Requirements for efficient time use on train journeys

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Time advantage of railways

**Advantage** of railway system:

- **Travel time** can be used **meaningful**
- Lost time is much shorter compared to other transport modes

![Bar chart comparing travel time for different modes of transport](chart.png)
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Mobility chain – customer satisfaction

Each chain is only as strong as its weakest link!!

Customer satisfaction is very important along the whole mobility chain
To gain the railway‘s advantages

• Passengers **must be able to use** the **time** as they prefer

• Passengers must be satisfied during the entire trip (from door to door)

→ Passengers must be **satisfied** during the **entire train journey** in the passenger coach and on their seats
The highest priority for the railway industry and the operator must be: „The customer is always right!“

The customer must be in the focus, therefore it is required to know about:

- actual behaviour
- actual satisfaction or dissatisfaction
- needs
- expectations
Austrian research project “FLEXICOACH” focuses on the needs and expectations of passengers.

Aim: Gather information about passenger’s needs and their requirements on a journey.

Passenger opinion surveys: About 5,000 passengers were interviewed.

Analyses of passenger’s actual behaviour.
Main focus

• Two principles are important to gain as many passengers as possible:

  • What do passengers need to be really able to use the time efficiently?

  • What do passengers need to be satisfied?
Why do passengers take the train?

~50% comfort

Reasons to take the train

- No car: 43.6%
- Duration of journey: 19.1%
- Price: 41.4%
- Safety: 21.4%
- Comfort: 48.2%
- Environment: 43.8%

N=3826, multiple answers were permitted.
Satisfied passengers – general well being

Mobility chain! – Chain link „train trip“

- Boarding and alighting the train
- Moving in the train
- Finding a free seat
- Storing luggage
- Seating comfort
- Climate conditions in the vehicle
- Disturbing by other passengers, high utilization rate
- Noise, light, (bad) smell
- Quite running / unsteady running, vibrations
Boarding and alighting

Combination of difficulties

- Personal mobility reduction, age of passengers
- Luggage, baby prams, bicycles ....
- Entrance: height, width, steps, gap ....
Difficulties when boarding

Cat 1: level boarding or one step

Cat 2: ICE, TGV etc.

Cat 3: typical passenger coach, 55cm platform

Cat 4: Old passenger coach with steep entrance, low platform
Stress factors

Do you feel stressed by a certain reason on your current journey? N=3826, multiple answers were permitted

- ~20% search for free seat
- ~10% utilization rate
- ~10% noise
- ~10% other passengers
Luggage storing – two principles

• Passengers.....
  • do not want to lift their luggage
  • want to have an intervisibility to their luggage
Disregard of the two principles

Many large items are stored on floor level → ON or BEFORE SEATS / IN THE AISLE

Hindrance in the aisle

Seats are blocked!

Well being factors: Moving in the train / Finding a free seat / Storing luggage
General well-being

well-being during the trip

- Very uncomfortable: 1%
- Rather uncomfortable: 24%
- Rather comfortable: 28%
- Very comfortable: 47%
Decrease in well-being
Indoor climate

- Satisfied: 76%
- Too warm: 9%
- Too cold: 11%
- Draught: 4%
Actual use of journey time

Actual use of journey time: purpose of the journey

N=3733

- Technical devices
- Reading documents
- Relaxing
- Eating and drinking

- Use of laptop, smartphone or tablet
- Reading documents
- Meeting, discussion
- Telephoning
- Reading books or newspapers
- Eating and drinking
- Game-playing

- Business
- Free time
Desired use of journey time

What passengers would like to do but for some reason can’t.

**Desired use of journey time: purpose of the journey**

N=3733

- **technical devices**: 15.8%
- **relaxing**: 12.2%
- **fitness exercises**: 12.4%

Bar chart showing percentages:

- Use of laptop, smartphone or tablet (business: 15.8%, free time: 12.2%)
- Reading documents (business: 2.8%, free time: 2.1%)
- Meeting, discussion (business: 1.3%, free time: 0.7%)
- Telephoning (business: 7.1%, free time: 3.8%)
- Reading books or newspapers (business: 4.5%, free time: 5.4%)
- Ease and sleep, looking at the scenery (business: 10.0%, free time: 12.4%)
- On-board purchasing (business: 1.5%, free time: 3.6%)
- Fitness exercises (business: 7.4%, free time: 8.6%)
- Eating and drinking (business: 3.0%, free time: 3.5%)
- Game-playing (business: 3.0%, free time: 2.1%)
**Desired use of journey time**

