

# T-mobilitat

**NFC T-mobilitat ecosystem**

TTG March 5<sup>th</sup> 2025

**ATM**

Àrea de Barcelona  
Autoritat del Transport  
Metropolità

# 1. Barcelona T-mobilitat Project

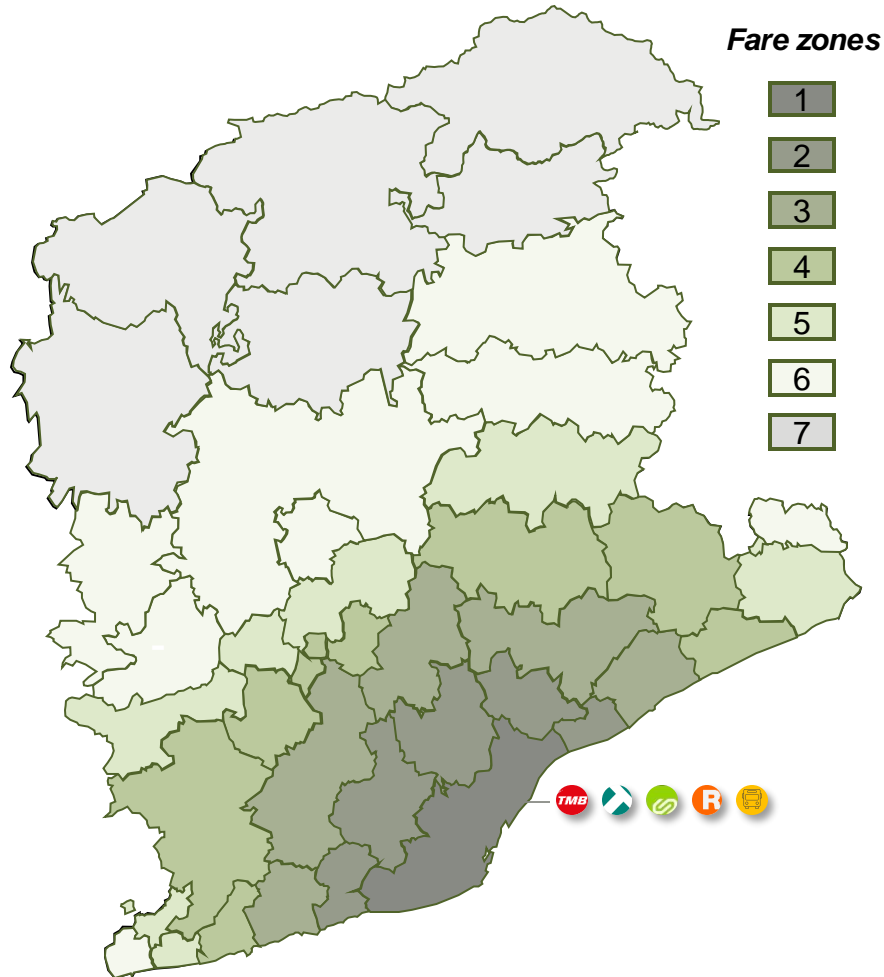
# T-mobilitat



← Barcelona

# 1. Barcelona T-mobilitat Project

Geographical deployment



+80 PUBLIC TRANSPORT OPERATORS



**+1.500**  
TVM

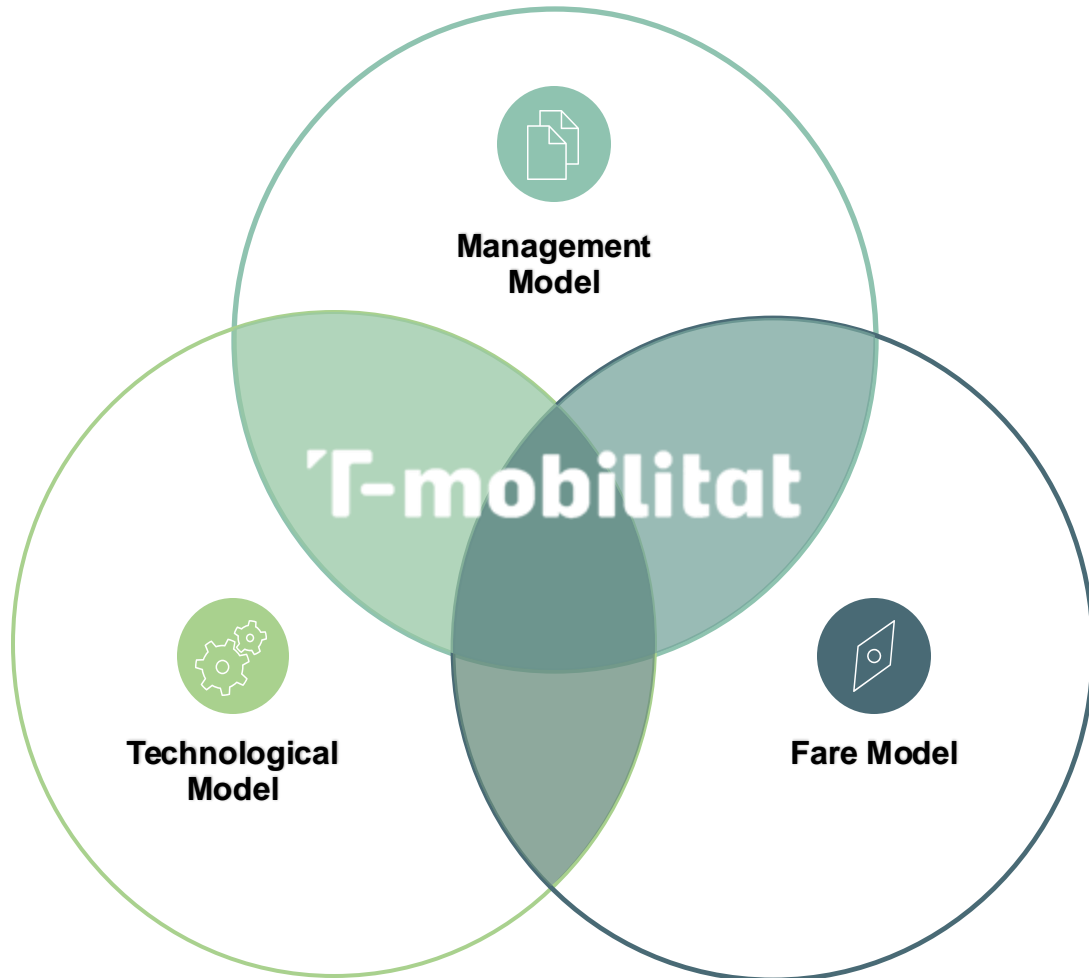
**+1.600**  
Consultation Terminal

**+3.000**  
Railway/Metro access  
Gates

**+12.000**  
Driver's console &  
Validators



# 1. Barcelona T-mobilitat Project



## Management model

- Operational and role-based management based on ISO 24014
- Mobility information (CGIT)
- New customer service (CAI)
- Mobility management and transport planning
- Maintenance and operation of technology (SECOM)

## Technological model

- End-to-end security system
- High-performance chip
- Scalable, interoperable, and multi-operator solution
- PCI&EMV certification
- Mobile as an NFC terminal for consultation and validation

## Fare model

- Multi-operator, multi-user, and multi-territory tariff system
- Mid-term kilometric pricing
- Exit validation (Check in – Check out)
- Account-based ticketing (ABT)
- Users Identification for discounts (profiles)

# 2. NFC T-mobilitat Ecosystem

## TYPES OF CARD

### PLASTIC CARD



### VIRTUAL CARD (APP)



### ANONYMOUS CARDBOARD



## SALES AND MANAGEMENT CHANNELS

### CUSTOMER SERVICE POINT



### TVM



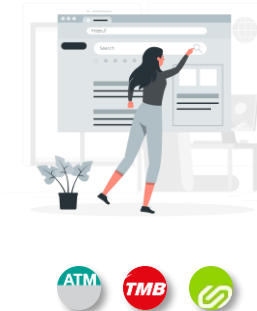
### APP



### KIOSKS



### WEB



# 3. Mobile App


## Functionality

The functionalities enabled by the Mobile Application can be divided into three areas:


### User Management



**User and profile registrations**



**Purchase of physical cards (PVC)**




**Invoice management**




**Route Planner**

### Sales channel



**Reading physical cards**



**Purchase of passes on physical cards**



**Reloading passes on physical cards**

### Virtual Card

*Registered users only*




**Registration and purchase of e-wallet**



**Purchase of virtual passes**



**Recharging virtual passes**



**Virtual media validation**

# 3. Mobile App



### 3. Mobile App



# 4. History, Motivation and Beginnings

### Strategic objectives



**Improving the experience  
of public transport users**



**Sustainability and  
environmental impact**



**Reduction of system  
operating costs**

# 4. History, Motivation and Beginnings

## Technological challenges

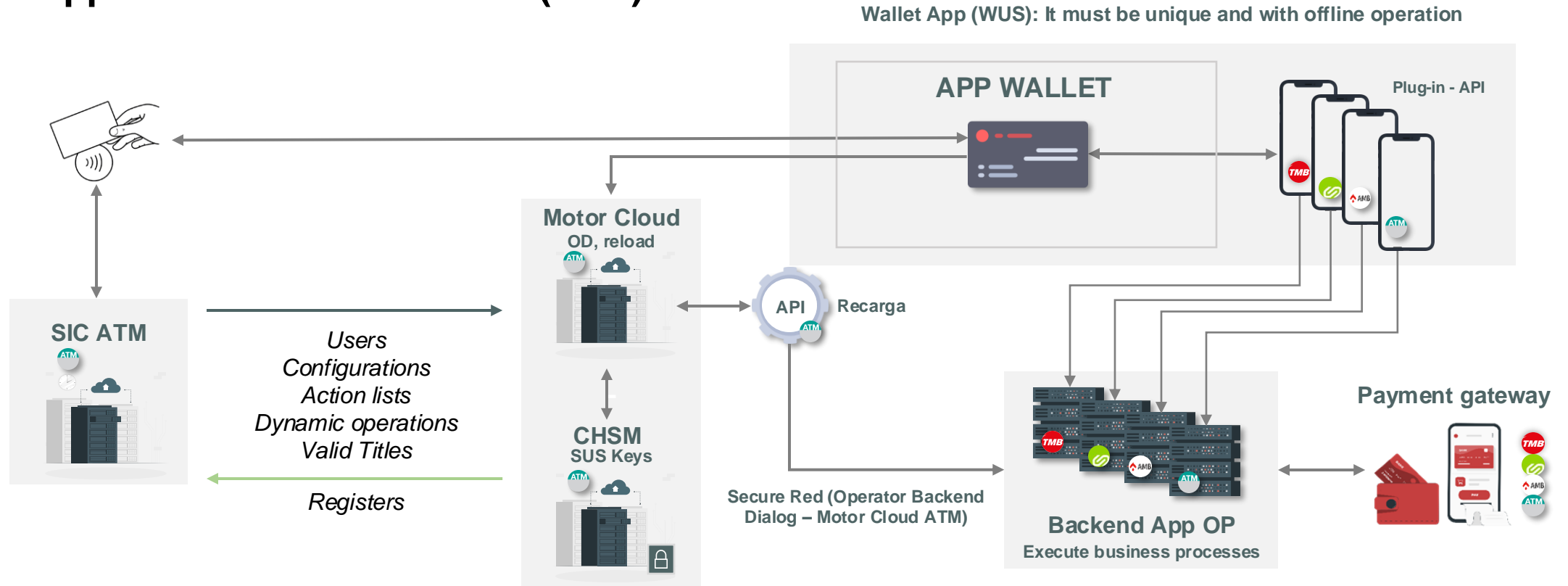
### Technical assessment of the different solution options

			<i>Japan Case</i> 
Criteria	HCE	SIM	Chip SE
Interoperability	 ✓ complexity decreases as the actors involved are reduced	✗ Communication with different operators conditions the development	✗ Hardware element that conditions the adoption of solutions with other models
Dependence on external actors	✓ Mobile operator business model-agnostic solution	✗ The presence of intermediaries conditions their commission model	✗ Dependent on in-house chip manufacturers
Safety	✓ Solution chosen for the financial system	✓ Model secured through an Internal Hardware element	✓ Model secured through an Internal Hardware element
Scalability	✓ The HCE alternative is the most scalable option	✗ Scalability of the solution depends on the Mobile Operators	✗ Scalability depends on the ability to include this secure element

**In-house technical solution without license or third-party dependencies**

# 5. Technology architecture

## WUS App – Mobile NFC as wallet(SUS)



### The use of NFC mobile as a TIU has advantages

- It has sound, display, keyboard, memory
- Always available (offline)

### But it also has limitations

- The WUS must be unique

# 6. Actual use

## Validations

T-mobilitat validations  
(January 2025)

