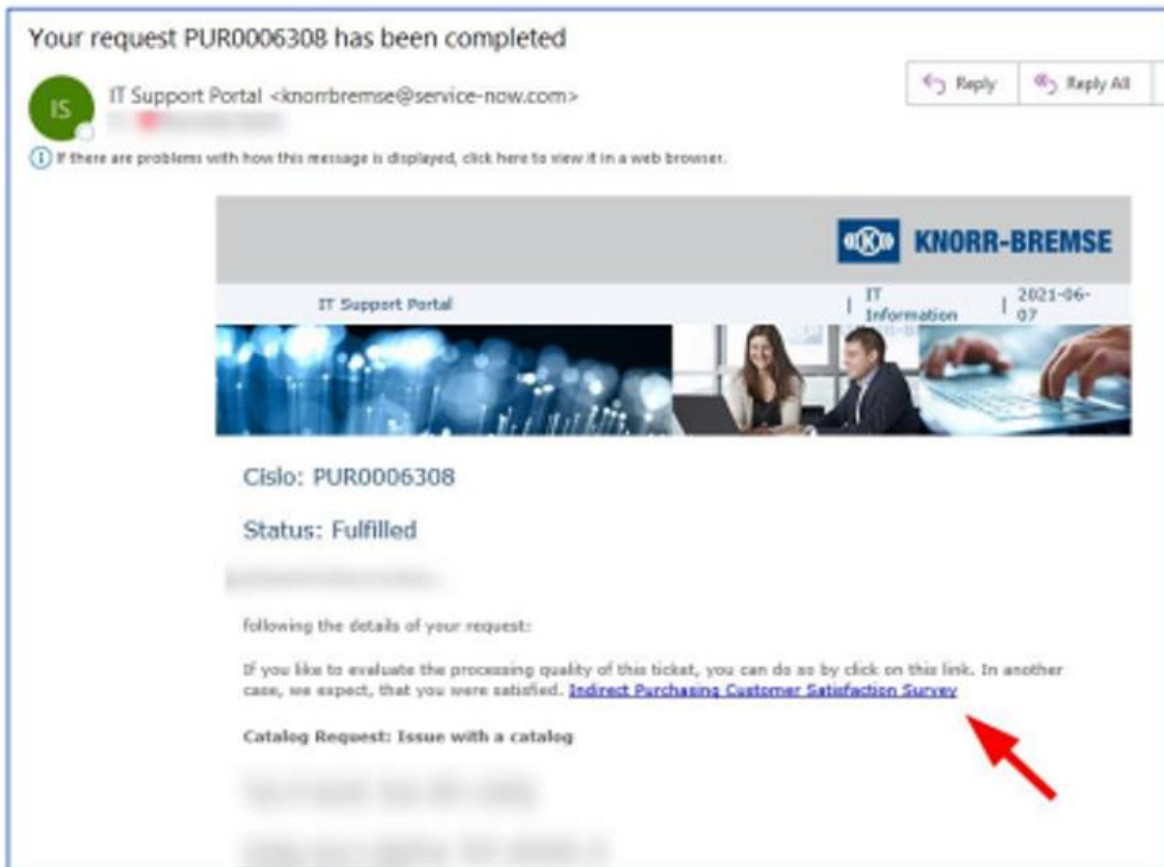
Figure 17: E-mail setting
Source: internal document

Employees often do not even have to open the e-mail, as the ticket status can be seen directly in the subject of the e-mail. If the ticket is successfully closed, employees only need to read the subject and do not have to click on the email. Even if an employee does decide to click on the email, it's likely that they'll only focus on the ticket status and not read the rest of the email. As a result, most employees who have the ticket closed may completely ignore the opportunity to rate. This fact makes it difficult to get feedback from employees and can lead to insufficient collection of information to improve processes and services. This may be one of the reasons why the ticket rating is so low.

The second reason may be the fact that the sentence of the evaluation request contains an assurance that if the employee does not go to the evaluation link, it will automatically be assumed that he was satisfied with the service. While this assurance may be a valid assumption in practice, it also provides a clear signal to employees that they do not need to click on the review link. This factor can reduce employees' motivation to provide feedback and lead to general passivity in the service evaluation process.

3.5.3 Analysis of the current situation

During the period from May 31, 2021, to March 10, 2024, a total of 19,240 tickets were processed, falling under the category of Indirect Purchase TS. Out of this total number, 257 tickets were evaluated by employees. Tickets that were not rated by anyone are automatically rated with 5, which means „Extremely Satisfied". Of these 257 evaluated tickets:

- 13 tickets were rated as 1, meaning "Extremely Dissatisfied",
- 9 tickets were rated as 2, meaning "Somewhat Dissatisfied",
- 14 tickets were rated as 3, meaning "Neither Satisfied nor Dissatisfied",
- 29 tickets were rated as 4, meaning "Somewhat Satisfied",
- 192 tickets were rated as 5, meaning "Extremely Satisfied".

A graphic representation of rated tickets by employees can be seen in Figure 18.
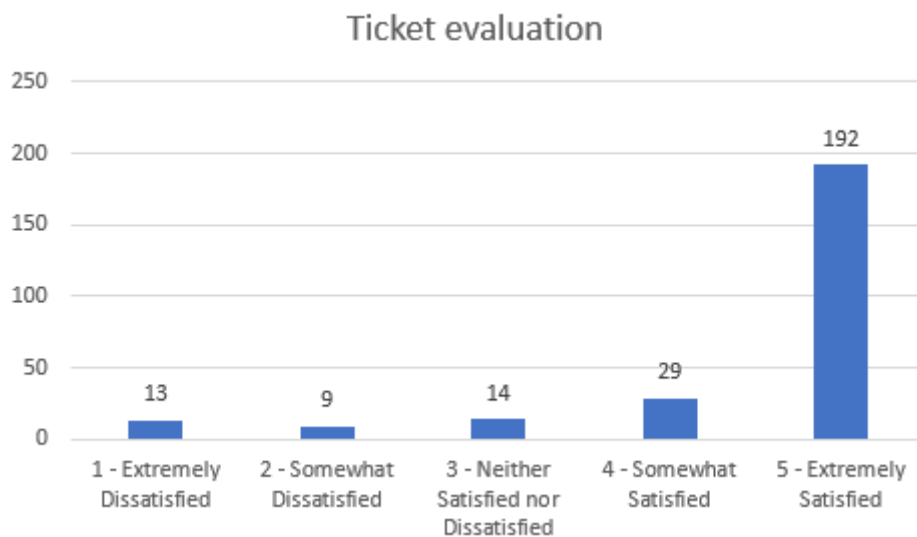
Figure 18: Ticket evaluation
Source: Internal dashboards

These rating data provide an important insight into user satisfaction with the services provided within the Indirect Purchase TS. Analysing this feedback can help identify strengths and weaknesses in processes and services and suggest measures for improvement in the future.

The analysis of the distribution of ticket ratings for the period 2021 to 2024 (Figure 19) shows a gradual improvement and stabilisation of user satisfaction with the services provided. During the four-year period, there is a noticeable trend of a higher number of positive evaluations, especially in the "Somewhat satisfied" and "Very satisfied" categories. This trend can be interpreted as a

consequence of the effective implementation and operation of the ticket system since its introduction in 2020, followed by the introduction of ratings in 2021.