**Main obstacles** for using technical devices like laptops, tablets and smartphones:

- Absence of Wifi-connection
- No practical tables
- Place of deposits (for documents, eating & drinking etc.)
- Power socket

**Main obstacles** for the desired activity „ease and sleep“:

- Uncomfortable seats (not adjustable)
- Noise, disturbance by other passengers
- Light
Passengers (want to) do **more than one** activity during the trip:

- Depending on the travel time
- Different activities with **opposite needs**

**Example:**
- Working on technical devices
- Relaxing (sleeping, looking out of the window…)
- Eating & drinking
- Reading papers, books, newspapers…..
- Do a phone call
Other requested services

Request by more than 10% of passengers:

- General knowledge transfer (e.g. via screens)
- Information about destination
- Facilities for fitness
- Catering (health-conscious, high quality, low-priced…)
- Free water dispenser
- Wake-up service
- Selling of newspapers, books etc.
- Relaxiation tape via headset
- Compartments for children (no TV-screens)
Problem: multiple and opposite needs

Different individual (and subjective) sensations:

- **Indoor climate**: too warm ↔ o.k. ↔ too cold
- **Light**: too bright ↔ o.k. ↔ too dark

Different activities with opposite needs and impacts:

- **Working**: need light, (**produce noise**), need calm
  - Devices: table, place of deposits, Wifi, mobile reception, power socket etc.

- **Sleeping/Relaxing**: no light, need calm
  - Devices: adjustable and comfortable seats, lie area

- **Entertainment, playing etc.**: produce noise, need motion space (e.g. for children)
Problem: multiple and opposite needs

Area of conflict

- working
- sun light (window)
- eating (smell)
- relaxing
- entertainment
- unsteady running (vibrations)
Offer different areas in a train, for example:

- Business area
- Relaxation area
- Family car
- Restaurant car
- etc.
Problem 1: multiple activities

- Working
- Eating (smell)
- Entertainment
- Relaxing
- Area of conflict

**Multible** activities during trip
Problem 2

• The desired **activities** must be **known in advance** when booking the trip.

• **Spontaneous trips** (e.g. after a meeting with unknown finish)
  - you may not find a free seat in the area you want
  - you may sit in an area you do not want to sit
Solution: Individualisation

• Some classifications may be meaningful, e.g.:
  • 1st oder 2nd class
  • Special areas for families and children
  • Restaurant car

• All other waggon (within the same class) should be identical
  • You don’t need to search for specific areas
  • You can take the next available seat
  • You can do all (usual) activities you want (work, sleep…..)

• Individualisation of each seat is required!
  → Individualisation of each zone!
Solution: Individualisation – indoor climate

- Individual heating/cooling
  - Seat heating
  - Seat cooling
  - Ventilation in seat
  - Spezial seat cover (textile with individual conditioning)

→ Good ideas and developments from automotive and textile industry
Solution: Individualisation – lighting

- Individual lighting
  - For each "zone"
  - Individual regulation of brightness
  - Exact borderline!
  - Possible solutions with LED

- Individual sun shades
  - Smart glass
Solution: Individualisation – lighting

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Solution: Individualisation – noise

• **Individual noise reduction**
  • Noise *emission*: sound absorbing elements
  • Noise *immission*: e.g. noise cancelling in head-rest
  
  Individual separative elements
General requirements

- **Working and relaxing**
  - *Quite running* of the vehicle
  - E.g. mass-spring-system for the whole cabin
  - or mass-spring-system only for the seat
  - Tables, place of deposit
  - Wifi connexion, power socket

- **Individual on-board information system**
  - Individualized information regarding the individual trip
  - Specific catering order
  - Booking connecting routes etc.
General requirements

- **Relaxing during trip / evening hours**
  - Comfortable, adjustable seats
  - Foldable seats (e.g. to a couch)
    - Usually in the evening hours the utilisation rate is low
    - Especially in the evening hours many passengers want to sleep
  - Or turn down back rest

*Abb. 131: Air New Zealand Economy Skycouch™*
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• Smell production!
  • Good air conditioning
  • Spezial wall coats and materials
General requirements – luggage storage

• Enough luggage storage
• Well situated
  • No lifting of luggage
  • Close to the passengers
• Luggage racks
• Between the seats
• Or complete new system
7. Conclusion

- Luggage storage

- Enough individual space (can’t compare travel time in the plan and in the train)

- more privacy, individualisation of lighting, indoor climate, noise reduction

- Working: WiFi, tables, place of deposits quite running (vibrations)

- Comfortable seats (sleeping, relaxing)
Thank you for your attention

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