optibus

The State of Digital Transformation in Public Transportation

5 Key Takeaways for 2024 & Beyond

Executive Summary

The Optibus Industry Report 2024 presents a comprehensive analysis of the current trends, challenges, and priorities within the public transportation sector, as revealed by our extensive annual survey.

With responses from hundreds of participants across 34 countries, this report captures the sector's collective drive towards digital transformation and modernization as a strategy for enhancing operational and cost efficiency, passenger satisfaction, and sustainability. The survey findings offer a nuanced understanding of the objectives, concerns, and successes surrounding digital adoption across the sector, serving as a roadmap for the future of digitalization in public transportation.

About Optibus

Optibus is a unified software platform for public transportation planning, scheduling, rostering, operations, and passenger information, powered by artificial intelligence (AI) and optimization algorithms. Transportation agencies and operators in more than 5,000 cities worldwide trust Optibus to improve their operational efficiency and service quality, promote transportation equity, reduce emissions and costs, and modernize their operations.
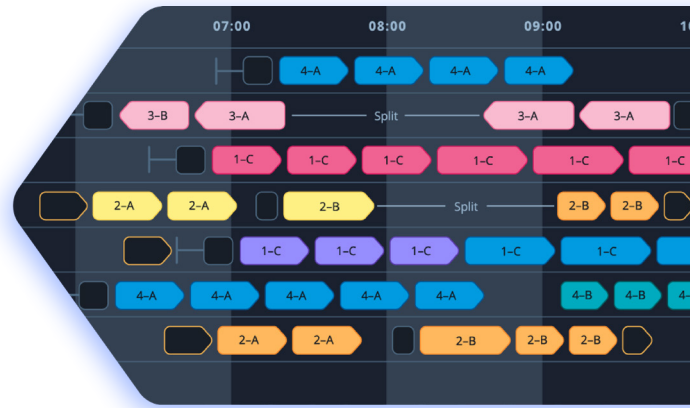Learn more: www.optibus.com

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Introduction _____

The Digital Imperative in Public Transportation

The advent of digital technology has ushered in a new era for the public transportation industry, characterized by rapid innovation in automation and artificial intelligence and shifting market dynamics surrounding new regulatory standards, labor and safety, sustainability, business models, and beyond.

This transformation is not a trend. It is a fundamental shift - one that is necessary to address the complex challenges of modern mobility.

The annual Optibus Industry Survey, which collects the opinions and insights of a broad spectrum of public transportation organizations from around the globe, seeks to uncover the scope, impact, and extent of digital transformation efforts across the sector.

Survey Participants

Hundreds of planners, schedulers, executives, dispatchers, IT professionals, and more from diverse employer backgrounds in 34 countries worldwide participated in the survey.

Angola · Argentina · Armenia · Australia · Austria · Azerbaijan · Belarus

Brazil · Canada · Eritrea · Finland · Germany · Hungary

India · Ireland {Republic} · Italy · Luxembourg · Malaysia

Mauritius · New Zealand · Nigeria · Pakistan

Philippines · Portugal · Romania · Russian Federation

South Africa · Spain · Sweden · Switzerland

Turkey · United Arab Emirates · United Kingdom · United States

Pie Chart

- Management — 16%
- Planning — 23%
- Scheduling — 31%
- Dispatching — 16%
- Finance/HR/Marketing — 3%
- IT — 3%
- Other — 8%

The State of Transformation

Digitalization Acceptance and Maturity

To understand the extent of digital transformation within the sector, we started with a simple question: Is your team or organization undergoing digital transformation?

The responses show that the acceptance of and shift towards digital work tools is relatively uniform worldwide. This suggests that, despite geographical and cultural differences, there is a global consensus regarding the future of the public transportation industry and the importance of investing in innovation to address today's and tomorrow's challenges.