At the same time, however, it is important to pay attention to possible negative reviews, which can provide valuable information about areas that require further improvement and optimisation of services.
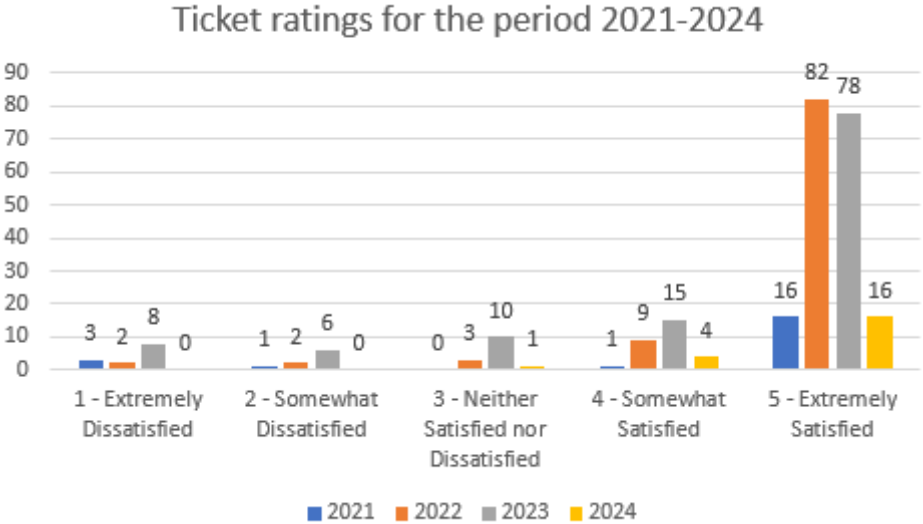
Figure 19: Ticket ratings for the period 2021-2024
Source: Own processing.

In the analysis of the ticketing system's functionality, it is important to note that unrated tickets are automatically rated as 5, meaning "Extremely Satisfied". This mechanism can be a crucial tool for maintaining transparency and efficiency in ticket processing within the system. However, this practice can also raise certain concerns and drawbacks that need to be considered.

One of the main issues with this functionality is that unrated tickets automatically receive the highest possible rating, "Extremely Satisfied". This situation can lead to a distortion of the actual level of user satisfaction and provide an unrealistic picture of the quality of services provided. Furthermore, the absence of ratings may hinder the identification of potential problem areas or deficiencies in the ticket processing process. This way, valuable feedback that could be utilised for appropriate adjustments and service improvements is lost.

Additionally, automatic rating may undermine the credibility and reliability of the overall system rating. Employees may lose motivation or the need to actively evaluate their experiences if they realise that unrated tickets will be automatically considered as maximally satisfied. This factor can

reduce the level of user engagement and limit the system's ability to identify real areas needing improvement.

For these reasons, it is important to encourage active user evaluation and minimise the use of automatic ratings. Ensuring fair and accurate feedback is crucial for continuous service improvement and effective management of the ticketing system.

4 Methodology

Quantitative analysis is essential to assess the data for the research. Quantitative methods entail the collection, evaluation, interpretation, and documentation of study data. To delineate a sample and population, specify the inquiry strategy, collect and analyse data, present findings, interpret results, and format research akin to a survey or experimental study, there exist specific methodologies applicable to both types of research—survey and experimental (Creswell, 2014).

4.1   Objectives of research

The aim of this research is to assess strategies for optimising the ticketing system to boost the rate of ticket ratings, thus improving user engagement and feedback collection within the enterprise. The primary instrument will entail an in-depth analysis and evaluation of survey data collected from Knorr-Bremse Services Europe. Additionally, efforts will be made to pinpoint key areas of service quality where the current ticketing system may be falling short, followed by the proposal of tailored solutions for Knorr-Bremse Services Europe.

The main objective of this research is to answer the following question: How can the ticketing system be optimised to increase the proportion of rated tickets, thereby enhancing user engagement and feedback acquisition within the enterprise? With this research question, the author will try to analyse respondents from the Knorr-Bremse company. Based on the research question, the following hypotheses were determined:

H1: Greater frequency of system usage for indirect purchases is associated with a higher number of rated tickets.

H2: Duration of employment in the organisation influences the user-friendliness rating of the ticketing system.

H3: Employees with longer tenure have significantly more positive ratings regarding the clarity of communication about the purpose of rating within the system compared to employees with shorter tenure.

4.2   Data collection

This study utilises both primary and secondary data sources. Primary data, acquired directly from participants, plays a crucial role in fulfilling the research objectives and holds substantial significance in academic inquiry (Unacademy, 2023). A variety of methods, including surveys, physical examinations, observations, postal questionnaires, interviews, and focus groups, are employed to collect primary data (Surbhi, 2016). In this research, primary data is gathered through a specifically designed survey, detailed in Appendix A.

On the contrary, secondary data encompasses information sourced from outlets other than the researcher and accessible through various channels (Global Magazine, 2022). Secondary sources have offered fundamental insights for theoretical discussions, facilitating a deeper comprehension of the research subject, and aiding in the development of theoretical frameworks concerning service quality and customer satisfaction.

4.3   Questionnaire design

This chapter focuses on describing the design of the questionnaire used for data collection to analyse the rating of tickets within the ticketing system. The aim of the questionnaire was to obtain a comprehensive understanding of employees' experiences with the system and to identify areas for improvement. The following sections describe the individual parts of the questionnaire and their purpose:

1) **Experience with Ticket Rating:** Respondents are asked about the frequency of their ticket rating, motivation for rating, and reasons for rating.

2) **Changes and Modifications in the Ticketing System:** This section explores respondents' awareness of changes in the system and their impact on ticket usage and rating.

3) **Improvement of User Environment:** This part evaluates the user interface of the system and proposes changes to enhance its user-friendliness and effectiveness.

4) **Regular Feedback and Rating Information:** Respondents are questioned about their opinion on regular feedback on ratings and the type of information that would motivate them to rate tickets more frequently.

5) **Communication effectiveness:** This section aims to assess participants' perceptions of the adequacy of communication regarding the ticketing system and the significance of ticket rating.

6) **Enhancing Ticketing System Experience:** This section seeks to gather user feedback on improving the ticket rating process and identifying desired features for the ticketing system, aiming to enhance user experience and system functionality.

7) **Demographic Information:** This section collects information about the length of employment in the company, the working department or team, and the frequency of using the ticketing system.

The questionnaire was designed to obtain crucial information about employees' experiences with the ticketing system and identify opportunities for improvement.

4.4 Sample design

This study is focused on individuals employed at Knorr-Bremse Company. The sample comprised participants who engaged in the survey. A non-probabilistic judgment was used because it was considered most appropriate for the research objectives. The questionnaire was sent to employees in locations that use TS for indirect purchasing and to employees in Knorr Bremse Service Europe who created at least one ticket in the month of March 2024.

4.5 Data analysis

The collected data will be analysed using an MS Excel spreadsheet. Tables with a percentage expression of the results will be made. Subsequently, based on the results, solutions will be proposed that should help achieve the research goal.

5   Data evaluation

This chapter delves into the data evaluation process carried out in the research. Data was gathered from a survey, presented in Appendix A, alongside secondary data sources like literature reviews.

5.1   Characteristics of the research sample

The research sample for this study comprises individuals within Knorr-bremse who, in March, initiated one or more tickets in the IP Ticketing system, totalling 35 participants out of 250 questionnaires sent, representing 14% of the total.

5.2   Demographic Information:

Regarding job roles (Table 2), respondents identified themselves as Requestors (31.40 %), Buyers (22.90 %), Accountants (14.30 %), Controllers (8,60 %), and a variety of roles grouped under "Other" (22.90 %), including industrial engineers, information security specialists, MD personal assistants, administrative support staff, CIT requestors, and AP and payment helpdesk personnel.

Table 2: Job role

Job Role	Frequency	Percent	Valid Percent	Cumulative Percent
Requestor	11	31.40%	31.40%	31.40%
Buyer	8	22.90%	22.90%	54.30%
Accountant	5	14.30%	14.30%	68.60%
Controller	3	8.60%	8.60%	77.10%
Other	8	22.90%	22.90%	100.00%
Total	35	100.00%	100.00%	-

Source: own processing.

Similarly, respondents were distributed across various departments (Table 3), including Accounting (22.90 %), Indirect Purchasing (28.60 %), HR (2.90 %), Controlling & Reporting (5.70 %), IT (2.90 %), Logistics (2.90 %), and "Other" (34.30 %), including Sales & Marketing, R&D, Backoffice business service and Pre-Development.

Table 3: Departments

Department	Frequency	Percent	Valid Percent	Cumulative Percent
Accounting	8	22.90%	22.90%	22.90%
IP	10	28.60%	28.60%	51.40%
HR	1	2.90%	2.90%	54.30%
Controlling & Reporting	2	5.70%	5.70%	60.00%
IT	1	2.90%	2.90%	62.90%
Logistics	1	2.90%	2.90%	65.70%
Other	12	34.30%	34.30%	100.00%
Total	35	100.00%	100.00%	-

Source: own processing.