**88.158.099**

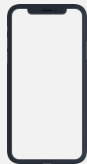
Monthly Validations



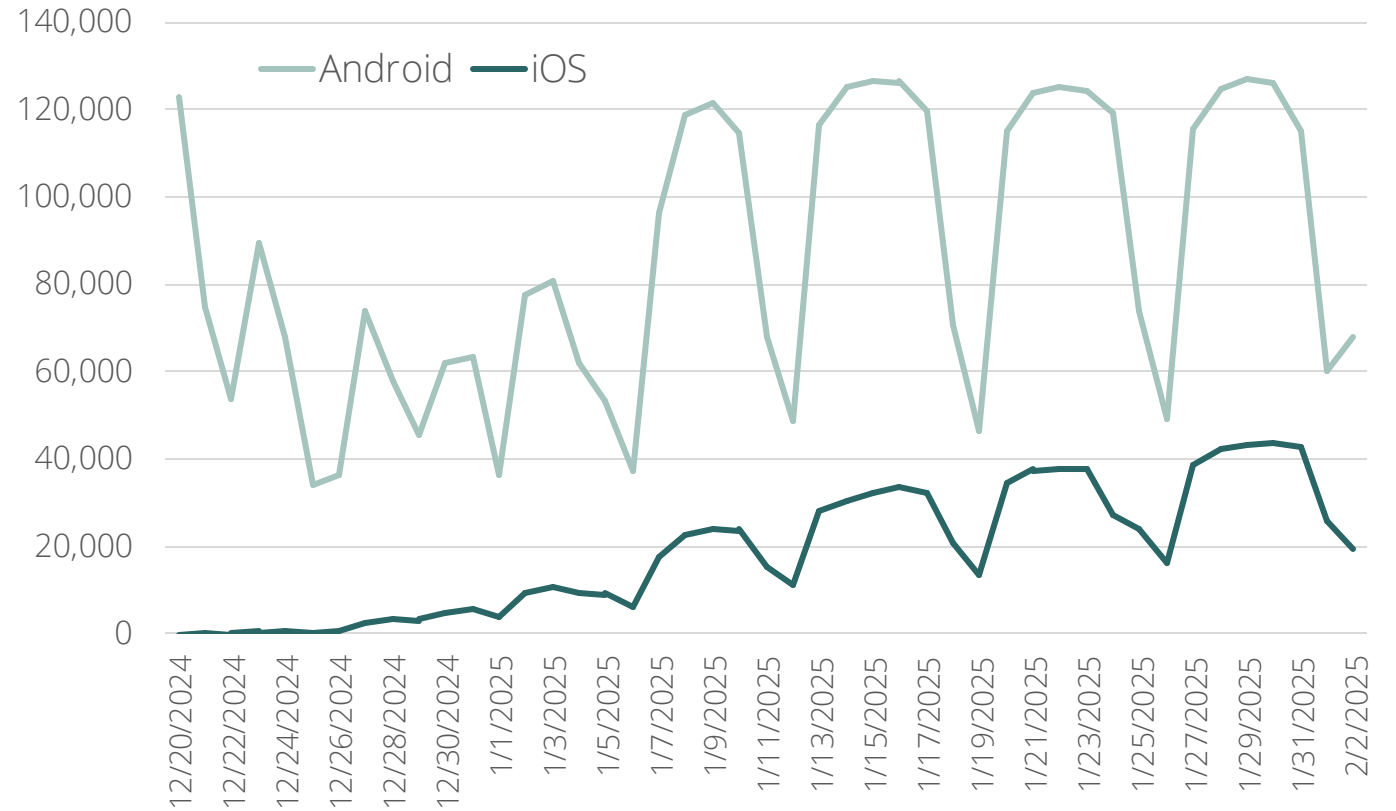
**64,7%**  
Plastic Card



**30,1%**  
Cardboard



