Digital Transformation at Transport Company X: Designing a Roadmap for a Medium-Sized Slovenian Road Freight Firm

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Medium-sized road freight companies in Slovenia face growing pressure to digitalise, yet many still depend on fragmented IT tools and paper-based processes. This teaching case examines "Transport Company X", a medium-sized Slovenian road freight and warehousing operator that has grown steadily since the mid-1990s but remains only partially digitalised. Using internal documentation, process descriptions and management insights, the case assesses the firm's digital maturity across seven dimensions: culture, employees, organisation, technologies, processes, services and customers. The case study highlights key operational and strategic challenges: rising customer demands for real-time visibility and electronic documentation, manual handling of transport and billing documents, duplicated data entry, and uneven digital competencies. In parallel, management is concerned about implementation risks, employee resistance and the financial burden of investing in an integrated ERP-based solution. Students are asked to evaluate the company's digital maturity, identify critical gaps and risks, and design a phased transformation roadmap with clear priorities and KPIs. The case supports a discussion on how general insights into digital transformation in Slovenian transport SMEs can be translated into concrete strategic choices for a specific firm.

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DIGITALNA PREOBRAZBA V PODJETJU TRANSPORT X: OBLIKOVANJE NAČRTA ZA SREDNJE VELIKO SLOVENSKO PODJETJE ZA CESTNI TOVORNI TRANSPORT

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Ključne besede:
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Srednje velika podjetja za cestni tovorni transport v Sloveniji so pod vse večjim pritiskom digitalizacije, vendar se številna še vedno opirajo na razdrobljena informacijska orodja in papirne procese. Študijski primer obravnava podjetje Transport X, srednje veliko slovensko podjetje za cestni tovorni transport in skladiščenje, ki od sredine devetdesetih let stabilno raste, a ostaja le delno digitalizirano. Na podlagi notranje dokumentacije, opisa procesov in vpogledov managementa primer ocenjuje digitalno zrelost podjetja v sedmih dimenzijah: kultura, zaposleni, organizacija, tehnologije, procesi, storitve in kupci. Študijski primer razkriva ključne operativne in strateške izzive: naraščajoče zahteve kupcev po sledljivosti v realnem času in elektronski dokumentaciji, ročno obravnavo transportnih in obračunskih dokumentov, podvajanje vnosov podatkov ter neenakomerne digitalne kompetence. Sočasno je management zaskrbljen zaradi tveganj uvedbe, odpora zaposlenih in finančnega bremena naložb v integrirano rešitev ERP. Od študentov se pričakuje, da ocenijo digitalno zrelost podjetja, prepoznajo ključne vrzeli in tveganja ter oblikujejo fazni načrt digitalne preobrazbe z jasnimi prioritetami in kazalniki uspešnosti (KPI). Študijski primer omogoča razpravo o tem, kako lahko splošna spoznanja o digitalni preobrazbi slovenskih malih in srednje velikih podjetij v transportu prenesemo v konkretne strateške odločitve na ravni posameznega podjetja.

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1 Literature Review

Digital transformation has become a central theme in contemporary management and logistics research; however, the term is used differently across disciplines. Building on Verhoef et al. (2021), digitalisation is the use of digital technologies to redesign existing processes, and digital transformation involves broader changes to the business model and value-creation logic enabled by these technologies. In this view, digital transformation is not merely the deployment of new IT tools, but a strategic reconfiguration of how the firm creates, delivers, and captures value. Similar arguments appear in broader business literature, which treats digital transformation as an ongoing process of strategic renewal rather than a one-off IT project (Schwertner, 2017; Warner & Wäger, 2019).

1.1 Conceptual perspectives on digital transformation

Verhoef et al. (2021) emphasise that digitisation primarily affects information representation, while digitalisation reshapes processes such as customer communication, distribution, and internal coordination; only when these process changes aggregate into new business models and organisational forms can we speak of full digital transformation. This layered perspective is important in transport and logistics, where many firms have already digitised core documents (e.g., CMR, invoices) but have not yet fundamentally restructured planning, control, or customer interaction. Research shows that, in practice, these three levels frequently coexist: some activities remain paper-based, others are partially digitalised, and only a small subset is transformed end-to-end.

From a strategic management perspective, digital transformation is closely tied to the development of new dynamic capabilities—the firm's ability to sense technological and market changes, seize new opportunities, and continuously reconfigure its assets (Warner & Wäger, 2019). Verhoef et al. (2021) similarly argue that digital transformation combines technological change with organisational, cultural, and leadership shifts, and thus cannot be reduced to incremental process optimisation. This conceptual lens is particularly useful for medium-sized transport companies, which operate under tight resource constraints and must therefore prioritise those digital initiatives that genuinely enhance their strategic flexibility and resilience.