Furthermore, the survey collected data on respondents' tenure with the company, revealing that 14.30 % of participants had been with the company for less than one year, 22.90 % for 1-3 years, 17.10 % for 4-6 years, and 45.70 % for more than six years (Table 4).

Table 4: Tenure

Tenure	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 1 year	5	14.30%	14.30%	14.30%
1 - 3 years	8	22.90%	22.90%	37.10%
4 - 6 years	6	17.10%	17.10%	54.30%
More than 6 years	16	45.70%	45.70%	100.00%
Total	35	100.00%	100.00%	-

Source: own processing.

These tables provide a clear breakdown of the demographic characteristics of the research sample. It is evident that most respondents held job roles such as Requestors and Buyers, while a smaller percentage occupied roles like Accountants and Controllers. The distribution across departments shows a diverse representation, with the "Other" category encompassing various roles. Additionally, tenure analysis indicates a significant proportion of respondents have been with the company for more than six years, suggesting a level of experience and potential institutional knowledge within the sample.

5.2.1 Experience with Ticket Rating

This chapter explores user engagement and satisfaction levels related to ticket rating within the Indirect Purchasing domain. It analyses the frequency of ticket usage, the number of tickets created and rated in the last month, and the reasons behind ticket ratings provided by respondents. Understanding these aspects is essential for optimising feedback mechanisms and improving user satisfaction with the ticketing system. Through data analysis, this chapter aims to identify trends, challenges, and opportunities for enhancing user engagement and satisfaction in Indirect Purchasing workflows.

The frequency of using the ticketing system for Indirect Purchasing among respondents varied (Table 5). Among the 35 participants surveyed, 8.6 % reported using the system daily, 20.0 % reported weekly usage, 25.7 % reported monthly usage, 40.0 % reported rare usage, and 5.7 % reported never using the system. This suggests potential areas for improvement in user engagement strategies and system usability to encourage more consistent usage across all respondents.

Table 5: Frequency of using TS

Frequency	Count	Percent	Valid Percent	Cumulative Percent
Daily	3	8.60%	8.60%	8.60%
Weekly	7	20.00%	20.00%	28.60%
Monthly	9	25.70%	25.70%	54.30%
Rarely	14	40.00%	40.00%	94.30%
Never	2	5.70%	5.70%	100.00%
Total	35	100.00%	100.00%	-

Source: own processing.

In the last month, respondents reported varying levels of activity in terms of creating tickets within the Indirect Purchasing system (Table 6). Among the 35 respondents, 20.0 % reported not creating any tickets, 62.9 % created between 1 to 5 tickets, 11.4 % created between 6 to 10 tickets, and 5.7 % created more than 15 tickets.

Table 6: Number of created tickets

Number of Tickets	Count	Percent	Valid Percent	Cumulative Percent
None	7	20.00%	20.00%	20.00%
1-5	22	62.90%	62.90%	82.90%
6-10	4	11.40%	11.40%	94.30%
11-15	0	0.00%	0.00%	94.30%
More than 15	2	5.70%	5.70%	100.00%
Total	35	100.00%	100.00%	-

Source: own processing.

Regarding ticket rating activity (Table 7) in the last month, respondents exhibited differing levels of engagement. Among the 35 participants, 68.6 % did not rate any tickets, while 22.9 % rated between 1 to 5 tickets. Only a small percentage of respondents rated more than six tickets.

Table 7: Number of rated tickets

Number of Tickets Rated	Count	Percent	Valid Percent	Cumulative Percent
None	24	68.60%	68.60%	68.60%
1-5	8	22.90%	22.90%	91.40%
6-10	1	2.90%	2.90%	94.30%
11-15	1	2.90%	2.90%	97.10%
More than 15	1	2.90%	2.90%	100.00%
Total	35	100.00%	100.00%	-

Source: own processing.

Among those who rated tickets (Table 8), satisfaction levels varied. Among the 35 respondents, 25.7 % indicated satisfaction with the tickets they rated, while 5.7 % expressed dissatisfaction. The majority, consisting of 68.6 % of respondents, did not provide any rating for the tickets.

Table 8: Reasons for Ticket rating

Reason	Count	Percent	Valid Percent	Cumulative Percent
I was satisfied	9	25.70%	25.70%	25.70%
I was not satisfied	2	5.70%	5.70%	31.40%
Didn't rate any	24	68.60%	68.60%	100.00%
Total	35	100.00%	100.00%	-

Source: own processing.

Table 5 suggests that although most respondents do not use the system regularly, there is still a diversity of usage ranging from daily to never. This diversity may reflect different work processes and user needs, which could be crucial for designing future system improvements.

Table 6 reveals that most respondents created only a limited number of tickets during the past month, with a significant portion not creating any. This may indicate efficient problem-solving or processes that do not require frequent ticket creation, but it could also highlight the need for streamlining and simplifying workflows for users.

Table 7 indicates that many respondents do not take advantage of the option to rate tickets, which could be due to a lack of awareness of this feature or insufficient encouragement to provide feedback. This factor may hinder opportunities for system improvement based on user ratings and underscores the need to enhance communication and awareness of available system features.

Table 8 shows that among those who provide ratings, there is a variety of satisfaction levels. While some users expressed satisfaction, others expressed dissatisfaction, indicating areas that need improvement. However, most respondents did not leave any ratings, which could hinder the full utilisation of feedback opportunities for system improvement.

5.2.2 Changes and modifications in the Ticketing System

The data gathered from questionnaire participants provides valuable insights into potential changes and modifications that could enhance user engagement and satisfaction with the ticketing system.

Regarding the use of alerts to motivate regular evaluations (figure 20), it is notable that most respondents (42.43 %) expressed a lack of interest or uncertainty in utilising alerts for this purpose. This suggests that simply implementing alerts may not be sufficient to encourage consistent evaluation. However, a notable portion of respondents (31.31 %) indicated a willingness to consider alerts as a motivational factor for regular evaluations. Additionally, 26.26 % of respondents expressed uncertainty about whether alerts would motivate them. This highlights the importance of understanding user preferences and providing tailored solutions to incentivise user engagement.

Would alerts motivate you to evaluate regularly?

26, 26%

31, 31%

42, 43%

■ Yes ■ No ■ I don´t know
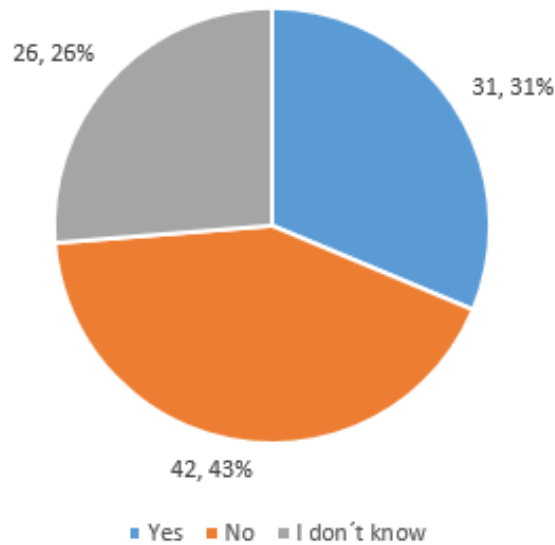
Figure 20: Alerts
Source: own processing.

When evaluating these results, it becomes evident that while alerts may hold potential as a motivational tool for some users, they may not resonate with others. Therefore, a one-size-fits-all approach to implementing alerts may not be effective. Instead, it may be beneficial to offer customisable alert options or alternative methods of encouraging regular evaluations to accommodate the varied preferences and motivations of users. This approach can help ensure that the ticketing system effectively promotes user engagement and participation in the evaluation process.

Furthermore, when asked about factors that would motivate them to rate tickets more frequently, respondents provided diverse responses. Some emphasised the importance of knowing that their feedback is meaningful and that actions are taken based on their evaluations. Others mentioned the potential impact of mandatory ratings or the convenience of receiving direct prompts to rate tickets. Additionally, several respondents emphasised the importance of efficient ticket resolution and the availability of time for rating.