**Percentage of respondents that are undergoing digital transformation, by region**

69% APAC

76% EMEA

81% LATAM

74% NA
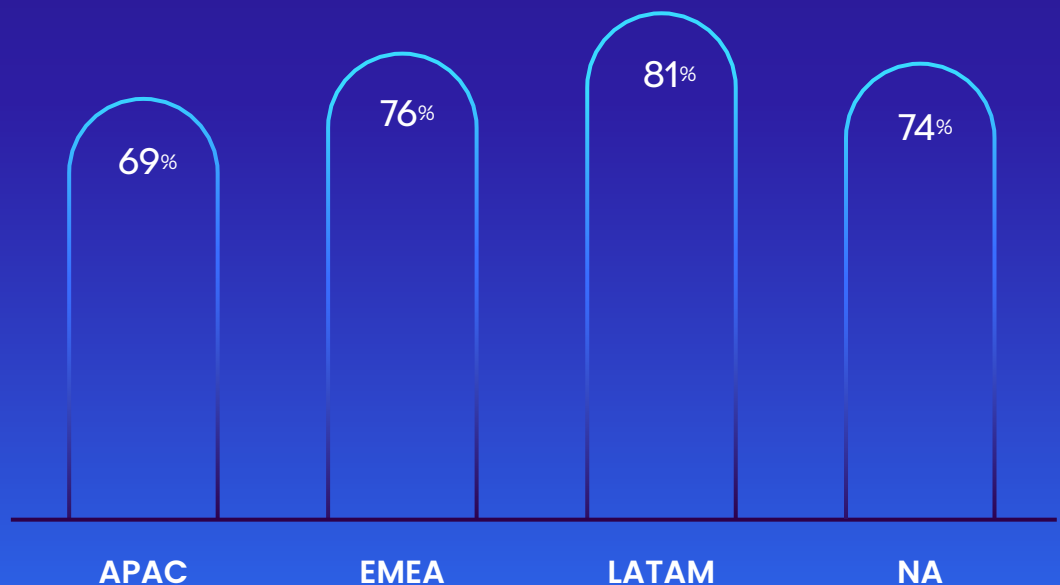
Next, to understand the maturity level of digital transformation, we asked how much time has been dedicated to the process, on a global level.

Modernization Trajectory

With 75.5% of surveyed organizations in the midst of digital transformation, the momentum towards digital adoption is undeniable. But progress is phased. Of that 75.5%, two-thirds have invested more than one year in integrating more modern, digital tools into their operation. The other third started the process in the last 12 months. An additional 15% plan to start their digital transformation in the coming years.

This reflects a sector-wide acknowledgment of digital technology as a cornerstone for operational resilience and competitive advantage. Of the 9.5% that said they are not planning to undergo digitalization, it is likely this number will decrease over time given the direction of the industry and changes in how people work.

9.5%

6.1%

8.8%

48.3%

27.2%
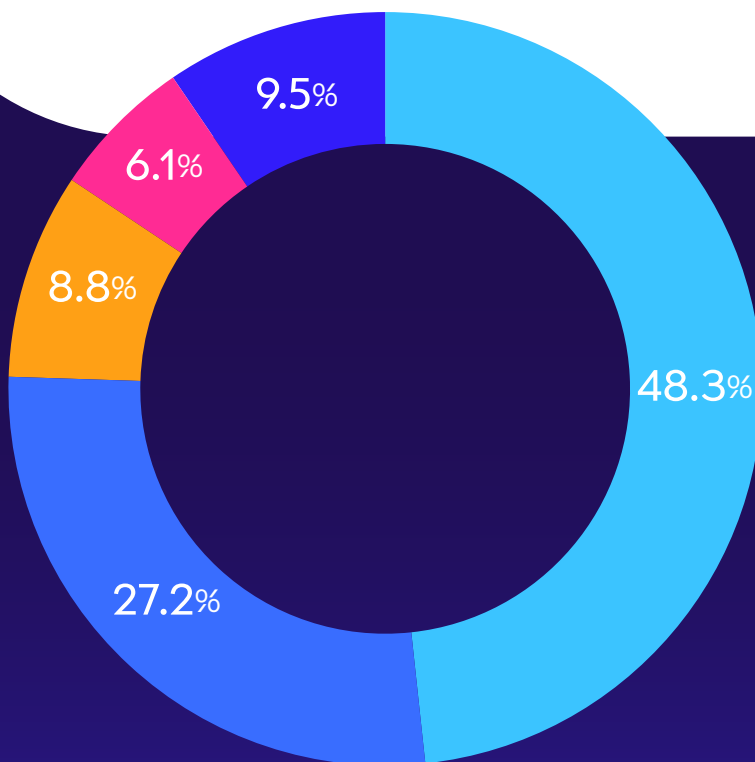
- **Yes**
  we have been in transformation for over one year