1.2 Strategic role and objectives of digital transformation

The case study summarises several core aims of digital transformation at the firm level: cost reduction, process acceleration, digital connectivity, quality improvements, greater agility, and enhanced innovation capacity (Rožanec & Lahajnar, 2022). While all of these are relevant, Rožanec and Lahajnar (2022) stress that long-term competitiveness increasingly depends on agility and innovation—i.e., the ability to detect technological trends and environmental shifts and respond through new solutions, rather than solely through efficiency gains. Herbert (2017) similarly associates successful digital transformation with increased revenues, improved competitive advantage, and the ability to perform work faster with less effort.

Zaoui and Souissi (2020) propose a framework in which digital transformation is embedded within the overall corporate strategy, rather than being treated as a separate IT agenda. Their work highlights the need to align digital and business objectives in a multidimensional strategy that considers markets, processes, people and technology simultaneously. Leadership commitment is identified as a critical success factor; top management must take explicit ownership of the digital agenda, rather than delegating it entirely to CIOs or digital officers (Rožanec & Lahajnar, 2022). Evidence shows that clear strategic vision and leadership commitment are among the most frequently cited enablers of successful digital transformation in transport and logistics firms (Cichosz et al., 2020; Leso et al., 2022; Nesterova, 2024).

1.3 Key technologies and systems in transport digital transformation

In transportation and logistics, digital transformation is closely tied to the deployment and integration of specific technologies. The case study devotes substantial attention to ERP (Enterprise Resource Planning) systems, transport management systems (TMS), warehouse management systems (WMS), fleet management solutions (FMS), cloud platforms, and emerging AI-based tools. ERP systems are described as integrated suites that connect finance, logistics, human resources (HR), and supply chain modules on a shared database, thereby enabling consistent data and process flows across the organisation (Greeff & Ghoshal, 2004).

TMS and WMS are highlighted as sector-specific solutions that support planning, execution and monitoring of transport and warehousing activities (Tomicová et al., 2021). For example, TMS can manage route optimisation, load consolidation, carrier selection and freight documentation, while WMS supports inventory control, picking strategies and warehouse layout optimisation. The case study also highlights the growing importance of telematics and fleet management systems, such as Scania Fleet Management, which provide real-time vehicle data, fuel consumption metrics, and driver performance feedback.

Findings from various studies (Albrecht et al., 2023; Helo & Thai, 2024; Kaplunovska & Lebid, 2025; Nesterova, 2024) complement this picture by documenting how advanced technologies—such as AI, IoT, big data analytics, and digital platforms—are increasingly integrated into transportation and logistics operations. These studies show that telematics data, sensor networks, and cloud-based analytics can be combined to optimise routing, reduce fuel consumption, support predictive maintenance, and enable new digital services.

1.4 Operational, competitive and sustainability benefits

A key conclusion is that digital transformation enhances operational efficiency and competitiveness in transportation companies. Multiple empirical and case studies demonstrate efficiency gains, cost reduction, and enhanced market adaptation when digital solutions are effectively implemented (Alanazi & Alenezi, 2024; Helo & Thai, 2024; Kaplunovska & Lebid, 2025; Loske & Klumpp, 2020; Nesterova, 2024; Pucihar et al., 2021). These improvements typically arise from automation of routine tasks, real-time data availability, and better coordination across organisational boundaries.

This case study comes to similar conclusions at the firm level, arguing that a comprehensive digital transformation can deliver significant time and cost savings, higher productivity, and improved service quality in a medium-sized road freight company. Digitalisation is shown to enhance fleet utilisation, reduce administrative workload, and strengthen decision-making support, thereby increasing adaptability and competitiveness. Broader management sources cited in the thesis illustrate how digital technologies can also improve customer experience, reduce operating costs, and open space for new products and services (Rogers, 2016).

More recently, research has started to examine the environmental implications of digital transformation in transport. Alanazi and Alenezi (2024), Feroz et al. (2021), Huang et al. (2023), and Martínez-Peláez et al. (2023) provide evidence that digital transformation can reduce carbon intensity and improve environmental performance, for instance, through optimised routing, better asset utilisation, and data-driven energy management. Although these studies are not specific to Slovenian road freight SMEs, they underscore the potential of digital transformation to contribute to broader sustainability objectives.

1.5 Barriers, risks and challenges

Despite these benefits, substantial barriers to digital transformation can be highlighted, especially in medium-sized and smaller firms. Studies identified a lack of qualified personnel and digital skills, significant investment requirements, organisational resistance, fragmented or unclear digital strategies, cybersecurity risks, and digital inequality as key obstacles (Artamonova et al., 2020; Brodny & Tutak, 2022; Cichosz et al., 2020; Končan et al., 2024; Leso et al., 2022; Nesterova, 2024; Pucihar et al., 2021; Tijan et al., 2021).