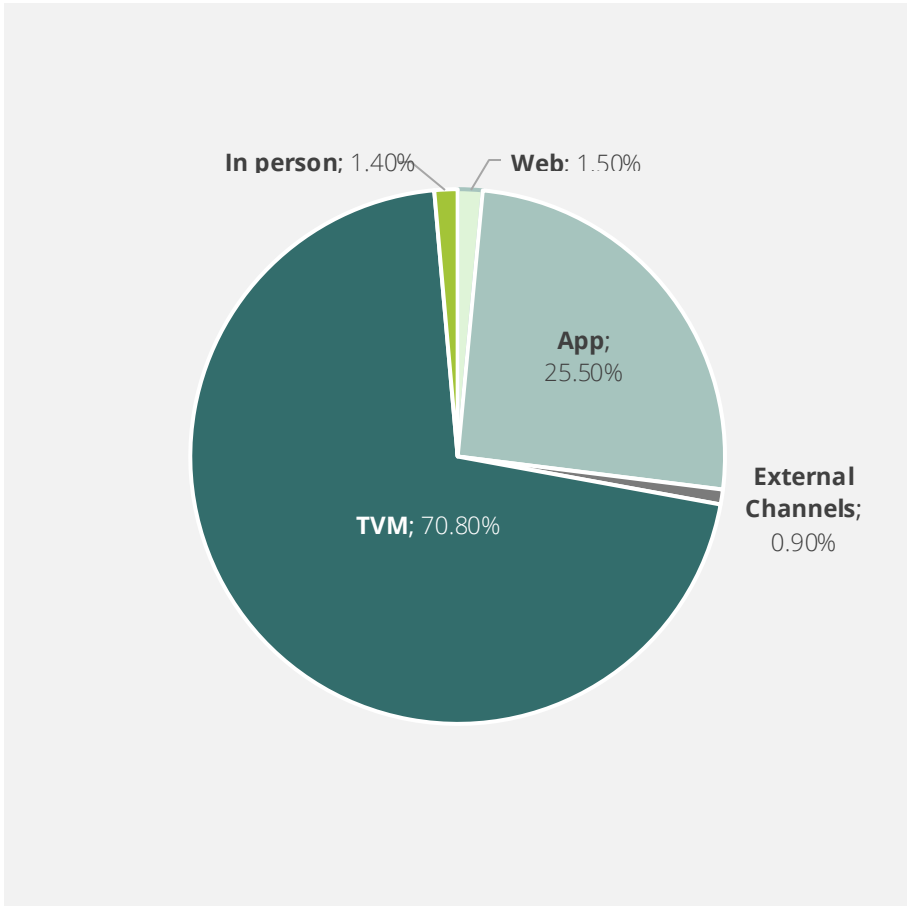
**5,2%**  
Virtual card



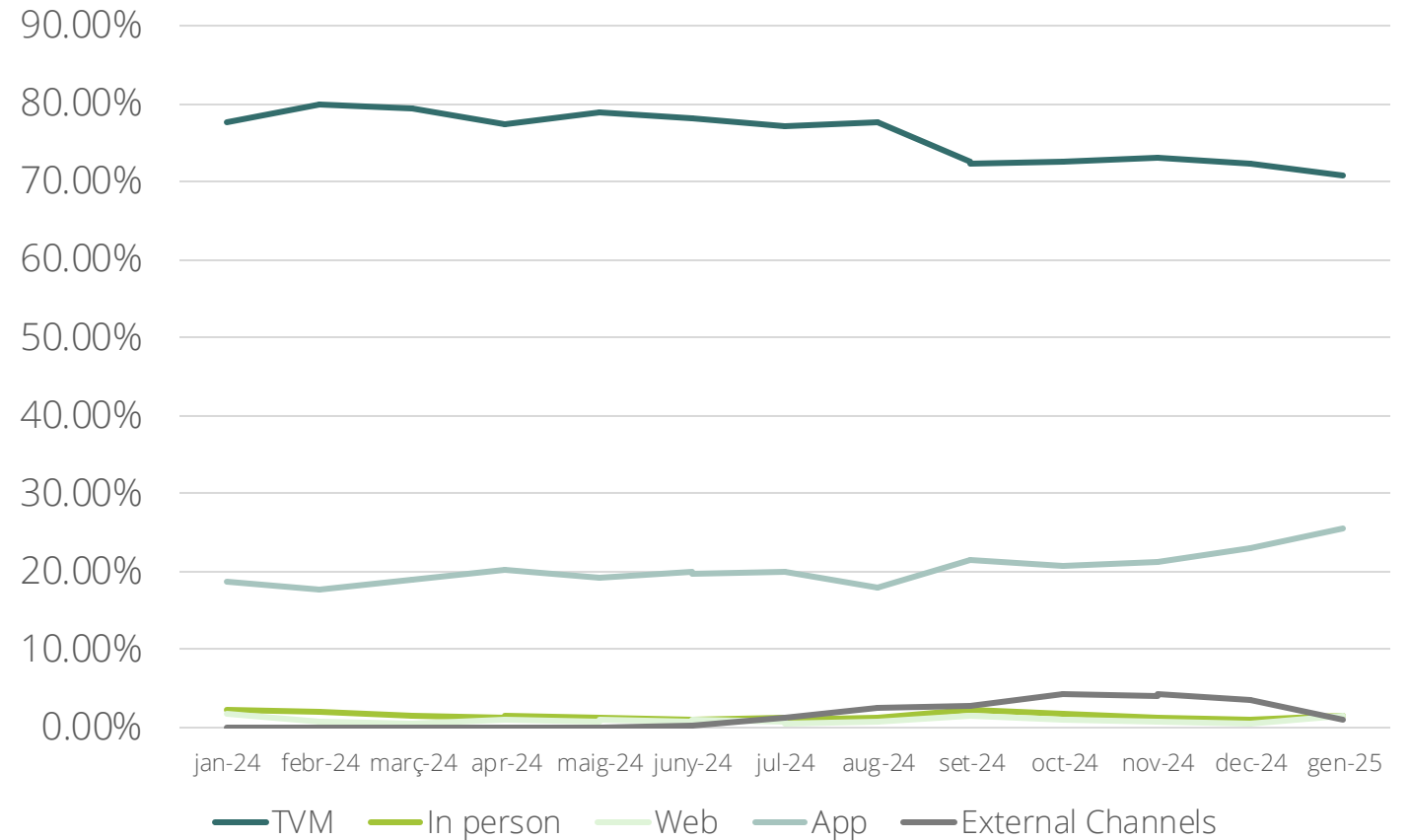
# 6. Actual use

## Top-ups

T-mobilitat top-ups (January 2025)