- **Yes**
  we just started in the last 12 months

- **Not yet**
  we are considering to start in the next year

- **Not yet**
  we plan to start in the next 5 years

- **No**
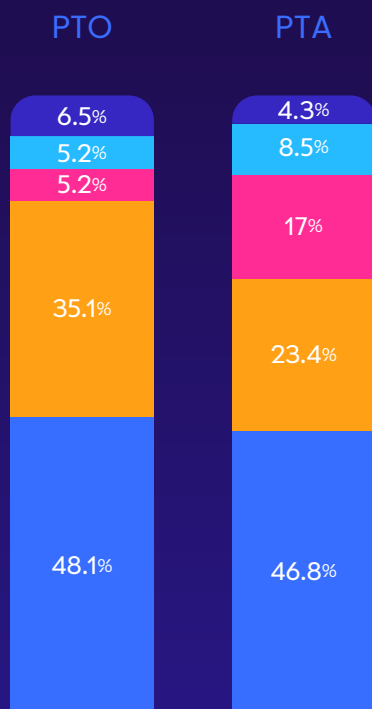 we are not digitizing our operation

Most PTOs and PTAs are undergoing digital modernization

Modernization Maturity

Breaking down digital adoption, the survey findings demonstrate high interest in digital transformation within both the private and the public sectors.

Across both segments, approximately 88% have digitalization on the agenda, either already in progress or for the next year. An overwhelming majority (83%) of public transportation operators (PTOs) are in the midst of digitalization. Public transportation agencies (PTAs) are slightly behind at 70%.

When it comes to time invested, almost half of the respondents from each sector said their organization is more than one year into their digitalization journey. Forty percent said they either recently started or plan to start in the next twelve months. Of these, more PTOs than PTAs began their digitalization journey in the past year. But in the coming year, we may see more agencies begin that transition.

PTO   PTA

	PTO	PTA
No	6.5%	4.3%
Not yet (5 years)	5.2%	8.5%
Not yet (next year)	5.2%	17%
Yes (last 12 months)	35.1%	23.4%
Yes (over one year)	48.1%	46.8%

Maturity in digital modernization varies by PTO and PTA

- **No**
  we are not digitizing our operation

- **Not yet**
  we plan to start in the next 5 years

- **Not yet**
  we are considering to start in the next year

- **Yes**
  we just started in the last 12 months

- **Yes**
  we have been in transformation for over one year

A deeper dive into the data shows interesting differences in digital maturity within the private sector alone. Seventy-one percent of large private organizations are more than twelve months into the digitalization process, versus 28% of small and medium-size ones, which are more likely to have started in the past year.

Unpacking the Pain Points

Driver Shortages, Electrification, Costs, and Demand

As the public transportation industry sets its sights on 2024, it aims to address a range of challenges that will help unlock the ability to operate more efficiently and sustainably.

By far the biggest of these pain points was driver shortages. Bus drivers are resigning and retiring faster than new drivers are joining the workforce, creating a shortage at a time when passenger demand is growing. Given that services cannot run without drivers, the industry is looking at innovative ways to recruit and retain drivers, especially in the private sector.

The transition to electric and zero-emission fleets was the second most common pain point. Here, we see the industry struggling with novel technologies, organizational restructuring, new cost considerations, and safety concerns.

In a close third place was inflation and rising fuel costs.

51%
Driver shortages (recruiting & maintaining drivers)

35%
Transitioning to an electric/zero-emission fleet

32%
Inflation and rising fuel costs

31%
Rising passenger experience expectations

19%
Data security and integrity and cyber risks

17%
Fluctuating ridership levels

14%
Government reforms (regulation, funding)