The case study provides a complementary, firm-level perspective on these barriers. It notes that many transport SMEs struggle with uneven digital competencies among employees, limited capacity for continuous learning, and dependence on external IT providers (Syamsuddin et al., 2024). Financial and technological risks are associated with the capital-intensive nature of ERP, WMS, CRM, and business intelligence (BI) investments, as well as the challenges of integrating legacy tools such as Scania Fleet Management, Proton Business Suite, and Timocom with new solutions. Furthermore, the case study emphasises cybersecurity, data protection, and regulatory compliance (e.g., GDPR, eCMR) as critical risk areas in broader digitalisation, calling for robust information security standards and regular employee awareness training.

1.6 Slovenian and European context

Several studies focus specifically on Slovenian enterprises or on transport sectors in Central and Eastern Europe. Pucihar et al. (2021) show that Slovenian firms exhibit substantial variability in digital maturity, and that smaller and medium-sized

enterprises often lag larger organisations in integrated systems and advanced analytics. Brodny and Tutak (2022) and Končan et al. (2024) confirm that, across Slovenian and neighbouring economies, digital adoption remains uneven, with resource constraints, regulatory complexity, and legacy systems acting as important barriers.

For transport and logistics specifically, Jović et al. (2022) and Tijan et al. (2021) emphasise the importance of sector-specific policies, infrastructure, and support programs to accelerate digital adoption, particularly in maritime and multimodal transport. While these studies do not focus exclusively on road freight SMEs, they underscore that government incentives, industry associations, and cross-firm collaborations can mitigate some of the structural barriers identified earlier. The case company is situated within this broader context, portraying it as a typical medium-sized Slovenian road freight operator that has adopted some digital tools but still lacks an integrated digital ecosystem and a formal digital strategy.

1.7 Frameworks and digital maturity models

The literature commonly uses multidimensional frameworks or maturity models to assess digital transformation. Several studies emphasise the importance of evaluating readiness and progress across domains such as strategy, leadership, culture, processes, technologies, and skills (Cichosz et al., 2020; Kryukov et al., 2022; Leso et al., 2022; Warner & Wäger, 2019). These frameworks help identify which organisational dimensions constrain or enable digital initiatives and guide the sequencing of interventions.

The case study operationalizes digital transformation in a seven-dimension model—culture, employees, organization, technologies, processes, services and customers—and applies it to assess the digital maturity of Transport Company X. Culture captures openness to change and innovation; employees encompass digital competences and training; organization reflects structure and governance; technologies cover the portfolio and integration of IT systems; processes focus on automation and standardization; services address digital support for value-added offerings; and customers relate to digital communication and relationship management. This framework is compatible with broader BPM (Business Process Management) perspectives that emphasise cross-functional collaboration, process

transparency, and customer-centric design as foundations for coherent digital transformation (Gimpel & Röglinger, 2015).

1.8 Research gaps and rationale for a case-based contribution

The case study identifies important research and practice gaps. Studies noted that the evidence base is robust regarding operational and competitive benefits of digital transformation, but less conclusive on long-term sustainability impacts, on effective strategies for overcoming sector-specific barriers, and on the role of digital inequality and cybersecurity in transport SMEs (Alanazi & Alenezi, 2024; Feroz et al., 2021; Huang et al., 2023; Martínez-Peláez et al., 2023; Nesterova, 2024). It also explicitly calls for more empirical research focusing on medium-sized Slovenian transport companies, rather than on broader cross-sectoral or large-enterprise samples (Brodny & Tutak, 2022; Jović et al., 2022; Končan et al., 2024; Pucihar et al., 2021).

The case study reinforces these points from a practice-oriented angle. It shows how a specific Slovenian transport SME has adopted several digital tools yet remains only partially digitalised, with fragmented systems, manual processes, and limited systematic development of digital competences. It argues that many of the challenges and opportunities identified in the international literature manifest in idiosyncratic ways at the firm level—for example, in the interplay among telematics, customer portals, ERP/WMS/CRM systems, and local regulatory requirements (e.g., EU road transport regulations, eCMR).

Against this backdrop, an in-depth case study of Transport Company X can make two contributions. First, it translates general findings on digital transformation in transport and Slovenian enterprises into a concrete organisational context, illustrating how strategic vision, culture, skills, technologies, and processes interact in a medium-sized road freight firm. Second, it provides a detailed, practice-oriented digital transformation roadmap that can inform both managerial decision-making in similar companies and future empirical research on digital maturity, implementation pathways, and sector-specific barriers in the Slovenian transport sector.