Overall, these responses underscore the need for a multifaceted approach to encourage ticket evaluations. This may include implementing alerts for those who find them motivating, ensuring that feedback is acted upon, and providing convenient options for rating tickets. Additionally, clear communication about the significance of ticket evaluations and the potential impact on improving processes may help to increase user engagement. Moreover, considering the varied preferences

and motivations of users, a flexible and adaptable approach to implementing changes in the ticketing system is crucial to effectively meet the needs and expectations of all users.

5.2.3 Improvement of user environment

The data gathered under the chapter "Improvement of User Environment" provides valuable insights into users' perceptions and areas of concern regarding the ticketing system.

When examining the effectiveness of the ticketing system (figure 21), it's encouraging to note that most respondents expressed satisfaction, with a significant portion rating it as "somewhat satisfied" (42.86 %) and "extremely satisfied" (20 %). This indicates that, overall, users find the system to be adequate in addressing their needs. However, it's essential to address the concerns raised by the three respondents who expressed dissatisfaction. While their specific grievances were not detailed, addressing any underlying issues contributing to their dissatisfaction—such as slow response times or incomplete ticket resolution—could potentially improve overall user satisfaction.
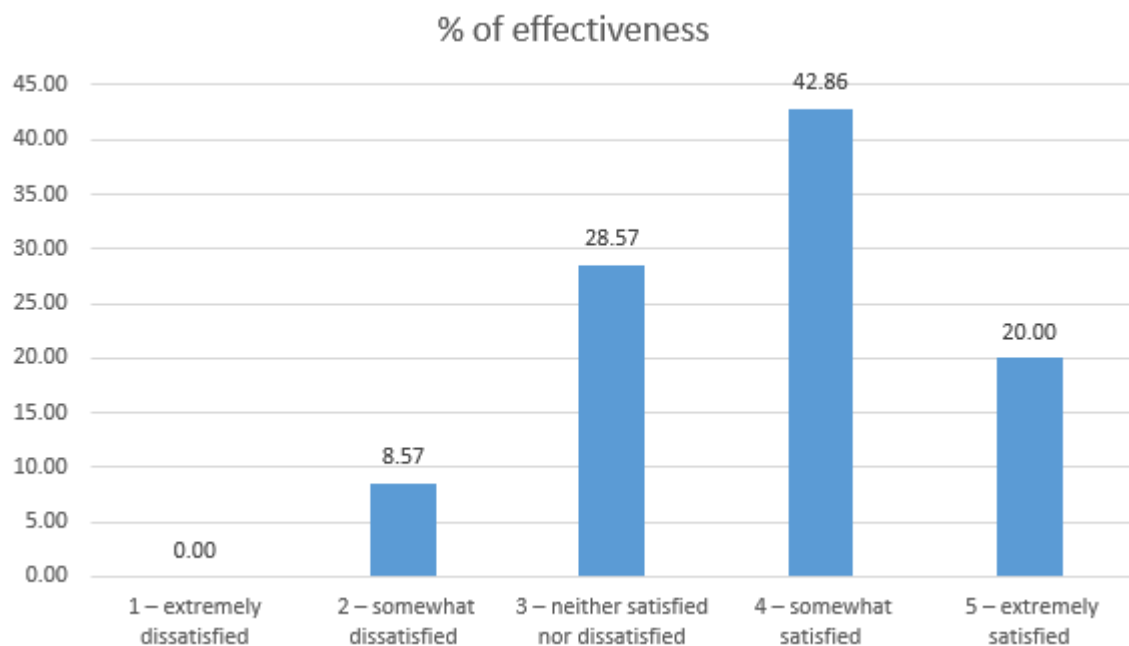

Figure 21: % effectiveness of TS
Source: own processing.

Similarly, while the user-friendliness of the ticketing system (figure 22) garnered mixed responses, with an almost equal number of respondents expressing satisfaction and neutrality, there are opportunities for enhancement. For instance, 31.43 % of respondents who felt neutral may

represent users who find the system functional but not intuitive or user-friendly. Implementing user interface improvements, simplifying navigation, and providing more comprehensive user training could address these concerns. Additionally, the three respondents who expressed dissatisfaction with user-friendliness highlight areas for targeted improvement. Addressing their specific pain points, whether related to system navigation difficulties or inadequate support resources, could lead to tangible enhancements in user experience.
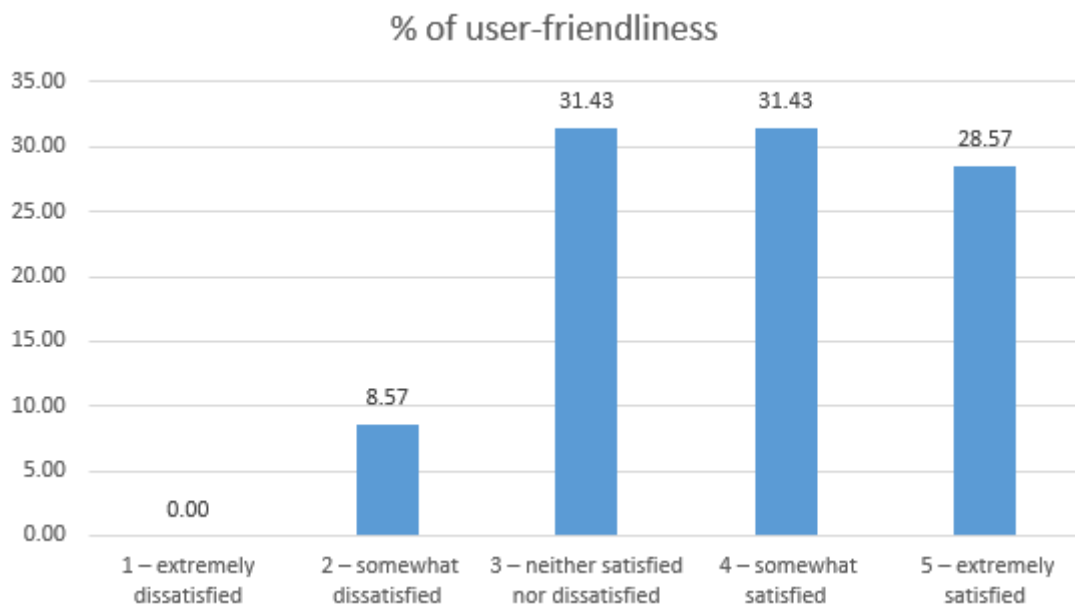
Figure 22: User-friendliness of TS
Source: own processing.

Furthermore, respondents identified various areas of concern within the current ticketing system. The most cited issues included slow response time, poor search functionality, and complexity, each mentioned by a notable number of respondents. Other concerns included technical issues, lack of training and support, and a lack of a user-friendly interface. Additionally, respondents highlighted specific challenges such as difficulty in navigating categories, illogical information requirements, and the need for better integration with external systems like Ariba.

To address these concerns and improve the user environment, it may be beneficial to focus on streamlining processes, enhancing search functionality, and providing comprehensive training and support. Additionally, incorporating user feedback into system updates and considering suggestions such as adding an "Other" option in helpdesk types can contribute to a more user-friendly and efficient ticketing system. Overall, addressing these areas of concern can help enhance user satisfaction and optimise the usability of the ticketing system.

5.2.4   Regular feedback and rating information

The data collected under the chapter "Regular Feedback and Rating Information" sheds light on the factors that would most motivate users to rate tickets more frequently within the ticketing system. Notably, respondents provided diverse insights into their preferences, offering valuable guidance for improving the feedback and rating process (Table 23).

Among the respondents, clear communication of benefits emerged as the most significant motivator. This suggests that users value understanding the direct benefits of their feedback, such as its impact on improving organisational performance or individual workflows. Similarly, the impact on organisational performance was another key motivator, highlighting the importance of understanding how their feedback contributes to broader organisational goals and outcomes.