13%
Increasing the equity and safety of our network
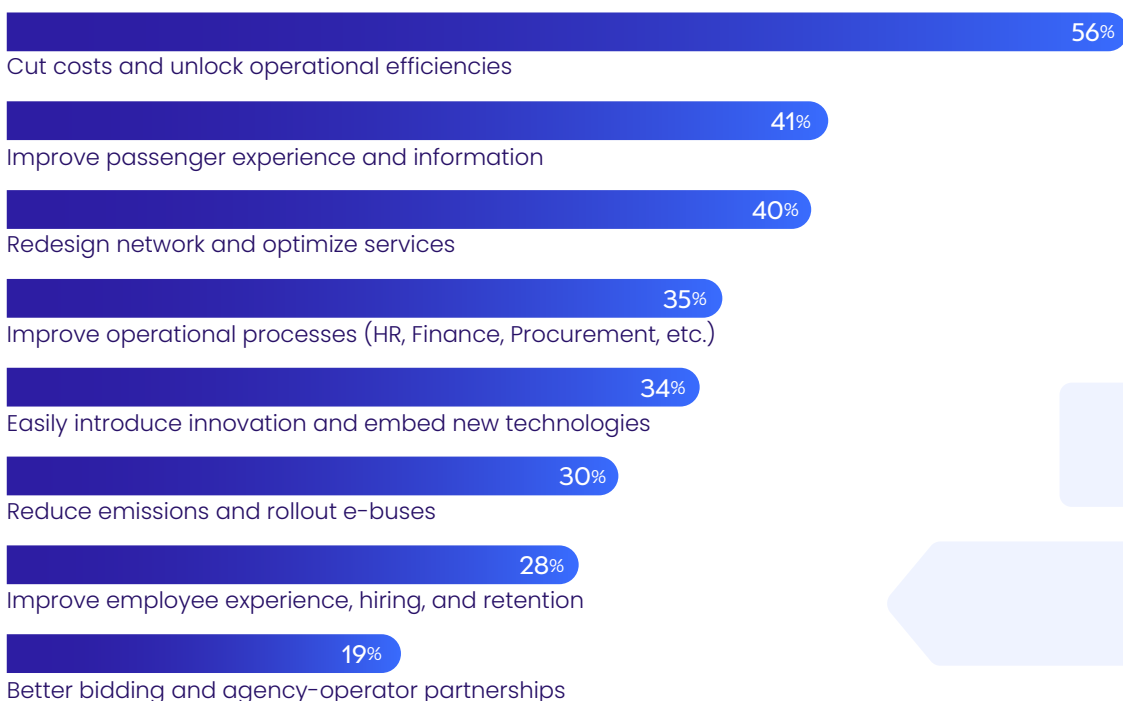
6%
None of the above

Next Stop: Efficiency and Experience

Digital Transformation Objectives & Strategic Priorities

Across all survey respondents, there is one clear and leading motivator of digital transformation: **cost reduction and operational efficiency.** But objectives differ between segments.

- **The private sector is focusing on financial efficiency:** Across the board, the ability to unlock cost savings and operational efficiency is the most common primary objective. Notably, respondents from large operators (PTOs) expressed a significant inclination towards this goal, with the number of those favoring it accounting for more than double the amount of interest in any other objective. This indicates a focused vision to harness new technologies to make the most of every dollar and financially optimize the operation.

- **The public sector is balancing passenger experience with financial responsibility:** For agencies and cities, their primary objective is improving passenger experience and information - a trend first identified in our 2023 State of the Industry report. While cost and efficiency is an important objective for all, respondents from agencies and cities ranked it as a close second.

- **Other priorities:** While savings and efficiency are the primary drivers of digitalization, the most common secondary objectives related to network design and service optimization, improving operational processes, and future-proofing the organization by integrating cutting-edge technologies.