2 Case study

2.1 Learning Outcomes

The case study is designed to support the achievement of the following learning outcomes:

Learning outcome 1: Explain the difference between digitisation, digitalisation, and digital transformation, and discuss why a strategic approach to digital transformation is critical in transport companies.

Learning outcome 2: Assess the digital maturity of a medium-sized transport firm across multiple dimensions (culture, employees, organisation, technologies, processes, services, customers).

Learning outcome 3: Identify key barriers and risks associated with digital transformation in resource-constrained transport SMEs, including skills, investment, and organisational resistance.

Learning outcome 4: Design a phased digital transformation roadmap with clear priorities, milestones, and KPIs for a specific company context.

Learning outcome 5: Critically reflect on how broader empirical findings about digital transformation in Slovenian transport companies can inform firm-level strategic decisions.

2.2 Story

2.2.1 Company background

Transport Company X (hereafter "the Company") is a family-owned road freight operator based in north-eastern Slovenia, not far from the Austrian border. The business began in 1996, when the owner, then a young truck driver, decided to leave his job in a larger logistics firm and start his own sole proprietorship with a single used truck. In the early years, he spent most of his weeks on the road, driving international full-truckload (FTL) routes between Slovenia, Hungary, the Czech

Republic, and Poland. Orders were arranged by phone, invoices were typed in Microsoft Word, and an external bookkeeper handled accounting.

As demand grew, the owner purchased a second and third vehicle and employed his first driver. He rented a small office adjacent to an industrial zone and hired a part-time assistant to assist with paperwork and customer communication. Over the following decade, the Company gradually shifted its core markets toward Austria and Germany, where higher freight rates and more stable demand were available through longer-term contracts with industrial clients in the metal, paper, and food sectors. By the mid-2000s, the fleet had grown to ten trucks, and the sole proprietorship was transformed into a limited liability company to support further growth and limit personal risk.

A major turning point came in 2017. After several years of operating from rented premises, the Company invested in its own site: a 1,200 m² warehouse, a 7,000 m² paved yard, an on-site fuel station, and a small workshop for truck maintenance. The new location enabled the Company to expand its warehousing and cross-docking services, offering combined transport and storage solutions to key customers. Today, the Company employs approximately 40 people, comprising 25 drivers, 4 dispatchers, 4 warehouse staff, and several administrative and accounting personnel.

The Company's core services include:

- international road freight transport (predominantly FTL, with some groupage),
- warehousing and cross-docking for industrial customers,
- basic value-added services such as pallet exchange, repacking, and short-term storage.

The owner is still actively involved in day-to-day operations. Strategic decisions are mostly taken by him and a small informal management team consisting of the head dispatcher and the head of accounting. Over nearly three decades, the Company has grown steadily and built a reputation as a reliable, flexible partner. At the same time, its information systems and digital practices have evolved in a piecemeal, ad-hoc way, reflecting short-term needs rather than a coherent digital strategy.

"We never had the luxury of stopping to design the perfect system," the owner often says. "We just added tools when problems became too big to ignore."

2.2.2 Key processes and current information flows

The Company's core processes include order intake, transport planning and dispatching, transport execution and monitoring, documentation handling, invoicing and warehousing. On paper, these processes are relatively straightforward. In practice, they depend heavily on informal routines, tacit knowledge and manual coordination.

A day in the life of a dispatcher

At 6:45 a.m., Ana, one of the dispatchers, arrives at the office. She opens her e-mail inbox, where new transport orders and schedule changes from the previous evening have accumulated. Some customers send orders in structured Excel sheets, others in semi-standardised PDF forms, and a few in short free-text e-mails such as *"Same loading place as last week, deliver to Munich, ready from 10 a.m."*

Ana starts by printing several of the orders and spreading the papers on her desk. She then opens a shared spreadsheet named "Plan_teden.xlsx", which the dispatchers use to keep track of the week's trips. Each row represents one transport and contains basic data, including customer name, loading address, unloading address, time windows, type of goods, pallet count, agreed-upon price, and allocated truck.

As she updates the spreadsheet, she keeps glancing at a whiteboard on the wall, where the fleet is listed with colour-coded magnets indicating availability, location and planned maintenance. Around 7:15 a.m., the first drivers start calling:

"Good morning, I'm unloaded in Linz, what's next?"

"There's a traffic jam near Graz; I'll be late for loading."

Ana checks the telematics system, which shows GPS positions and estimated arrival times, and manually updates the plan. For one large automotive customer, she must

also log into the customer's web portal and confirm the updated loading time; failing to do so may result in penalties.

Order intake and interfaces

Most orders arrive by email or phone. Only a handful of customers use EDI connections or offer structured data interfaces. There is no central order management system. Instead, order data is scattered across e-mails, spreadsheets, customer portals and occasional paper notes. When a new order comes in, the dispatcher typically:

1. reads the e-mail,
2. copies key data into the weekly planning spreadsheet,
3. prints the e-mail and attaches it to a paper folder,
4. sometimes re-enters the same data into a customer portal.