Additionally, user-friendly rating interfaces and comparative data with other departments were identified as significant motivators as well. This underscores the importance of providing intuitive and accessible rating mechanisms, as well as opportunities for benchmarking and learning from other departments' experiences.
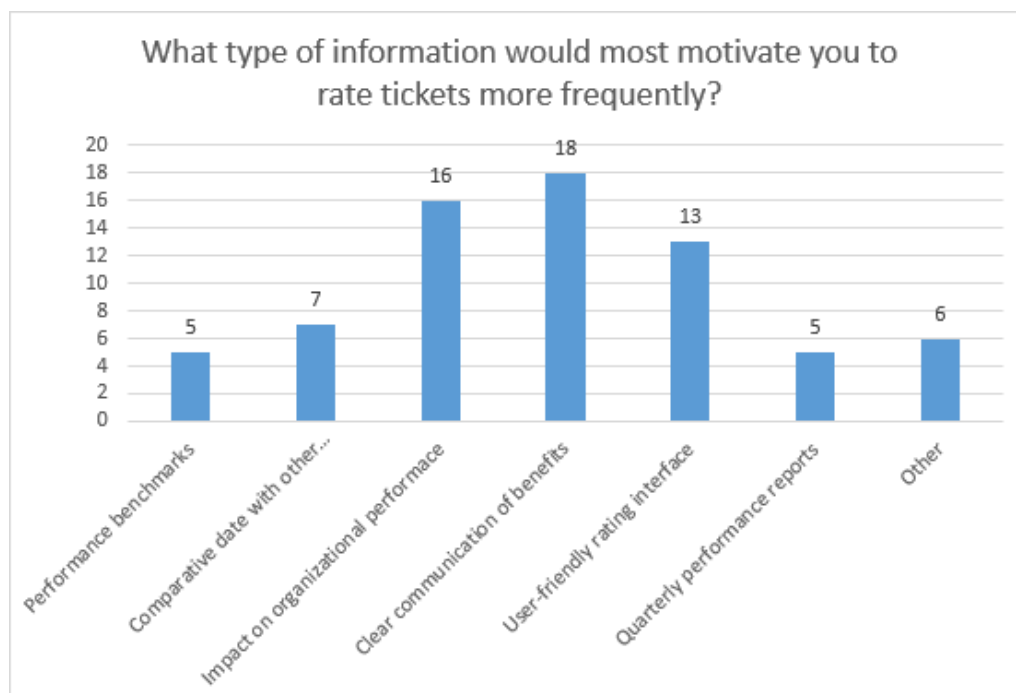
Figure 23: Motivation for rating
Source: own processing.

Overall, these findings offer valuable insights into the types of information that can effectively motivate users to engage in regular feedback and rating processes. By incorporating clear

communication of benefits, emphasising the impact on organisational performance, and providing user-friendly rating interfaces, organisations can encourage greater user participation and derive actionable insights for continuous improvement. Moreover, an ongoing exploration of user preferences and needs can inform iterative enhancements to the feedback and rating process, ultimately leading to a more effective and user-centric ticketing system.

5.2.5 Communication effectiveness

In terms of communication adequacy concerning the ticketing system (figure 24), most respondents expressed dissatisfaction, with 37.14 % of respondents rating it as "somewhat dissatisfied" and 14.29 % as "somewhat satisfied." Interestingly, 31.43 % of respondents indicated a neutral stance, neither satisfied nor dissatisfied, while there were no respondents who rated communication as "extremely dissatisfied" or "extremely satisfied." This suggests that there is a lot of room for improvement overall. These results show that satisfaction with the adequacy of communication is not too great.
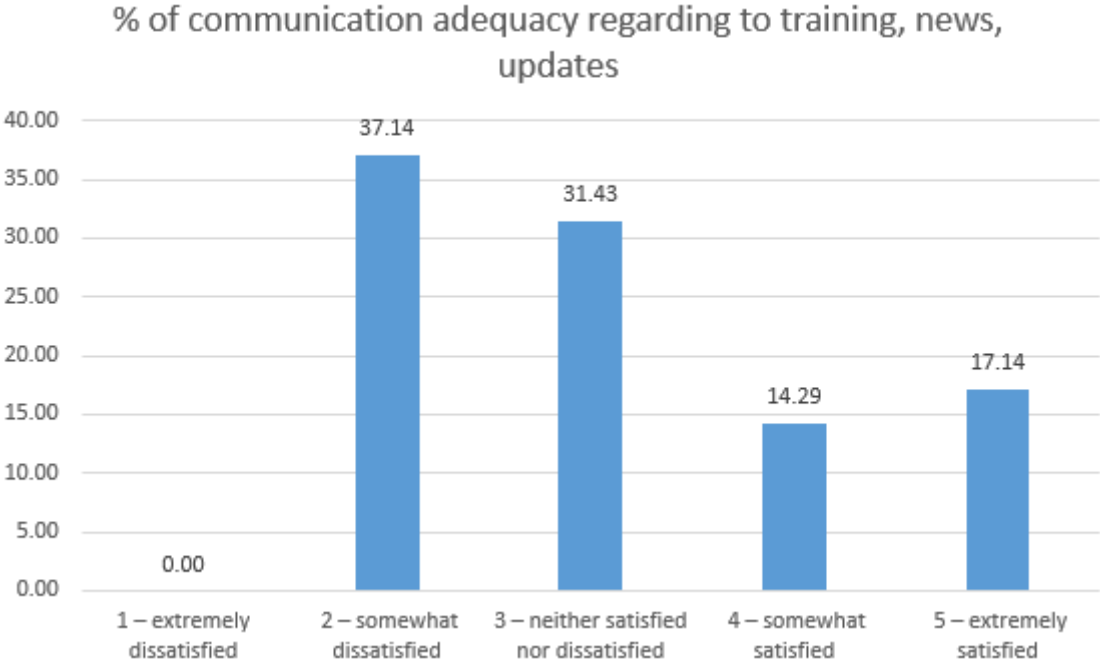
Figure 24: Adequacy of communication
Source: own processing.

Regarding the clarity of communication about the purpose of rating within the system (figure 25), opinions were varied. While a notable portion of respondents (65.71 %) indicated a neutral stance, 20 % of respondents found the communication to be somewhat unclear and very unclear. Only a

single respondent found the communication to be somewhat clear, indicating a need for improvement in effectively communicating the purpose of rating within the system.
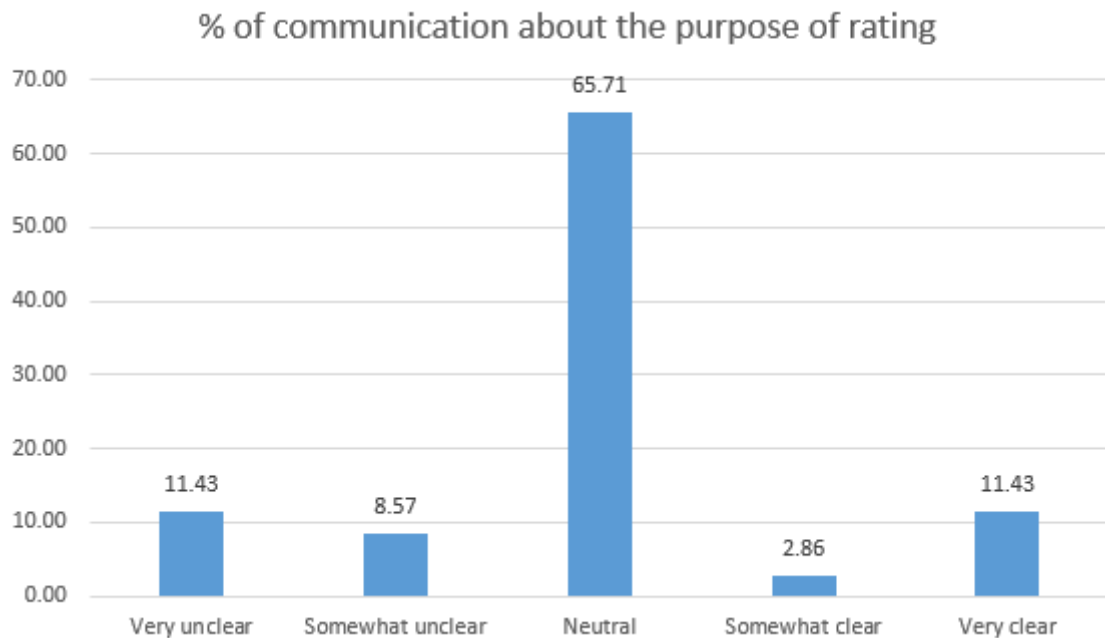
Figure 25: Communication about the purpose of rating
Source: own processing.