Objectives of digital transformation

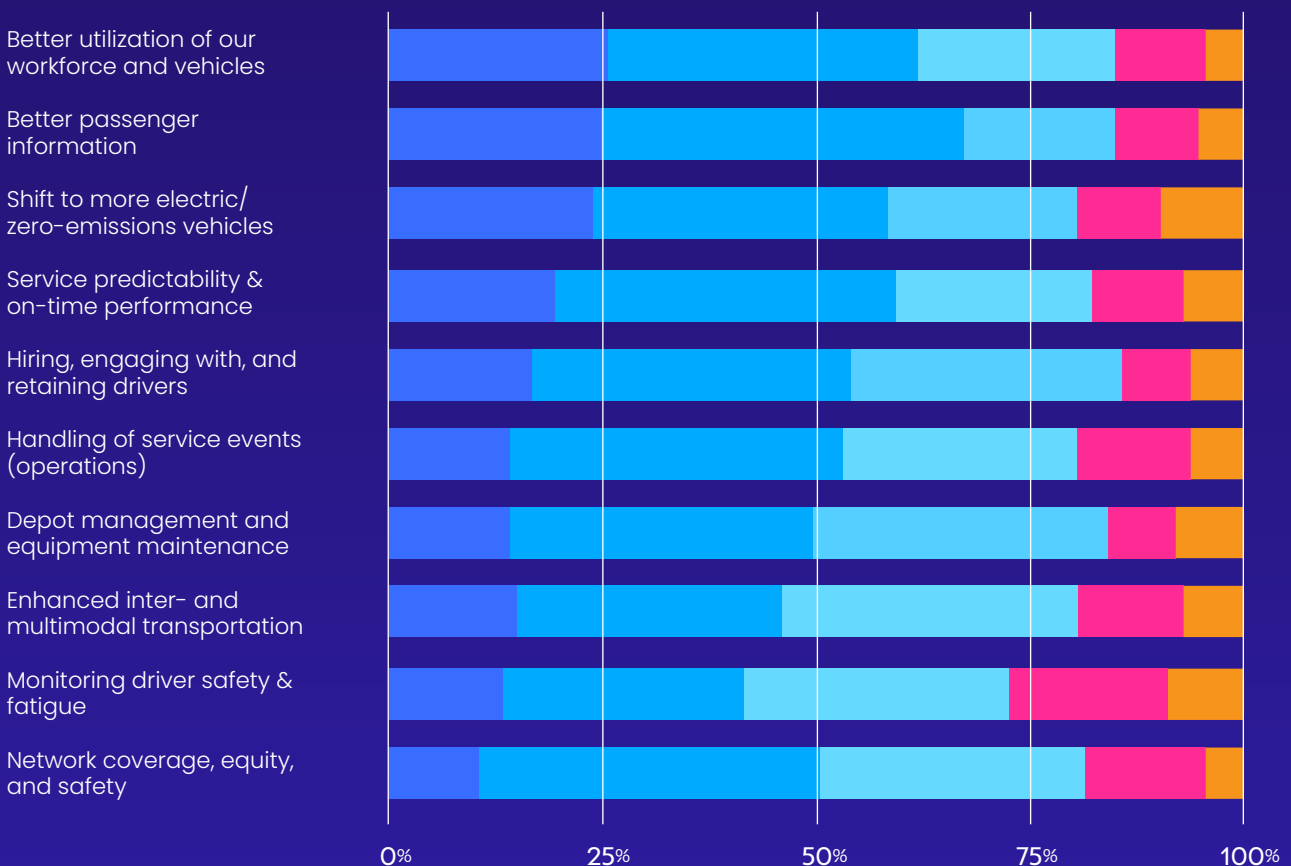| Objective	Percentage
Cut costs and unlock operational efficiencies	56%
Improve passenger experience and information	41%
Redesign network and optimize services	40%
Improve operational processes (HR, Finance, Procurement, etc.)	35%
Easily introduce innovation and embed new technologies	34%
Reduce emissions and rollout e-buses	30%
Improve employee experience, hiring, and retention	28%
Better bidding and agency-operator partnerships	19%

Funding the Future

2024 Investment Landscape

Towards what topics, challenges, and opportunities is the industry looking to invest time and resources? Passenger information systems ranked as the most likely area of investment, followed by vehicle and workforce optimization, electrification, and on-time service performance. Comparing this year's responses to the results of our 2023 State of the Industry report, investment related to electric buses, including depot management, increased the most over the past year, reflecting growing awareness of the complexity of fleet electrification.

How likely is your organization to invest in the options below?

Legend: ● Highly likely ● Most likely ● Not sure ● Less likely ● Not likely

- Better utilization of our workforce and vehicles
- Better passenger information
- Shift to more electric/ zero-emissions vehicles
- Service predictability & on-time performance
- Hiring, engaging with, and retaining drivers
- Handling of service events (operations)
- Depot management and equipment maintenance
- Enhanced inter- and multimodal transportation
- Monitoring driver safety & fatigue
- Network coverage, equity, and safety