If a colleague needs information about a particular transport, they might check the spreadsheet, search the shared email inbox, or simply ask the dispatcher directly.

Transport execution and monitoring

During the day, the dispatchers monitor vehicle positions using Scania Fleet Management. The telematics interface provides an overview of each truck's location, current speed and remaining driving time. For a small number of customers, the Company has agreed to share GPS positions or to grant access to parts of the telematics portal.

When a driver arrives at the loading point and encounters problems—such as waiting time, an incorrect loading address, or missing documents—he calls the dispatcher by phone or sends a message through the telematics app. The dispatcher then contacts the customer by phone or e-mail, updates the plan, and, if necessary, rearranges other loads.

Although the telematics system provides accurate data, much of the communication still flows through phone calls and informal notes. When a dispatcher is on holiday, colleagues often struggle to reconstruct why a particular decision was made or what was agreed with a customer two weeks earlier.

Documentation handling and invoicing

After completing a trip, drivers return to the depot and hand a stack of documents to the dispatcher:

- the CMR consignment note,
- delivery notes stamped by the customer,
- pallet slips,
- occasionally customs documents.

The dispatcher checks that all signatures and stamps are present, attaches internal reference sheets and places the documents into a plastic folder labelled with the transport number. These paper folders move to the accounting office, where Maja, the head of accounting, uses them to issue invoices in a specialised e-invoicing application.

Because there is no integrated ERP system, Maja often has to re-enter data that already exists elsewhere, such as customer names, reference numbers, prices, and VAT categories. If any information is missing, she returns to the dispatcher to clarify the details. Once the invoice is issued and sent electronically, the paper documents are stored in physical archives. Rows of shelves in the backroom are filled with alphabetically sorted folders.

"If a customer calls after six months and asks about a specific transport, we can usually find the papers," Maja explains. "But it takes time, and if the person who handled the job is not here, it becomes a small detective story."

Warehousing operations

In the warehouse, operations are even more manual. Incoming pallets are recorded on simple paper forms and later transcribed into Excel by the warehouse administrator. Forklift drivers receive instructions verbally or via phone calls: *"Take three pallets from aisle B and move them to the outbound area for Truck 12."*

There is no warehouse management system, no barcode scanning, and no real-time digital inventory. Stock visibility relies heavily on the memory and experience of two key warehouse workers who "know where everything is". When they are absent, temporary replacements need much more time to locate specific goods.

Information flows in summary

Across these processes, information flows are fragmented and often duplicated. The same data may be entered:

- an e-mail,
- a spreadsheet,
- a paper form,
- a customer portal,
- the invoicing system.

Errors are relatively rare, largely due to staff's dedication; however, when they do occur–such as incorrect reference numbers, missing documents, or forgotten status updates–they are difficult to trace and rectify. Management has limited consolidated data for systematic performance analysis; most KPIs are calculated manually in Excel once per year.

2.2.3 Growing pressures for digitalisation

For many years, the existing way of working seemed acceptable. Customers appreciated the Company's flexibility and personal approach; drivers valued the family atmosphere; and the owner preferred to invest in trucks and facilities rather than "expensive software".
Over the last five to seven years, however, the environment has undergone significant changes.

Customer expectations

Several large industrial customers have started to demand:

- electronic documentation, including eCMR, where legally possible;

- real-time visibility of shipments through status updates or shared GPS tracking;
- standardised digital interfaces for orders and invoices.

One automotive customer now requires all transport partners to provide status updates in its web portal at key milestones: "loaded", "departed", "arrived at border", "unloaded". If updates are late or missing, the system automatically records a deviation and may reduce the supplier's performance score.

"We sometimes lose points not because the truck is late," Ana notes, "but because we forget to click the status in their portal. It's frustrating, because from the customer's perspective it looks like non-performance."

Another customer has announced that, starting next year, they will gradually phase out paper CMRs and expect their carriers to support eCMRs for domestic and select international routes. The owner understands that this trend will spread:

"We can probably negotiate a grace period," he says, "but in the long run, we won't have a choice. If we don't adapt, they will find someone who will."

Regulatory and industry developments

Regulators and industry associations are also pushing the sector toward digitalisation. EU initiatives promoting electronic freight transport information and eCMR, as well as stricter requirements for data retention and reporting, are easier to comply with when documentation is digital and centrally stored. Fuel and emission reporting are becoming more common in customer contracts, increasing the value of integrated telematics and data analytics.

At the same time, concerns about data protection and information security are rising. The owner has become aware that informal practices–such as sharing login credentials, storing documents on personal devices, and using unencrypted USB drives—may pose legal and cybersecurity risks.

