
# Factors Influencing the Design of Mobile Services

Prof. Dr. Michael Amberg,

Jens Wehrmann, Ralf Zimmer

Chair for Business Information Technology
University of Erlangen-Nürnberg, Germany


# Motivation

- **Design** of mobile services is highly complex.
- Even extensive marketing campaigns don't lead to satisfying **revenues.**
- **Influencing factors** that are not adequately considered during the planning process may lead to incorrect specifications.

➢ How can a **theory based classification** of influencing factors look like?

➢ What **methodologies** are suitable for the planning of the design of mobile services?


# Research Design

- **2-step Proceeding**
  - 1st step: Classification of basic dimensions
  - 2nd step: Identification of sub-dimensions for each dimension

- **Theory Based Identification** of Influencing Factors
  - Analysis of State of the Art literature (Desk Research)
  - Evaluating the suitability of different approaches

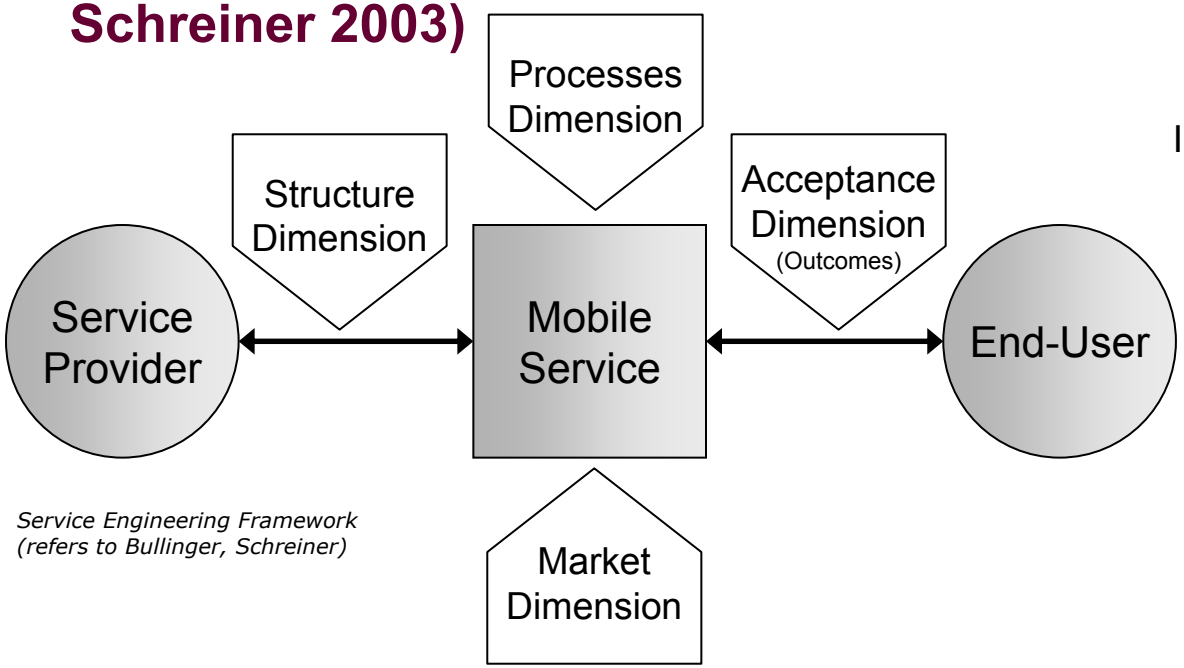
➢ **Framework** for the Identification of Influencing Factors for the Design of Mobile Services

➢ **Empirical Study** for the validation of the results


# Basic Dimensions

## Regarded Approaches for a Basic Subdivision:

- Constitutive Approach (Donabedian 1966)
- Quality Circle for Services (ISO 1992)
- Service Development (Edvardsson, Olsson 1996)
- Service Design (Ramaswamy 1996)
- ✓ **Service Engineering Framework (Bullinger, Schreiner 2003)**




*Service Engineering Framework (refers to Bullinger, Schreiner)*

| | Service non-specific | Service specific |
|---|---|---|
| Internal Influences | Structure Dimension | Process Dimension |
| External Influences | Market Dimension | Acceptance Dimension |