0% 25% 50% 75% 100%

Digitalization Dreads

How Will Technological Transformation Impact Operational Continuity, Skills Gaps, and Costs?
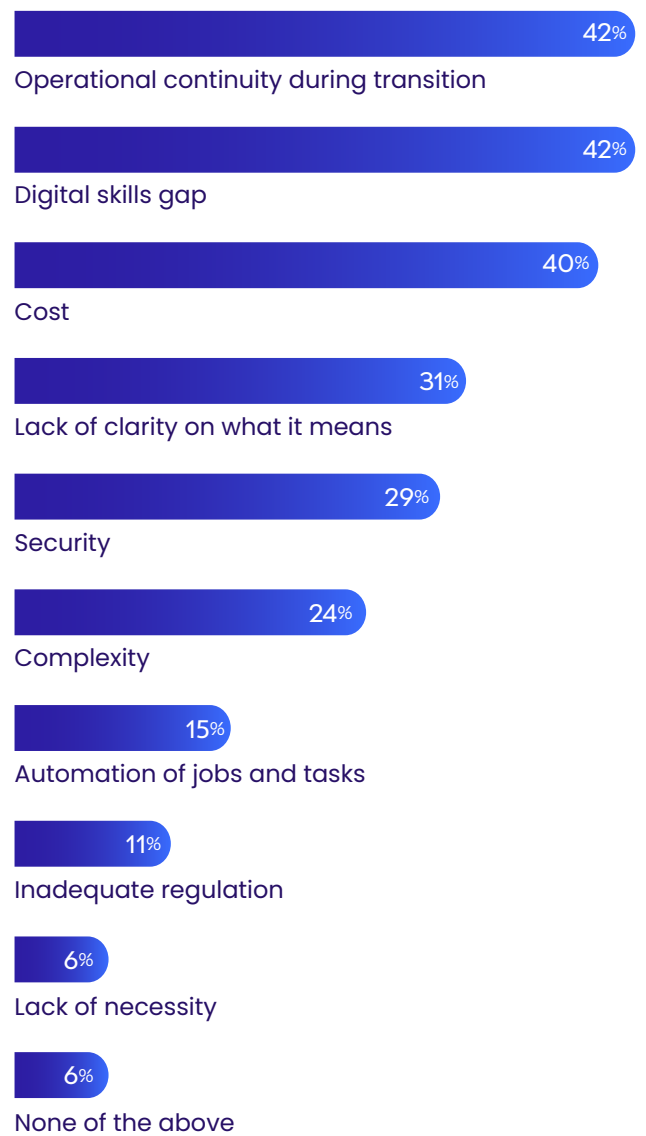
Transitioning from traditional and legacy processes that have been used for decades to new, digital tools introduces a spectrum of challenges.

Respondents, particularly agencies, are most worried about operational continuity during the transition. Public transportation can't 'pause' while implementing new work systems. Organizations need assurance that onboarding will be quick and smooth, without any interruption to service delivery or operational capability.

Tied for the top concern is the digital skills gap. It takes time to learn a new software system and adjust to new technological functions like 'machine learning'.

Cost implications ranked third, naturally, given limited budgets in some regions. In a KPMG International survey with public transportation executives, 41% noted the need for more financially sustainable revenue models over the next five to ten years.

Digital transformation concerns

| Concern	%
Operational continuity during transition	42%
Digital skills gap	42%
Cost	40%
Lack of clarity on what it means	31%
Security	29%
Complexity	24%
Automation of jobs and tasks	15%
Inadequate regulation	11%
Lack of necessity	6%
None of the above	6%

Defining and Achieving Success

Investment in People and Processes

Using new technologies to achieve desired financial and operational outcomes remains a challenge for many organizations. Less than half of respondents said their objectives were achieved, and almost 22% defined their project as unsuccessful.

However, when analyzing the difference between organizations that achieved their digital transformation objectives and those that fell short, we noticed a significant disparity.

Of respondents who reported a successful digital transformation journey, 80% focused on upskilling their teams and 65.7% concentrated on streamlining and automating their processes.

Conversely, organizations that did not meet their objectives often shared a commonality of underinvestment in critical areas: they lacked initiatives that focused on team upskilling, hesitated to adopt advanced algorithms for quicker response times, and overlooked the benefits of streamlining processes and harnessing data across systems. Entities that prioritized these investment areas witnessed substantially better outcomes.
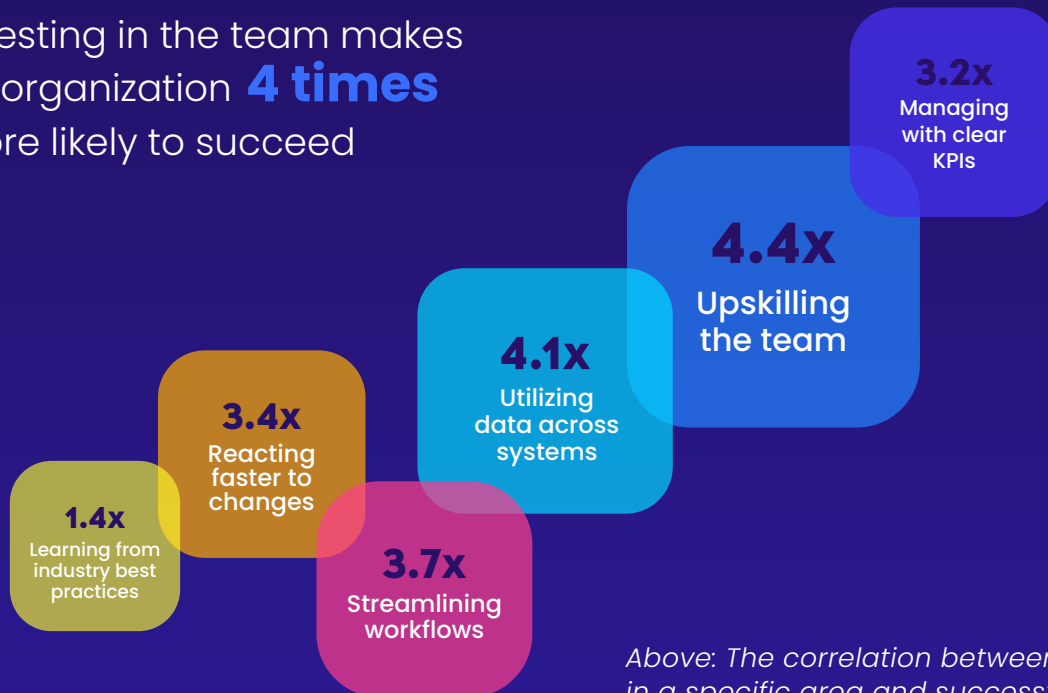
22.4%
Not successful

