

Monetarization of Delay Valuation in Freight



Anna-Katharina Keck
RailTokyo2015



Agenda

1. Introduction
2. Approach
3. Findings
4. Summary



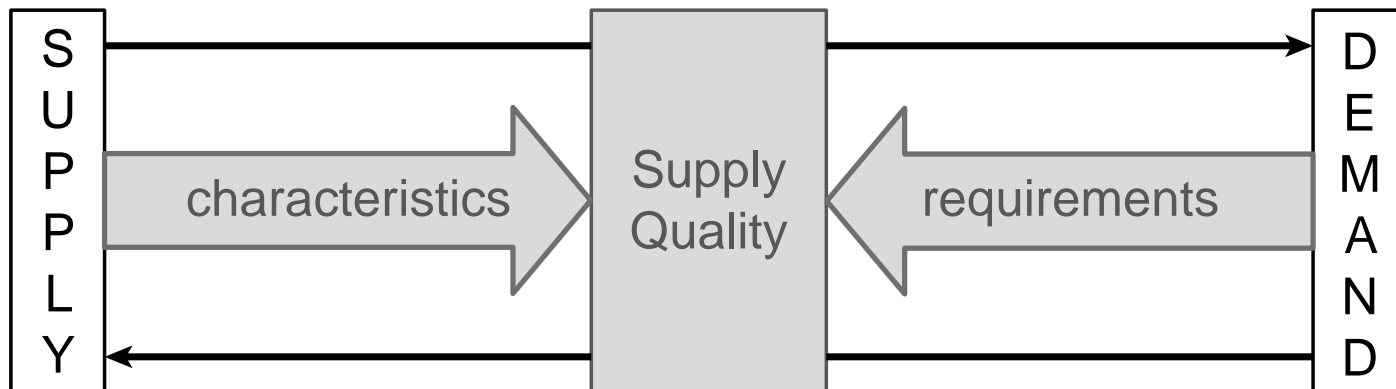
The increased intensity of use of rail infrastructure can entail availability and quality issues.



forecast of freight traffic [tonne kilometre] in Germany 2030
Translated Source (1)

measures concerning the level of supply quality:

- operations
- vehicles
- infrastructure



A logistics-oriented definition and valuation of delays in freight for transport mode choice is targeted.

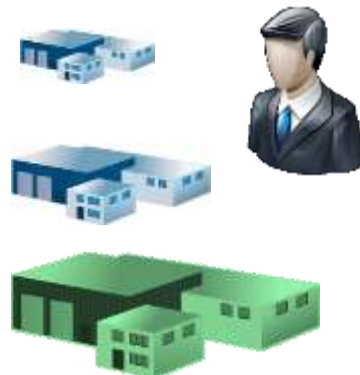
Framework

Related
Work



New Data

Expert
Interviews

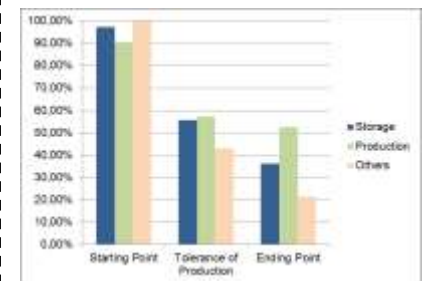


Survey



Results

Analysis



Requirements of the modern transport market seem to be not sufficiently represented in demand models.

Objective:

evaluation of demand reactions generated by measures targeting supply quality
e. g. a higher level of punctuality



Transport Demand Models:

- mostly include price and transport duration
- requirements of the supply chain might be more complex and diverse
→ requirements of the modern transport markets are not sufficiently included
- necessity to include reliability (Significance 2012 | BVU 2014)
- few approaches partially include qualitative characteristics (Oetting/Rio 2014)
→ still lacking requirements and link to logistics and production



The interviews gave an overview on the relevant criteria in mode choice.

- 21 interviews of 90 minutes duration
- forwarders and shippers
- open formulated interview guideline



Results:

criteria when choosing a mode of transport:



- no homogenous approach for a documentation of delays
- delays lead to a loss of image
- time window considered on time: 30 minutes up to one day
- information: as early as possible | proactive



Achieving a determination of value ranges and a relative assessment of criteria through a quantitative survey.