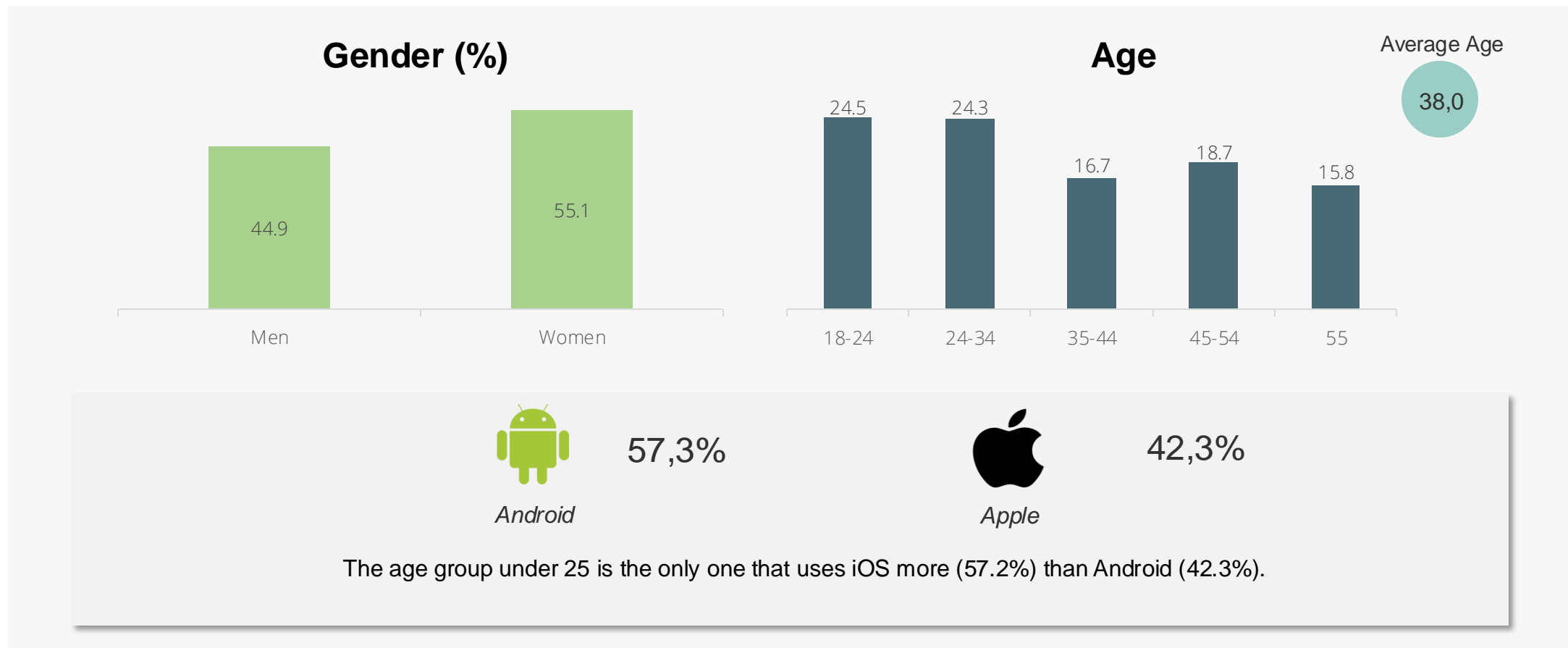


T-mobilitat top-ups (Jan-24 - Jan 25)