Competitive dynamics

Perhaps the strongest pressure, however, comes from competitive dynamics. In tender negotiations, the Company increasingly encounters competitors who:

- offer customer portals where clients can place orders, track shipments and download documents,
- provide detailed performance reports (on-time delivery, damage rates, CO_2 emissions per shipment),
- integrate seamlessly with customers' ERP systems.

During a strategy meeting, the head dispatcher describes a recent tender they lost:

"They told us our price was acceptable, and they were happy with our service, but the other carrier could provide automated status updates and full integration with their SAP system. They said they could save internal admin work. How do we compete with that if all our status updates are still by phone and e-mail?"

Internal workload and risk

Finally, internal pressure is building. As business grows, the manual nature of many processes is becoming a bottleneck. Dispatchers spend increasing amounts of time on data entry and administrative coordination; the accounting team struggles to keep pace during peak seasons; and warehouse workers complain about repeated "firefighting" when information is missing.

The owner realises that the Company has become heavily dependent on a few key individuals who "keep everything in their heads". If one of them were to leave or fall ill, the business would be exposed to significant operational risk.

"I feel like we are juggling glass balls," he admits. "We manage, but we are one serious incident away from big problems."

All these developments converge into a clear message: the current level of digitalisation is no longer sufficient.

2.2.4 Assessing digital maturity: seven dimensions

To better understand the situation, the Company participates in an internal project that assesses its digital maturity across seven dimensions: culture, employees, organisation, technologies, processes, services, and customers. The assessment combines interviews, document analysis, and structured questionnaires.

Culture. The Company's culture is pragmatic, informal, and strongly customer-oriented. Employees take pride in "getting things done" and solving problems efficiently. However, there is no shared digital vision or articulated digital transformation strategy. Digital initiatives are typically reactive: a new tool is introduced when a specific problem becomes acute or when a customer explicitly demands a change. Innovation is valued in practice but not systematically supported through formal structures or incentives.

Many employees have long tenure and deep operational knowledge. Dispatchers make relatively advanced use of telematics and customer portals; some drivers are comfortable with smartphone apps; and younger employees in the office handle Excel and e-mail efficiently. At the same time, digital skills are uneven. A few employees openly admit they "don't like computers" and prefer paper. Training is mostly informal—newcomers learn by sitting next to experienced colleagues. There is no structured digital skills development plan.

Organization. Responsibility for digital topics is fragmented. The owner makes the final decisions on IT investments, but day-to-day system management is split between an external IT provider and internal "power users". There is no dedicated role or committee for digitalisation or process improvement. Initiatives often start in one department (e.g., accounting) without full involvement from others (e.g., dispatching, warehouse), which can lead to suboptimal solutions.

Technologies. The Company uses several separate tools, including telematics (Scania Fleet Management), an e-invoicing and basic accounting application, office tools (Excel, Word, Outlook), and various customer portals. There is no integrated ERP system that connects transport, warehousing, and finance. Data is stored in multiple locations, including local PCs, network drives, cloud mailboxes, and external disks. Interfaces between systems are minimal or non-existent.

Processes. Many key processes are only partially digitalised. Order intake, transport planning and documentation handling rely heavily on manual steps and paper. No formal process mapping has been done; most procedures exist only as unwritten routines. As a result, process performance is difficult to measure and improve systematically.

Services. The Company offers reliable transport and some value-added services, but digital service innovation is limited. A few customers receive portal updates or access to telematics data, mostly because they insisted on it. The Company does not have its own customer portal or mobile app. Service differentiation based on digital capabilities is minimal.

Customers. Relationships with customers are largely managed through e-mail, phone calls and occasional meetings. There is no CRM system that consolidates customer histories, contact persons, contract details, and profitability data. This makes it hard to segment customers, track satisfaction systematically or target cross-selling opportunities.

Overall, the project estimates the Company's digital maturity at around 2 on a 5-point scale: some important digital building blocks are in place, but they are not yet integrated into a coherent system or guided by a clear strategy.

2.2.5 The proposed digital transformation plan

In response to the assessment, the owner agrees to develop a structured digital transformation plan. He invites a small internal team, including Ana (dispatcher), Maja (accounting), one warehouse supervisor, and the external IT consultant, to participate in a series of workshops. Their task is to translate the abstract idea of "becoming more digital" into concrete actions for the next three to five years.
During the first workshop, the group maps the main pain points:

- duplicated data entry,
- dependence on paper documentation,
- limited overview of open orders and capacities,
- absence of integrated reporting,

- growing customer demands for eCMR and portal access.