- based on the expert interviews
- pretest of the questionnaire
- 55 interviews of 20 minutes duration
- participants from not predetermined different industry sectors



Distributionslogistik
Allgemeines Teil

1. Erfassung der Transportgüter:

Verpackungsart	Menge (Stk oder (T)U) oder (T)U(x)	Artikel zu einem bestimmten Verkehrsmittel (Luft/See)	Welches Verkehrsmittel? (Straße, Schiene, Binnenschiff, See, Luft)	Grund für die Wahl des Verkehrsmittels

2. Für die weitere Befragung erfolgt die Betrachtung anhand eines gewählten Gütes aus ...
Bitte berücksichtigen Sie bei der Auswahl:

- Hohe Wahl des Verkehrsmittels möglich
- Anwesenheitsmenge
- Repräsentativität für Unternehmen
- Fundierte Aussagen zu den Einflussgrößen der Verkehrsmittelentscheidungen möglich

Auswahl eines der Güter aus 1. _____
Typische Transportzeit des ausgewählten Gütes: _____

3. Wer trifft die Verkehrsmittelentscheidung für Ihre Überweisung?

Sie als Versender

Der Kunde als Empfänger

Intern: _____

Für die weiterführende Bewertung erheben Sie Daten zu den 16M des Kunden haben, ist dies für Sie möglich? ja/nein

- 1) General Section → reference point
- 2) Supply/Distribution Processes → logistics dependency
- 3) Determination of Value Ranges of Criteria Influencing Mode Choice → points in delay valuation
- 4) Assessment of the Importance Influencing Mode Choice → relative assessment of importance



The individual points in time of delay valuation ensure that the whole supply chain is included.

Objective:

- first quantification of the parts of delay valuation

Method:

- no partitioning along the goods or sectors
- function of the applied logistics and production concepts

Requirement:

- aggregation of the data



	No	Yes	Multiple response
Storage	20	36	12
Production	36	20	7
Others	42	14	6

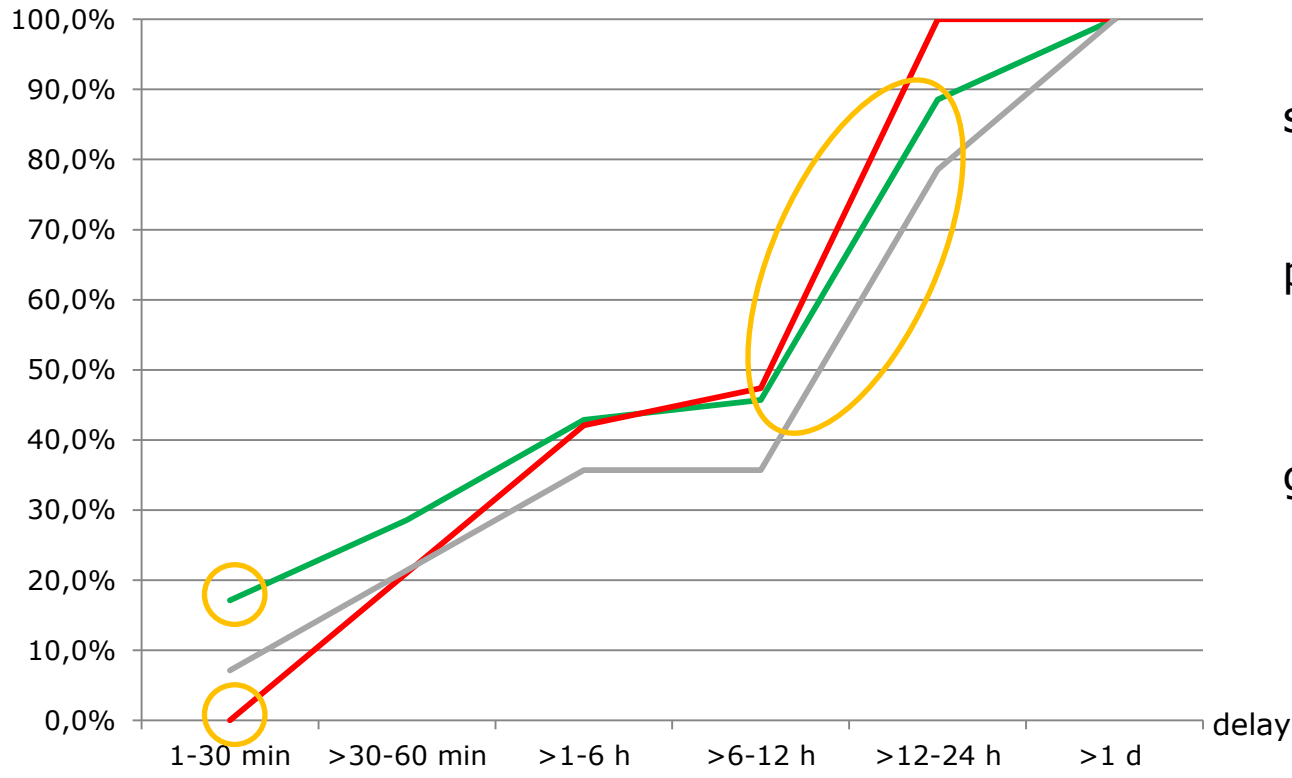


The starting point of the delay valuation of moves in the range from hours to days.

valuation of arrival deviations does not necessarily begin with the minute exceeding the delivery time



aggregated number of indications



storage:
17 % assess 1-30 minutes as delayed
production:
no delay valuation from 1-30 minutes

greatest accumulation:
12 hours to 1 day

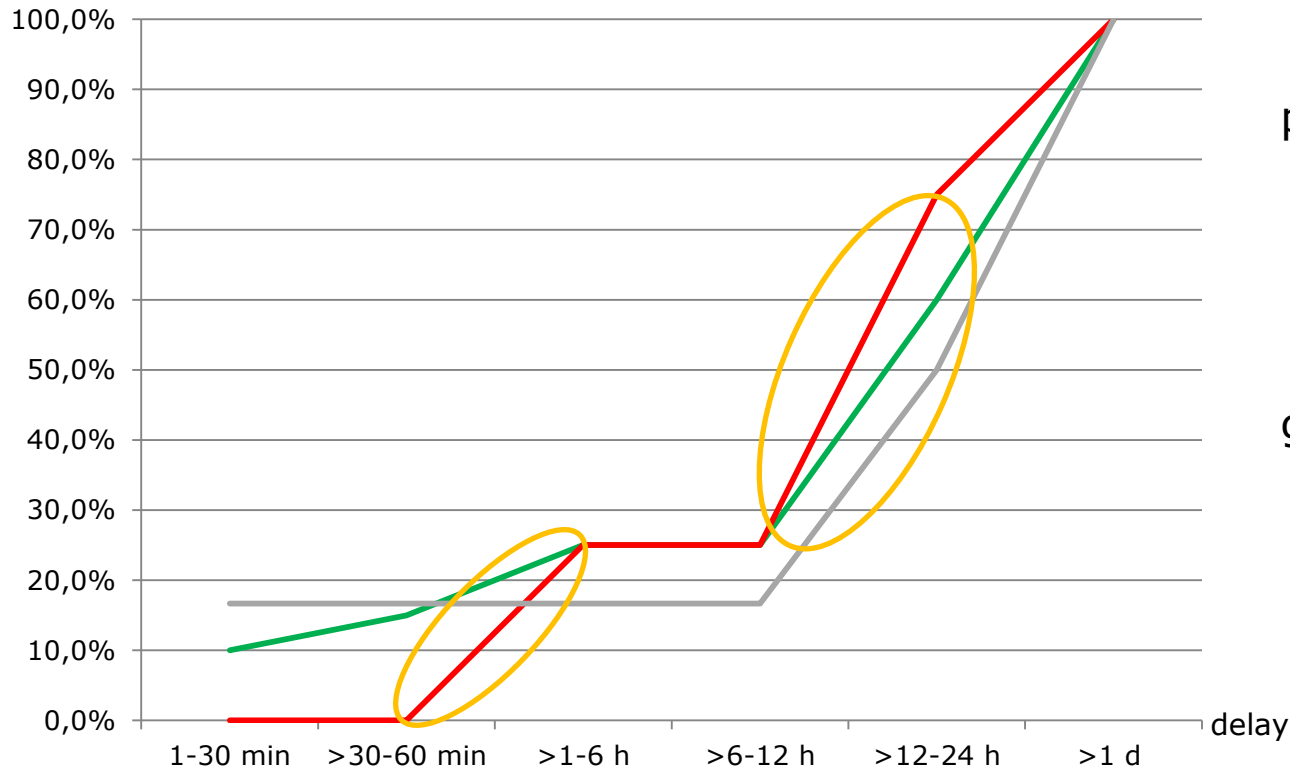
— Storage
— Production
— Others



Effects on the production occur at different points in time.