Overall, these findings underscore the importance of enhancing communication strategies surrounding the ticketing system, particularly in terms of clarity and transparency regarding the purpose and importance of user feedback. By addressing the specific suggestions provided by respondents, organisations can improve communication effectiveness, enhance user understanding, and ultimately drive greater engagement with the ticketing system.

5.2.6   Enhancing Ticketing System Experience

The responses provided by users offer valuable insights into potential areas for improvement in the ticket rating process and desired features for the ticketing system.

For the ticket rating process, suggestions were made, including the implementation of direct communication with each rater, the addition of the option to rate directly in the email about closing the ticket, and the simplification of the overall rating system. Some users emphasised the importance of clarifying the necessity and ease of rating, with suggestions for email or intranet notifications to prompt users to provide feedback. Others stressed the need for transparency in the

evaluation process and the importance of making the rating process more user-friendly and efficient.

Users expressed a variety of needs and preferences regarding desired features for the ticketing system. These included a direct connection with Ariba, the ability to see all other tickets like their problem and clearer responsibilities regarding whom to contact for assistance. Suggestions for features such as status tracking of tickets, selectable options for document submission, and the option to reopen tickets were also mentioned. Additionally, some users highlighted the importance of simplicity and ease of use in the ticketing system, while others emphasised the need for more comprehensive information and examples related to ticket raising.

Overall, these responses provide valuable guidance for the enhancement of the ticket rating process and the improvement of the ticketing system to better meet the needs of the users. Incorporating these suggestions can lead to a more streamlined and user-friendly experience, ultimately enhancing user satisfaction and efficiency within the organisation's ticketing system.

5.3   Hypothesis testing

The upcoming chapter will centre on the crucial aspect of hypothesis testing and the evaluation of the research conducted. In particular, the chapter will emphasise testing hypotheses to determine their validity and accuracy. The hypotheses were tested at a significance level of 0.05. The author conducted three hypotheses:

H1: Greater frequency of system usage for indirect purchases is associated with a higher number of rated tickets.

To investigate the relationship between the frequency of using the ticketing system for indirect purchasing and the number of rated tickets, a correlation analysis using Pearson's correlation coefficient was conducted. The data used in this analysis are taken from table 5 and table 7. A summary of these data is shown in Table 9.

Table 9: Testing the correlation between system usage and rating:

Frequency of system usage	Frequency code for frequency (in total)	Number of rated tickets	Frequency code for number of rated tickets (in total)	Correlation
Daily	3	3	10	
Weekly	14	7	9	
Monthly	27	9	13	-0.424016573
Rarely	56	14	18	
Never	10	2	2	

Source: own processing.

The calculated Pearson correlation coefficient between the frequency of system use and the number of evaluated tickets is -0.4240. This result suggests a weak negative linear relationship between the frequency of system use and the number of rated tickets. In other words, the more often users use the system, the fewer tickets they usually rate.

H2: Duration of employment in the organisation influences the user-friendliness rating of the ticketing system.

For these purposes, the length of employment was divided into two categories, namely more than six years (table 10) and less than six years (table 11).

Table 10: Anova for the group of employees with tenure of greater than six years

SUMMARY

Groups	Count	Sum	Average	Variance
User-friendliness rating	16	60	3.75	0.866666667
> 6 years	16	16	1	0

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	60.5	1	60.5	139.6153846	8.20342E-13	4.170876786
Within Groups	13	30	0.433333333			
Total	73.5	31				

Source: own processing

This result suggests that workers with more than six years of employment generally have a higher rating of system user-friendliness.

Table 11: Anova for the group of employees with tenure of less than six years

SUMMARY

Groups	Count	Sum	Average	Variance
User-friendliness rating	19	73	3.842105263	1.029239766
< 6 years	19	19	1	0

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	76.73684211	1	76.73684211	149.1136364	2.31509E-14	4.113165277
Within Groups	18.52631579	36	0.514619883			
Total	95.26315789	37				

Source: own processing.

The average user-friendliness rating of the ticketing system is 3.75 for workers with more than six years of employment and 3.842 for workers with less than six years of employment. ANOVA analysis shows a statistically significant difference in the perception of user-friendliness between these groups (for the length of employment > 6 years: $F_{(1, 30)} = 139.62$, $p < 0.05$; for the length of employment < 6 years: $F_{(1, 36)} = 149.11$, $p < 0.05$). This suggests that workers with more than six years of employment generally show higher ratings of system user-friendliness. However, despite this difference, both groups of workers show significant satisfaction with the system's user interface.

H3: Employees with longer tenure have significantly more positive ratings regarding the clarity of communication about the purpose of rating within the system compared to employees with shorter tenure.

For these purposes, the length of employment was divided into two categories, namely more than six years (table 12) and less than six years (table 13).

Table 12: Anova for rating of communication regarding purpose of rating TS by group >6 years

SUMMARY

Groups	Count	Sum	Average	Variance
Rating of communication regarding purpose of rating TS	16	49	3.0625	0.995833333
> 6 years	16	16	1	0

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	34.03125	1	34.03125	68.34728033	3.15056E-09	4.17087679
Within Groups	14.9375	30	0.497916667			
Total	48.96875	31				

Source: own processing.

For employees with more than six years of employment, the average rating for clarity of communication regarding the purpose of the evaluation in the system is 3.0625. ANOVA analysis showed a statistically significant difference in the perception of this clarity between employees with more than six years of employment and those with less than six years of employment ($F_{(1, 30)} = 68.35$, $p < 0.005$). Employees with a length of employment of more than six years perceive the communication regarding the purpose of evaluation in the system significantly more clearly than those with shorter work experience.

Table 13: Anova for rating of communication regarding purpose of rating TS by group <6 years

SUMMARY

Groups	Count	Sum	Average	Variance
Rating of communication regarding purpose of rating TS	19	54	2.842105263	1.140350877
< 6 years	19	19	1	0

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	32.23684211	1	32.23684211	56.53846154	6.9246E-09	4.113165277
Within Groups	20.52631579	36	0.570175439			
Total	52.76315789	37				

Source: own processing

For employees with less than six years of employment, the average rating for clarity of communication regarding the purpose of the evaluation in the system is 2.8421. Again, there is a statistically significant difference in the perception of this clarity between the two groups ($F_{(1, 36)} = 56.54$, $p < 0.05$). Employees with shorter work experience tend to perceive communication about the purpose of evaluation in the system less clearly than their colleagues with longer work experience.

Thus, length of employment significantly affects the perception of clarity of communication regarding the purpose of evaluation in the system. Older employees generally perceive this communication more clearly than employees with shorter work experience.

5.4   Summary of Results

The data evaluation process in this study involved collecting data from a survey administered to Knorr-Bremse employees and conducting secondary data analysis from literature reviews. The research sample consisted of 35 participants who initiated tickets in the IP Ticketing system in March, representing 14 % of the total 250 questionnaires sent.

Demographic information revealed a diverse sample in terms of job roles and departments, with most respondents identifying as Requestors and Buyers across various departments. Tenure analysis indicated a significant proportion of respondents had been with the company for more than six years, suggesting experience within the organisation.

The analysis of user engagement and satisfaction levels with ticket ratings revealed varying levels of activity and satisfaction among respondents. While most respondents did not rate any tickets, those who did expressed mixed satisfaction levels. The data highlighted areas for improvement in user engagement strategies, system usability, and communication about the ticketing system's purpose and benefits.

Regarding changes and modifications in the ticketing system, respondents provided insights into their preferences and suggestions for improvement. While alerts showed potential as a motivational tool for some users, a tailored approach may be necessary to accommodate diverse preferences. Clear communication of benefits emerged as a significant motivator for rating tickets more frequently.

Communication effectiveness surrounding the ticketing system was rated neutrally or somewhat dissatisfied by most respondents, indicating a need for improvement in clarity and transparency. Suggestions for enhancing the ticket rating process included implementing direct communication to raters and simplifying the rating system, while desired features for the ticketing system included direct connection with Ariba and clearer responsibilities for assistance.