41.2%
Successful

36.5%
Mixed success
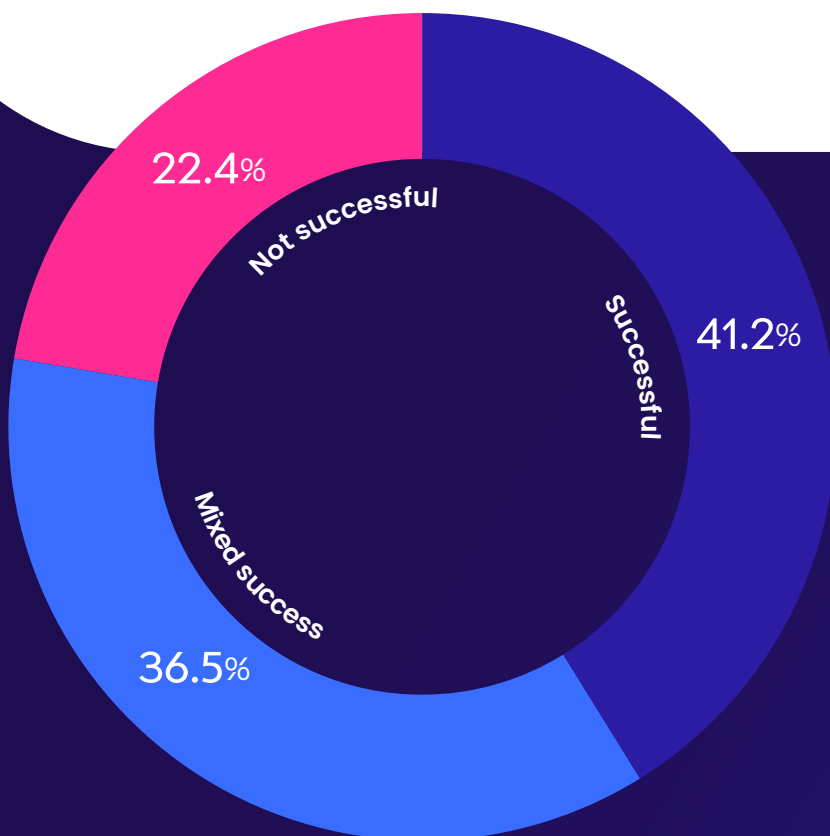
Succeeding in digital transformation isn't easy

% of respondents whose organization achieved their operational and financial outcomes through digitalization

Investing Smart

The key to digital victory

Investing in the team makes an organization **4 times** more likely to succeed

1.4x
Learning from industry best practices

3.4x
Reacting faster to changes

3.7x
Streamlining workflows

4.1x
Utilizing data across systems

4.4x
Upskilling the team

3.2x
Managing with clear KPIs

Above: The correlation between investment in a specific area and successful digital transformation. Survey respondents who said they were investing in "upskilling the team" were 4.4x more likely to describe their digital transformation as "successful" versus those who did not invest in upskilling.

The strong correlation between successful digital transformation, employee upskilling, process streamlining, and automation is supported by a number of industry reports.

In the RATP Dev & Kantar 2023 survey, findings about passengers' appreciation for quick, cost-effective public transportation services validate the need for ongoing investment in digital technologies that enhance operational efficiency and responsiveness to modern demands.