impact on production gathers in the time frame of 12 hours until 1 day

aggregated number of indications



production:
1-6 hours until
impact as expected
for JIT and JIS
concepts

greatest accumulation:
like starting point of
delay valuation

- Storage
- Production
- Others

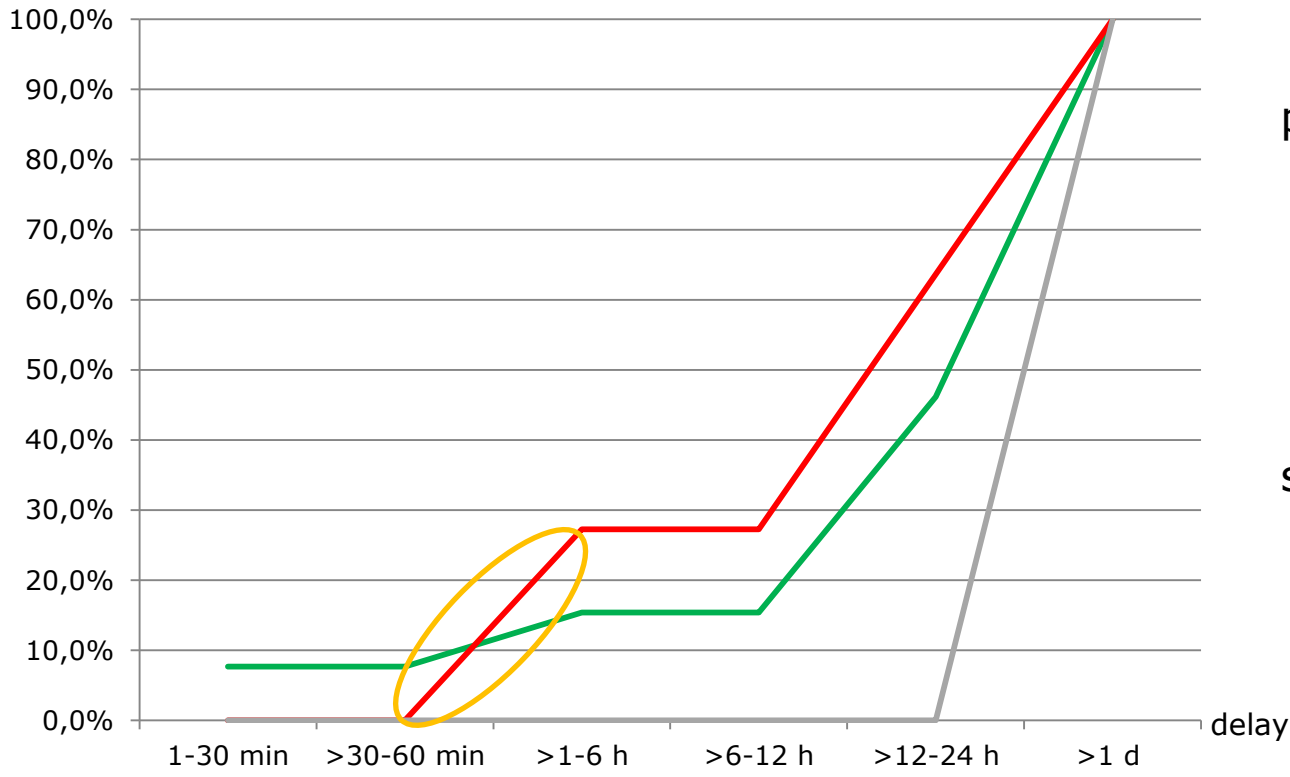


The ending point of delay is commonly located with a delay larger one day.