# 7. What customers say

## User's Survey Q4 2024



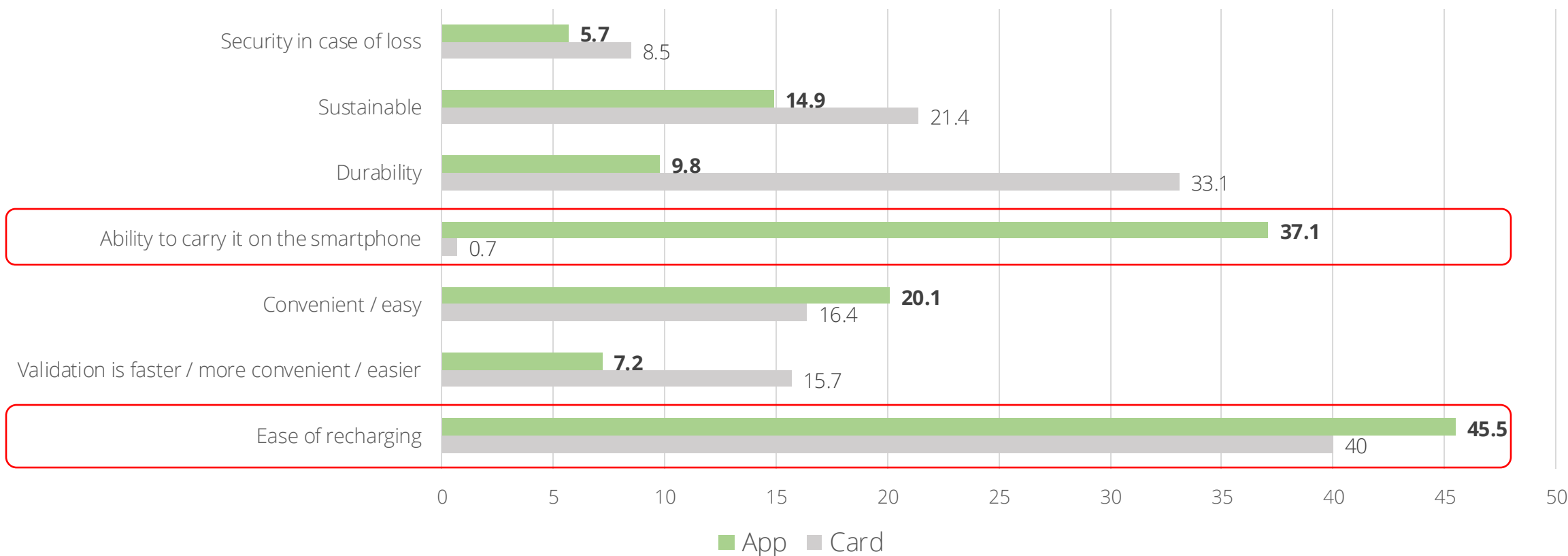
**90%** of the surveyed users (registered users) have installed a T-mobilitat App, and **75%** indicate that they use it to manage the T-mobilitat.

# 6. What customers say

## User's Survey Q4 2024

Among the people with virtual support, the ease of recharging stands out, followed by the possibility of using the phone as a virtual card. Other highlighted strengths are its ease of use and sustainability.

**Strengths of T-mobilitat according to the users surveyed**

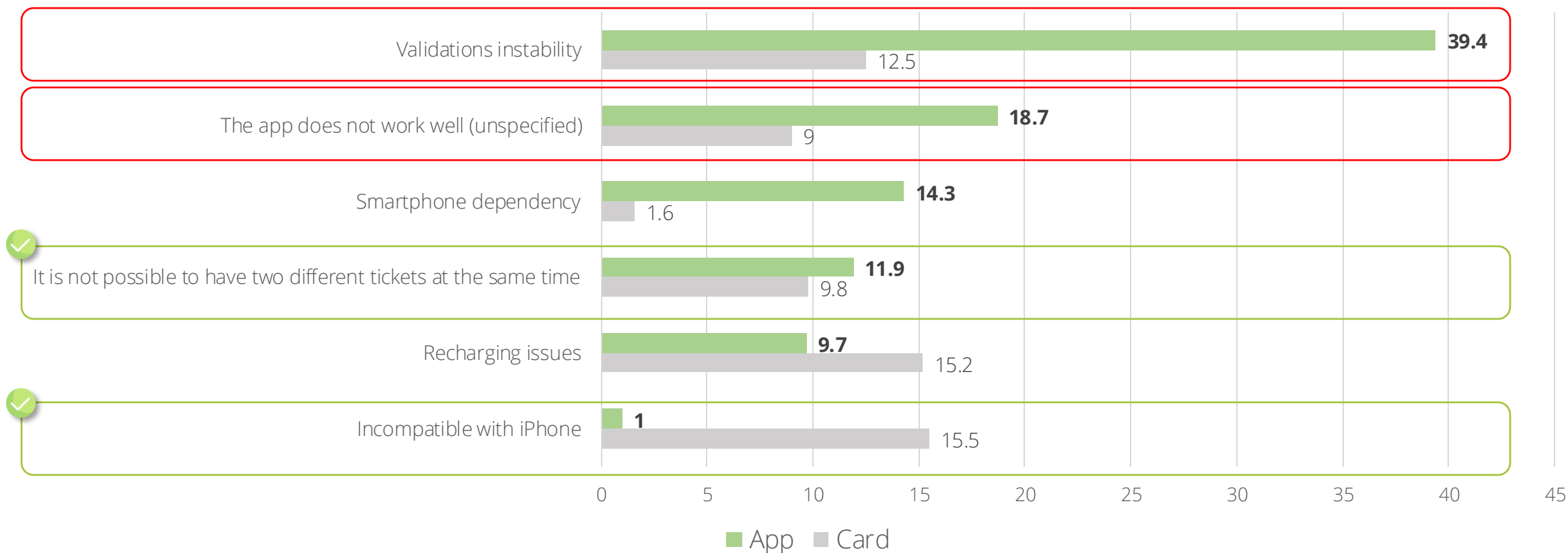


# 6. What customers say

## User's Survey Q4 2024

Among the people who have virtual card, the main criticism is the validation problems and, secondly, the operation of the app. Other criticisms made by people who have virtual support are the dependence on the mobile phone, and problems with topping up the virtual card.