The Joint Recommendation (JR) by the European Social Partners in Urban Public Transport (ETF - UITP) also complements these findings, advocating for continuous learning opportunities for employees and the cultivation of innovative organizational cultures.

What Now?

Strategic Recommendations

1. **Define Clear Digital Transformation Goals:** Effective digital transformation requires setting up specific, strategic goals and regularly evaluating progress. With clear, measurable objectives — such as improving efficiency, customer satisfaction, or sustainability — organizations can focus their resource investment. Continuous monitoring and adaptation keep these efforts on track to yield real, tangible benefits and achieve business objectives.

2. **Set Your Team Up For Success:** Digital transformation is only as impactful as the team involved. Organizations must cultivate an environment of continuous learning, upskilling, and innovation, enabling teams to adapt to and leverage new technologies. This involves formal training programs, experimentation, feedback, and talent development.

3. **Leverage Unified Platforms and Data Analytics:** Prioritizing a unified platform with integrated systems and advanced analytics can unlock operational efficiencies, enhance service planning, and provide insights into passenger behavior and preferences. The result is a holistic view of operations, data-driven decisions, and improved cross-functional collaboration that drives tangible results.

4. **Prioritize Passenger-Centric Solutions:** Investments should be channeled towards solutions that directly enhance the passenger experience, from real-time information systems to app-based services and digital ticketing. Enhancing the customer journey at every touchpoint can significantly impact satisfaction, loyalty, and ridership.

5. **Collaborate for Sustainable and Innovative Solutions:** Partnerships with technology providers, academic institutions, and industry consortia can inform and improve the digital solutions coming to market, spanning electric vehicle management to systems integrations. Collaborative efforts can also facilitate knowledge sharing, benchmarking, and the development of best practices for the sector.

MAKING PUBLIC TRANSPORTATION
BETTER. TOGETHER.
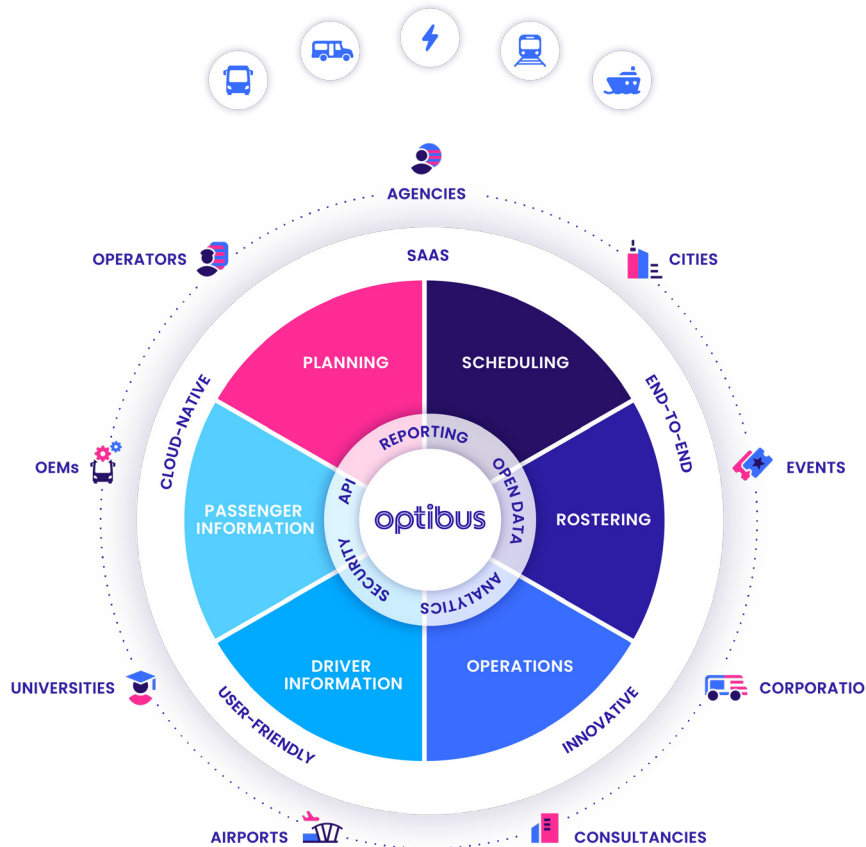
If you'd like to find out more about Optibus and explore how our platform can help you streamline and enhance your public transportation offering and processes, we welcome you to book an exclusive, one-on-one demo with one of our experts via the button below.

Learn more: www.optibus.com

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