ending point of delay valuation differs strongly along the categories



aggregated number of indications



production:
early ending point
distributed more
equally
→ fallback
procedures

storage and others:
impaired of a delay
until the delivery
arrives

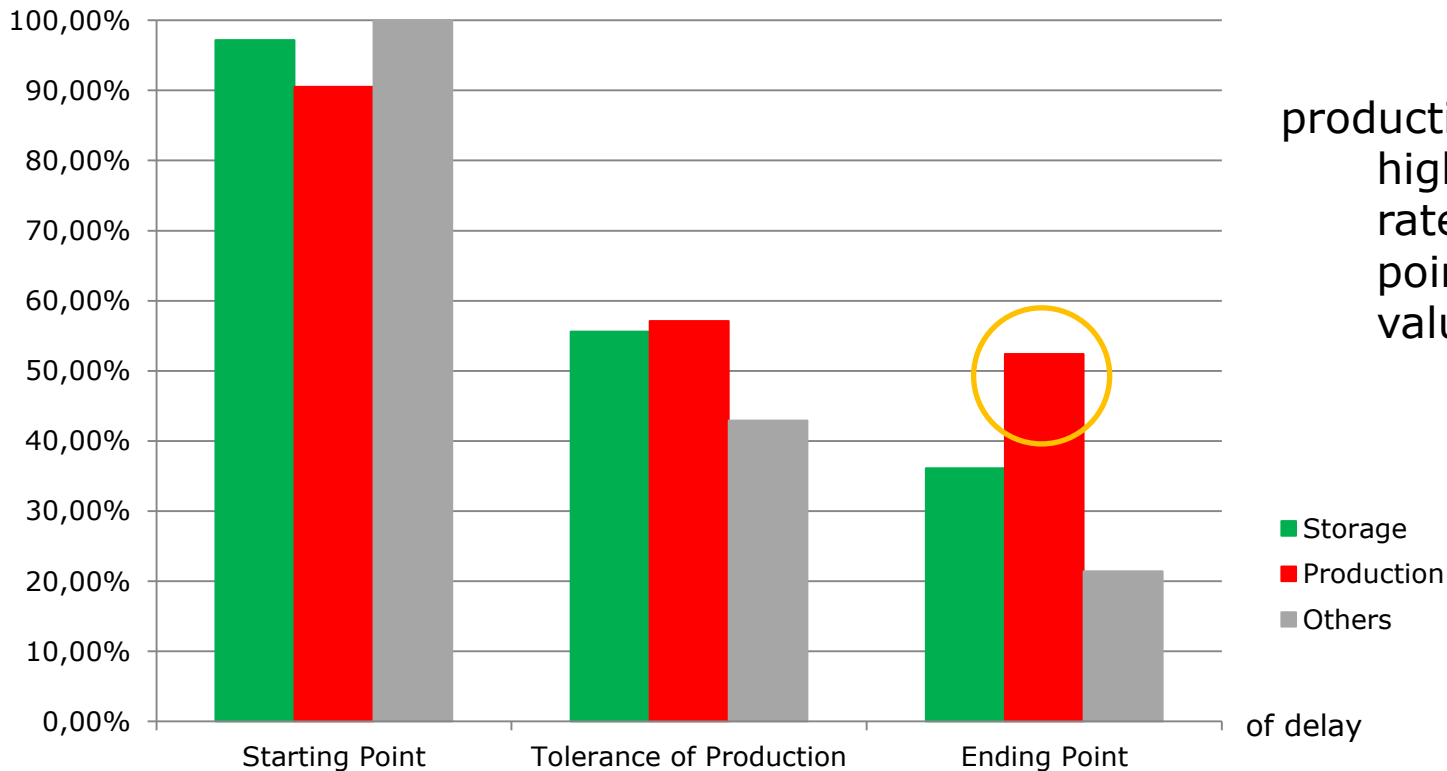
— Storage
— Production
— Others



The specification of the delay evaluation components by respondents is possible only restricted.