The external consultant challenges them:

"If you woke up tomorrow and your ideal system was already in place, what would be different in your daily work?"
Ana replies that she would like a single screen showing all orders, trucks, drivers, and statuses in real time. Maja would like to issue invoices without re-typing data and to have a clear overview of unpaid receivables by customers. The warehouse supervisor imagines working with barcode scanners and knowing exactly how many pallets of each product are in stock.

Based on these discussions, the team defines five priority areas:

1. Digitalisation of core documentation and workflows.

- Introduce eCMR where feasible and integrate it into transport workflows.
- Standardise internal documents and move from paper to electronic archives.
- Create digital checklists for dispatching and warehouse operations.

2. Implementation of an integrated ERP system.

- Select an ERP solution suitable for medium-sized transport and logistics companies.
- Implement core modules (finance, sales, purchasing) and integrate with the existing e-invoicing tool or gradually replace it.
- In later phases, connect ERP with a transport module and, if feasible, WMS and CRM.

3. Development of employee digital competences.

- Conduct a structured assessment of digital skills.
- Design short training sessions focused on practical tasks (e.g., using dashboards, entering orders, working with new mobile apps).

- Identify "digital ambassadors" in each department who support colleagues during the transition.

4. Introduction of customer-facing digital services.

- Develop a simple customer web portal for order entry, status tracking and document download.
- Standardise electronic communication formats for smaller customers who prefer e-mail.
- Explore options for sharing telematics data securely with selected customers.

5. Strengthening data analytics and decision support.

- Define a set of core KPIs (on-time delivery, cost per kilometre, empty mileage, invoice cycle time, stock accuracy).
- Implement dashboards for management and key departments.
- Use data to support decisions on pricing, capacity planning and customer selection.

The team agrees that the transformation must be phased to limit risk and workload. A preliminary roadmap is drafted:

Phase 1 (0–12 months): quick wins and foundation building

- process mapping and standardisation of key workflows;
- pilot use of eCMR on selected routes;
- digital archiving of new documents;
- basic KPI reporting in Excel;
- initial training sessions.

Phase 2 (12–24 months): ERP implementation and integration

- selection and implementation of ERP core modules;
- integration with telematics and e-invoicing;

- gradual migration of master data (customers, vehicles, products);
- extension of KPI reporting to an integrated dashboard.

Phase 3 (24+ months): advanced services and analytics

- implementation of customer portal;
- extension of digital services (automated notifications, self-service document downloads);
- refinement of warehouse operations (possible WMS);
- increased use of data analytics for performance and sustainability reporting.

Based on internal simulations and benchmarking, the project team estimates potential improvements, including a 20–30% reduction in order-processing time, a 3–5% reduction in operating costs through better utilisation and fewer errors, higher on-time delivery, and fewer complaints related to documentation. These projections are not guaranteed but illustrate the scale of potential benefits.

"If we can really achieve even half of these improvements," the owner comments, *"the investment will be worth it. The question is whether we can survive the transition period without chaos."*

2.2.6 The dilemma

Despite the structured plan and promising projections, serious doubts remain. The owner and management team face a classic SME dilemma: move too slowly and risk becoming uncompetitive, or move too fast and risk overextending financial and organisational capacity.

During a strategy workshop, three possible scenarios emerge:

1. Do nothing (status quo).

The Company continues to work largely as it does now, with only minimal incremental changes driven by customer demands. Short-term investment is low, and employees avoid disruption. However, the risk is that over the next five years:

- key customers may switch to more digitally advanced carriers;

- manual workload may increase to unsustainable levels;
- the Company becomes increasingly dependent on a few individuals with critical know-how.

2. Big-bang transformation.

The Company could decide to implement a full ERP system and several new digital solutions in a relatively short period (e.g., 12–18 months), with support from external consultants. This might accelerate benefits but would require high upfront investment and intense internal change. The risk of project failure, employee burnout or disruption to daily operations would be significant.

3. Phased transformation (proposed roadmap).

The recommended approach is a step-by-step implementation with clear milestones and regular reviews. This reduces risk while also extending the coexistence period between the old and new systems. For a time, employees would need to handle hybrid workflows (partly paper-based, partly digital), which could create confusion and resistance.

The owner summarises the dilemma:

"We all agree we can't stay where we are. However, if we jump too far, too fast, we might break the company. If we move too slowly, we might lose our best customers. We need a plan that we can execute with the people and money we have."

Some employees voice concerns of their own:

- Drivers worry about "constant monitoring" and "too many apps".
- Warehouse workers fear that new systems will slow them down or make them look incompetent.
- Office staff are anxious about learning yet another software tool, remembering a previous failed attempt to implement a generic ERP several years ago.

At the same time, younger employees are impatient:

"We are tired of working with ten different spreadsheets and searching through e-mails," one of them says. *"If we want to attract new people, we need more modern tools."*

The owner reviews the draft roadmap, the estimated costs and benefits, and his team's reactions. The external consultant turns to him and says:

"The technology is important, but the real question is: what kind of company do you want this to be in five years?"