We reject hypothesis H1, which states that more frequent use of the indirect purchase system is associated with a higher number of rated tickets, as weak negative linear relationships were found between frequency of system use and number of rated tickets.

We accept hypothesis H2, which states that length of employment in an organisation affects the user-friendliness ratings of the ticketing system, as employees with more than six years of employment were shown to generally rate the system more user-friendliness than those with less than six years of employment.

We also accept hypothesis H3, which states that employees with longer tenures have significantly more positive evaluations regarding the clarity of communication about the purpose of evaluation in the system compared to employees with shorter tenures, as employees with longer tenures have

generally been shown to perceive this communication to be clearer than employees with shorter employment.

In summary, the data evaluation process provided valuable insights into user engagement, satisfaction, and preferences related to the ticketing system within Knorr-Bremse. The findings underscored the importance of tailored approaches to user engagement, clear communication, and continuous improvement to optimise the usability and effectiveness of the ticketing system.

5.5   Connecting results with CSAT

Customer Satisfaction Score (CSAT) is a key metric for evaluating the level of customer satisfaction with the services or products provided. Respondents' answers to questions about satisfaction with a particular aspect of a service or product are typically used to calculate CSAT.

CSAT of the effectiveness of TS

In this case, was used a question about the adequacy of the effectiveness of the ticketing system (TS) and the respondents were allowed to express their level of satisfaction on a scale from "Very satisfied" to "Very dissatisfied".

From Figure 21, which shows the adequacy of TS effectiveness, 15 respondents out of a total of 35 answered that they were "Extremely Satisfied", and seven respondents answered that they were "Somewhat Satisfied".

The formula from Chapter 2.1.2 will be used to calculate CSAT. A total of 22 respondents who were "Extremely Satisfied" or "Somewhat Satisfied" were identified. This number was divided by the total number of respondents, and the result was multiplied by 100 to obtain a percentage. It was found that the CSAT for Figure 20 was approximately 62.86%.

This level of satisfaction indicates that most respondents have a positive perception of TS's effectiveness within the organisation. This figure may indicate that the ticketing system meets the expectations of most users and provides them with the necessary tools to effectively solve their requests and problems. However, attention should be paid to those who have not expressed their satisfaction and areas where the system can be further improved to suit as many users as possible

should be identified. At the same time, it is important not to forget the fact that only 35 employees out of a total of 250 answered the questionnaire.

According to the data provided, 62.86% of respondents expressed their satisfaction with the effectiveness of the ticketing system. Assuming that the same level of satisfaction would be maintained for all remaining 215 respondents (250 total - 35 respondents who have already answered), it is possible to calculate what the number of satisfied respondents would be.

According to the data provided, it is calculated that 62.86% of respondents would have their satisfaction expressed with the effectiveness of the ticketing system maintained for all remaining 215 respondents (250 total - 35 respondents who have already answered). It is deduced that approximately 157 respondents out of a total of 250 would be expected to be satisfied at the expected level of satisfaction found in the sample. Therefore, the probability that the CSAT result would be the same if all 250 people answered the questionnaire would be approximately 157 out of 250, which is 62.8%.

CSAT of user-friendliness of TS

For the question "How would you overall rate the user-friendliness of our ticketing system?" it was found that 24 respondents were "Very Satisfied" or "Satisfied". This number was then divided by the total number of responses, which was 35, and the result was multiplied by 100 to obtain a percentage. As a result, the Customer Satisfaction Score (CSAT) for this question was 68,57 %.

This suggests that most respondents found the ticketing system to be user-friendly, which is a positive indicator of its effectiveness. However, it's also worth considering gathering more detailed feedback to identify any specific areas for improvement despite the generally positive response.

CSAT of the adequacy of communication

To calculate the Customer Satisfaction Score (CSAT) for the question "How would you rate the adequacy of communication concerning the ticketing system? (training, news, updates)", the total number of responses was first calculated. Then, the number of respondents who expressed their satisfaction with the answers "Somewhat satisfied" and "Extremely satisfied" was determined. This number was divided by the total number of responses, and the result was multiplied by 100 to obtain a percentage.

The number of respondents who expressed their satisfaction was determined as the sum of the answers "Somewhat satisfied" and "Extremely satisfied", which amounted to 11 respondents. The resulting calculation shows that the CSAT for the question regarding the adequacy of communication regarding the ticketing system was approximately 31.43 %.

This result indicates that only a small proportion of respondents were satisfied with the level of communication regarding the ticketing system. This may signal a need to improve communication processes and increase transparency and availability of information to employees regarding ticketing system news, training, and updates.

CSAT for communication about the purpose of rating

The number of respondents who expressed their satisfaction was determined as the sum of the answers "Somewhat satisfied" and "Extremely satisfied", which amounted to 5 respondents. The resulting calculation shows that the CSAT for this question was approximately 14.29 %.

This result suggests that only a minority of respondents were satisfied with the clarity of communication regarding the purpose of the assessment within the system. This may signal a need to improve communication processes and provide clearer information to employees regarding the reason for the evaluation and its significance within the system.

In summary, the findings underscore the imperative for continuous improvement efforts across various facets of the ticketing system, ranging from functionality and user-friendliness to communication strategies. By addressing these areas of concern, organisations can strive towards optimising user satisfaction levels and fostering a more streamlined.

6 Recommendations

This chapter focuses on options that should lead to an increase in the number of evaluated tickets based on the result of the questionnaire. The proposals were developed mainly from the CSAT results, which are graphically represented in Table 14.

Table 14: Results of CSAT

CSAT - Evaluation of TS	CSAT value (%)	Recommendations
Effectiveness	62.86	1) Enhace awareness
User-friendliness	68.57	2) Transparent feedback
Adequacy of communication	31.43	3) Simplifying the evaluation process
Comunication about purpose of rating	14.29	

Source: own processing.

1) Enhance awareness:

Improving communication about the purpose and benefits of ticket evaluation among employees is key to encouraging their active participation. This step requires a comprehensive strategy and appropriate tools that provide relevant information in an accessible format. The results of the questionnaire show that only a small part of the employees are fully aware of the importance of ticket evaluation. Most respondents provided the need for more information and a clearer understanding of the impact of their feedback on the functioning of the organisation. These findings suggest that improving communication practices is key to effectively engaging employees in the ticket review process and strengthening their role in improving work practices.

Possibilities for improvement:

Internal communication platforms: Internal communication channels such as company intranets, e-mail bulletin boards, and digital screens are used to disseminate information about ticket reviews. These media provide an effective means of widely distributing important messages and providing employees with easy access to relevant information.

Creation of visual materials: Creating visually appealing presentations, infographics and videos that simply illustrate the importance of ticket evaluation and its impact on work processes. These materials are easy to understand and appeal to visual types of employees.

Improving communication towards employees was identified as the first step in addressing the issue of low-ticket evaluation rates. By enhancing awareness and understanding of the purpose and benefits of ticket evaluation, organisations can create a more supportive environment for active participation. This initial step lays the foundation for subsequent efforts aimed at increasing employee engagement and fostering a culture of feedback and continuous improvement. Effective communication practices serve as the cornerstone of successful ticket review processes, empowering employees to contribute meaningfully to the organisation's performance and success.

2) Transparent feedback:

Ensuring that employees see the concrete results of their evaluation and how it contributes to improving the processes and performance of the organisation can serve as motivation to regularly evaluate tickets. Providing constructive feedback and visible results can motivate employees to perform better.

Possibilities for improvement:

Regular Feedback: Providing regular feedback on ticket ratings. This may include information on what changes were made based on their feedback and what the outcome of those changes was. In this way, employees will see that their contribution has an impact on the operation and development of the organisation.

Visibility of Results: Ensure ticket evaluation results are visible to employees. This may include regularly updated reports or dashboards that show statistics and trends in ticket ratings. Visibility of results can motivate employees to perform better and actively participate in evaluation.

Implementing this interactive feedback system could have several advantages. First, it would motivate employees to regularly rate tickets because they would see concrete results of their efforts. Second, it would increase the transparency of the appraisal process and allow employees to better understand the importance of their contribution to the overall functioning of the organisation. This would improve employee engagement and contribute to a higher level of organisational performance.