determination ability decreases along the time course of delays

aggregated number of indications



production:
higher specification
rate of an ending
point of delay
valuation

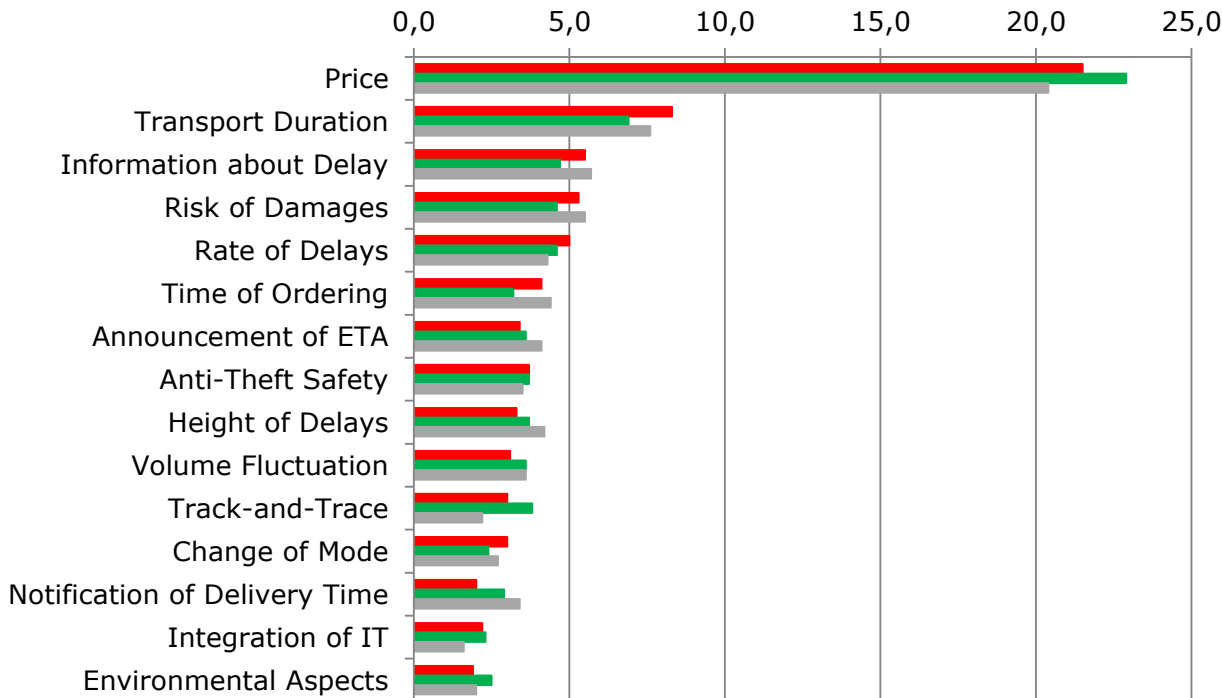


The importance of delays has been assessed accordingly high as in the expert interviews.

price is the most important criteria in all categories



assigned Points of possible 75 Points



rate of delay is more important than the height of delay

available information in case of delay should be proactive
→ necessary to intervene

- Storage
- Production
- Others



A conclusive assessment of planned activities optimizing supply quality is necessary.

- different types of additional costs occur along the chronological sequence:



- time-and-process dependent function of impacts and resulting costs
 - costs are located at the transport customer
 - the customer is the catalyst for a demand reaction

**effects of delays need to be monetarized
in a customer-dependent way**



- (1) [Bundesministerium für Verkehr und digitale Infrastruktur 2014]
Präsentation zur Verkehrsprognose 2030
Online verfügbar unter: <http://www.bmvi.de/SharedDocs/DE/Pressemitteilungen/2014/044-dobrindt-verkehrsprognose2030.html>
- Significance, Goudappel Coffeng, and NEA. Erfassung des Indikators Zuverlässigkeit des Verkehrsablaufs im Bewertungsverfahren der Bundesverkehrswegeplanung, 2012.
- BVU Beratergruppe Verkehr+Umwelt GmbH and TNS Infratest. Entwicklung eines Modells zur Berechnung von modalen Verlagerungen im Güterverkehr für die Ableitung konsistenter Bewertungsansätze für die Bundesverkehrswegeplanung: Vorläufiger Endbericht, 2014.
- Andreas Oetting and Angela Rio. Bewertung von Verspätungen im Güterverkehr durch den Endkunden. Eisenbahntechnische Rundschau, 2014(7+8), 2014.