2.3 Results

As part of the internal project, the management team of Transport Company X prepared scenario-based estimates of the potential impact of the proposed digital transformation roadmap. These figures are not realised results but informed projections based on the main actions in Phases 1–3 being implemented over approximately three to five years. The estimates are summarised in Table 1 and focus on changes in operational efficiency, cost efficiency, service quality, employee competencies, and the company's competitive position.

Table 1: Scenario-based impacts and example KPIs

Area	Scenario-based impact (if roadmap is implemented)	Example KPIs
Operational efficiency	20–30% reduction in order-processing time; fewer manual steps and re-entries	Average time from order receipt to dispatch; number of manual data entries per order
Cost efficiency	3–5% reduction in operating costs through better utilisation and fewer errors	Cost per kilometre; share of empty kilometres; admin hours per invoice
Service quality	Higher delivery reliability, fewer documentation errors, and complaints	On-time delivery rate (%); number of complaints per 100 orders; document error rate
Employee competences	Higher digital literacy and more consistent use of core systems	Share of employees using ERP/TMS functions (%); training hours per employee per year
Data & decision support	Improved transparency and faster management reporting	Time needed to prepare monthly reports; number of decisions supported by KPI dashboards
Competitive position	Stronger customer loyalty and better positioning in tenders	Share of repeat orders (%); number of new customers per year; revenue growth (%)

Source: (Authors' own calculations based on internal company data and selected studies on digital transformation in transport SMEs).

The scenarios were developed by combining internal performance data from the last three years (e.g., order-processing times, cost per kilometre, share of empty kilometres, complaint rates) with benchmarking information from industry reports and published studies on digital transformation in transport SMEs. In several workshops, managers and key users jointly discussed "realistic but ambitious" improvement ranges and stress-tested them against their own experience. As a result, the numbers in Table 1 should be viewed as plausible planning assumptions, rather than promises or precise forecasts.

Management considers the expected gains in operational efficiency and service quality to be relatively robust, as they are closely linked to well-understood process changes (e.g., automating documentation, reducing data re-entry). In contrast, the impacts on competitive position and revenue growth are viewed as more uncertain and highly dependent on market dynamics and customer reactions. These projections serve as a starting point for analysis: students are expected to critically evaluate their plausibility, refine the choice of KPIs, and consider how such indicators should be monitored throughout the transformation process.

3 Discussion Questions

1. How would you assess the current level of digital maturity of Transport Company X across the seven dimensions (culture, employees, organisation, technologies, processes, services, customers), and which dimensions appear most critical to address first?

2. What should be the three main strategic priorities for digital transformation at Transport Company X over the next two years, and why do these priorities follow logically from the situation described in the case?

3. How could a phased digital transformation roadmap for Transport Company X be structured (e.g., 0–12 months, 12–24 months, 24+ months), and what key actions, responsibilities, and expected outcomes would you assign to each phase?

4. What kinds of employee resistance and capability gaps are most likely to emerge during digital transformation, and how could management design targeted

measures to build digital competencies and a supportive culture among drivers, warehouse staff, and office employees?

5. Which digital solutions (such as ERP, TMS, WMS, CRM, telematics, analytics tools) should be prioritised at Transport Company X, in what sequence, and how can they be integrated into a coherent digital ecosystem rather than a new collection of isolated tools?

6. What set of 5–7 key performance indicators (KPIs) would you select to monitor the success of the digital transformation at Transport Company X over the next three years, and how do these indicators reflect the strategic objectives and scenario-based impacts summarised in Table 1?

7. How does the situation of Transport Company X reflect broader opportunities and challenges of digital transformation for Slovenian transport SMEs, and in what respects might this company be typical or atypical within its national and sectoral context?

4 Conclusions

This case illustrates how a medium-sized Slovenian road freight company with strong operational experience but limited digital integration faces a strategic crossroads. The pressures driving digital transformation–customer expectations, regulatory developments, and competitive dynamics–are clear; however, the path forward remains uncertain and constrained by resources.

By applying a structured digital maturity framework and drawing on empirical evidence about digital transformation in transport SMEs, students can explore how to move from general principles to concrete, phased actions. The case thus serves as a bridge between abstract research findings and the practical realities of a specific company that must balance ambition with feasibility, and technological possibilities with human and organisational constraints.

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Didactic use: The case study can be used in courses in the field of logistics, supply chain management, and digital transformation in business. It is particularly relevant to the content covered in courses at the FEB, such as *Logistics Management* and *Supply Chain Management* in undergraduate and master's study programs, and *Strategic Supply Chain Management* in master's study programs.