3) Simplifying the evaluation process:

Simplifying the appraisal process is key to increasing employee engagement. Based on the results of the questionnaire, some employees may experience difficulties with the evaluation process. Therefore, the author suggests these improvements.

Changing the e-mail design: Improving the design of evaluation link emails requires a comprehensive approach. Placing the link only under the ticket status is not effective enough, as employees may overlook or forget the link. It is worth considering other strategies to encourage employees to interact with the assessment link. One option is to include the link in the main body of the email, perhaps with a brighter and more imaginative design to grab their attention. Another option is to provide information about the assessment in a separate section of the email, which could raise awareness of the importance of the process. However, it is necessary to keep in mind that the goal is not to overwhelm the employee with more e-mails. It is important to find a balanced solution that will suit both parties.

Another modification that could lead to an increase in the likelihood that employees will click the email and interact with the review link is to remove the ticket status from the email subject line. If the status is already obvious in the subject line, employees have less reason to open the email to learn more about the content. By removing the status, employees are more curious and more likely to open the email, which can ultimately lead to higher participation in the evaluation. For this reason, this adjustment should be included in the email design improvement strategy to encourage active employee participation and increase the total number of tickets evaluated.

Automatic reminders: Another option is to consider implementing automated systems for reminders and easier feedback. In this way, employees can receive regular notifications about unrated tickets and be encouraged to rate them faster. Automatic reminder systems can be set to match individual employee preferences, making them more likely to be used. These measures can be an effective way to eliminate barriers that prevent employees from regularly evaluating tickets.

Based on the results of the questionnaires, employees did not show much interest in alerts. However, even so, the company should consider the possibility of implementing automated reminder systems. If the other suggested measures do not work, the use of automated reminders and simplified feedback may be an alternative solution to encourage increased employee participation in appraisals.

It is crucial to implement the recommended strategies to increase employee engagement in ticket evaluation. However, it is equally important to test these changes in practice and assess their effectiveness. Based on the results of the improvements, organisations can then select the most suitable options for encouraging employees to regularly evaluate tickets. By continuously monitoring and adjusting these strategies, organisations can create a culture of active participation and feedback, leading to improved work practices and organisational performance.

Conclusion

When interpreting the results of this research, it's crucial to acknowledge certain limitations linked to data collection and analysis. A primary constraint is the small sample size, where only 35 out of 250 collected questionnaires were processed, representing merely 14% of the total respondents. Despite multiple questionnaire mailings, the limited response rate may compromise the generalizability of the findings. Consequently, interpretations and conclusions should be approached cautiously within the context of the broader population.

Overall, this study effectively achieved its research objective of scrutinising ticket evaluation practices and proposing potential enhancements. The initial investigation unveiled a lack of rated tickets, signalling areas for improvement. Additionally, survey findings indicated a lack of employee awareness regarding the significance of ticket evaluation, coupled with a desire for transparent feedback mechanisms.

Based on these insights, recommendations were formulated for Knorr-Bremse, emphasising the need to bolster employee awareness and feedback transparency, along with enhancing user interfaces and evaluation processes. Ultimately, optimising request handling systems and enhancing user engagement and feedback mechanisms are pivotal strategies to bolster service quality and employee satisfaction at Knorr-Bremse.

Using internal communication platforms is the least financially demanding option for the company, as is creating visual materials. Here, deciding whether to use an external company (here, there would be additional financial expenses) or internal resources (here, there is a risk of time demands) is important. Considering the availability of their own resources, the author suggests starting with these recommendations.

As for introducing transparent feedback, this initiative is also financially undemanding. However, the main factor is the time required for preparation.

On the contrary, modifying the design of e-mails and turning on automatic reminders would require a larger financial investment, as the involvement of the IT department would be necessary. It is impossible to establish an exact price estimate, as this is information the author does not have full access to. It is, therefore, important to realise that there are financial costs associated with this proposal, including the possible need for the IT department to acquire additional tools.

Implementing these recommendations holds the promise of augmenting feedback collection efficiency, thus positively impacting overall company performance and competitiveness. However, if the company decides to implement certain proposals into operation, it's important to conduct further analysis and evaluate whether the adjustments have increased the number of rated tickets.

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List of Appendices

Appendix A

Dear all,

We are conducting a survey to assess the effectiveness of our ticket system for managing indirect purchases. The primary aim of this questionnaire is to evaluate your satisfaction with the ticket system, particularly in relation to the process of ticket rating. Your feedback will help us understand how well the system meets your needs and identify areas for improvement. Thank you for taking the time to participate and provide us with valuable insights.

Opening question:

1) How often do you use the ticketing system for Indirect Purchasing as part of your work?
    a. Daily
    b. Weekly
    c. Monthly
    d. Rarely
    e. Never

Rating of Activity in the Ticketing System:

2) How many tickets have you created in the last month? (*For the purposes of the questionnaire, the question refers to March.*)
    a. None
    b. 1-5
    c. 6-10
    d. 11-15
    e. More than 15

3) How many tickets have you rated in the last month? (*For the questionnaire, the question refers to March.*)
    a. None
    b. 1-5
    c. 6-10
    d. 11-15

      e.   More than 15

4) If you have rated any tickets, what was the reason for your rating? *(choose a maximum of 2)*
   a. I was satisfied
   b. I was not satisfied
   c. Didn´t rate any

Experience with alerts and motivation for ticket ratings:

5) Would alerts motivate you to evaluate regularly?
   a. Yes
   b. No
   c. I don´t know

6) What would motivate you to rate tickets more frequently?
   a. Open-ended answer

Rating satisfaction and efficiency of the ticketing system:

7) How would you overall rate the **effectiveness** of our ticketing system?
   a. 1 – extremely dissatisfied
   b. 2 – somewhat dissatisfied
   c. 3 – neither satisfied nor dissatisfied
   d. 4 – somewhat satisfied
   e. 5 – extremely satisfied

8) How would you rate the user-friendliness of our ticketing system overall?
   a. 1 – extremely dissatisfied
   b. 2 – somewhat dissatisfied
   c. 3 – neither satisfied nor dissatisfied
   d. 4 – somewhat satisfied
   e. 5 – extremely satisfied

9) Which area of our current ticketing system do you see as problematic? *(choose a maximum of 2)*

    a. Technical issues

    b. Complexity

    c. Slow response time

    d. Poor search functionality

    e. , Lack of training

    f. Lack of support

    g. Lack of User-Friendly interface

    h. Other (please specify)

Regular information on results and ratings:

10) What type of information would most motivate you to rate tickets more frequently? *(choose a maximum of 2)*

    a. Performance benchmarks

    b. Comparative data with other departments

    c. Impact on organisational performance

    d. Clear communication of benefits

    e. User-friendly rating interface

    f. Quarterly performance reports

    g. Other (please specify)

Communication effectiveness:

11) How would you rate the adequacy of communication concerning the ticketing system?

    a. 1 – extremely dissatisfied

    b. 2 – somewhat dissatisfied

    c. 3 – neither satisfied nor dissatisfied

    d. 4 – somewhat satisfied

    e. 5 – extremely satisfied

12) How clear do you find the communication about the purpose of rating within the system?

    a. Very clear

    b. Somewhat clear

c. Neutral

d. Somewhat unclear

e. Very unclear

13) If you find the communication about the purpose of rating somewhat unclear or very unclear, what specific additional information would help you better understand the ticketing system and the importance of rating tickets?

    a. Open-ended answer

Suggestions for improvement:

14) Do you have any ideas how we could improve the ticket rating process in our organization?

    a. Open-ended answer

15) What other features would you like to see in our ticketing system?

    a. Open-ended answer

Demographic Information:

16) How long have you been working at the company?

    a. Less than 1 year

    b. 1-3 years

    c. 4-6 years

    d. More than 6 years

17) Which department do you work in?

    a. Accounting

    b. IP

    c. HR

    d. Controlling & Reporting

    e. IT

    f. Logistics

    g. Other (please specify)

18) What is your job role?

    a. Requestor

b. Buyer

c. Accountant

d. Controller

e. Other (please specify)