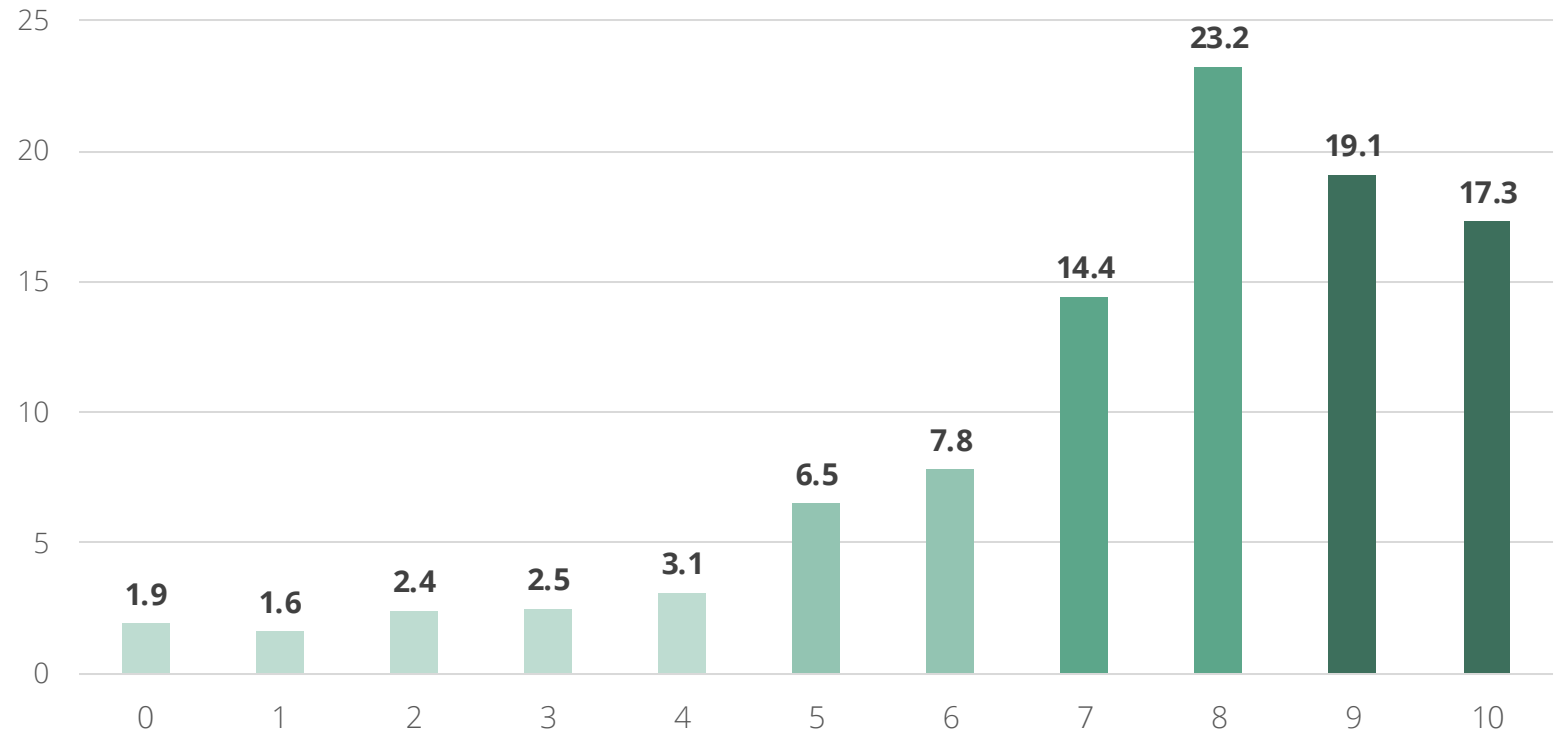
**Weaknesses of T-mobilitat according to the users surveyed**




# 6. What customers say

## User's Survey Q4 2024

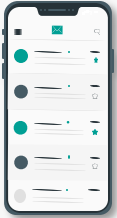
People who have the **T-mobilitat** rate it with an **average score of 7.4**



Average score



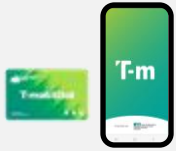
7,5



6,8



## App as a TVM



- More and better communication to users about this functionality
- Improve user experience (accessibility, UX/UI, etc.)
- Objective of a progressive reduction of the fleet of self-service machines

## App as virtual travel card



- Improve validation experience (validation without retries)
- Onboard anonymous users
- More features (up to 5 passes per app, automatic reloads, custom notifications, card virtualization, etc.)
- Embed Google and Apple wallet → users ask for it
- Evolution of the app to MaaS