*Structure of the basic dimensions*


# Framework for the Classification of Influencing Factors

## Design Criteria for the Framework:

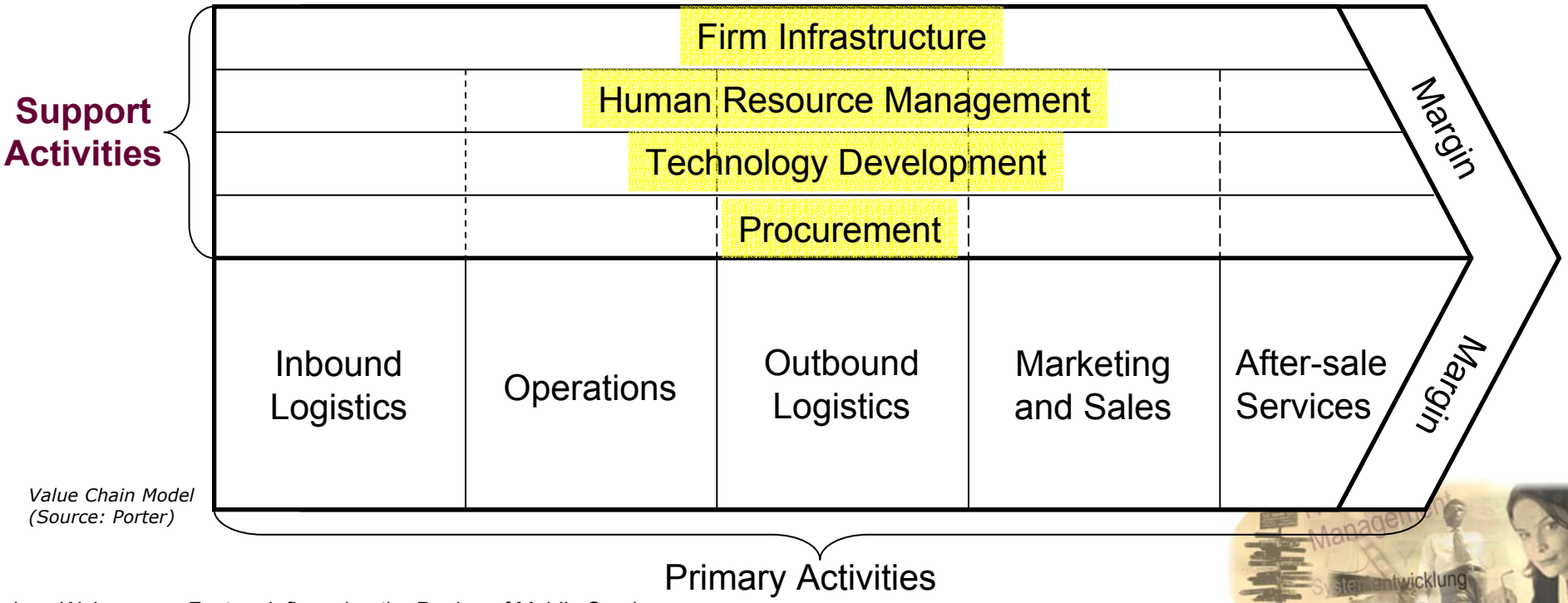
- Suitability for mobile services
- Consideration of all relevant aspects (completeness)
- Systematic and theory based Identification of influencing factors
- Disjunctive classification
- Feasible level of abstraction

➢Financial influencing factors are integrated in each sub-dimension


# Structure Dimension

## Regarded Approaches for a Subdivision:

- 7-S-Model (Peters et al. 1980)
- 5-Factors Model (Pfeiffer et al. 1994)
- ✓ **Support Activities of Porter's Value Chain Model (Porter 1995)**




*Value Chain Model (Source: Porter)*

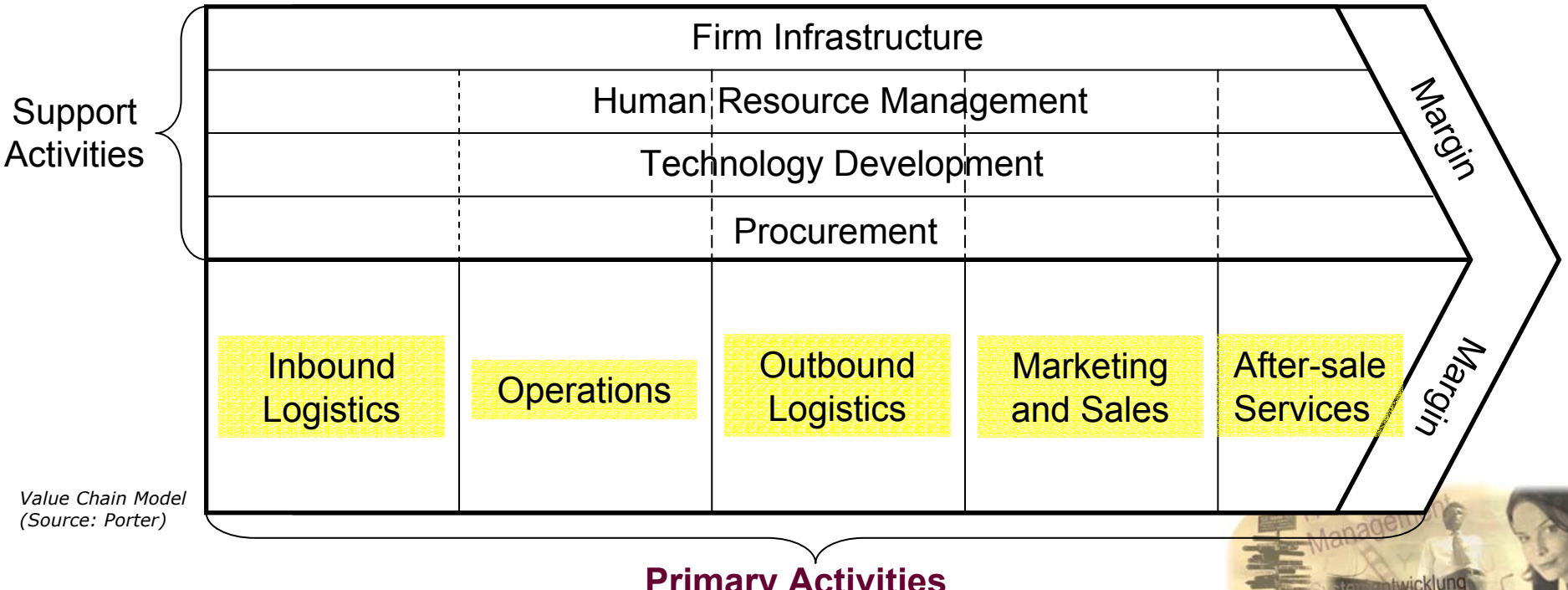

# Structure Dimension

| Sub-Dimensions | Examples for Influencing Factors |
|---|---|
| **(Firm) Infrastructure** | • Organizational Structure (e.g. existing Structure)<br>• Financial Resources (e.g. sufficient Ressources)<br>• Brands (**e.g. usable or transferable Brands**) |
| **Human Resource (Management)** | • Knowledge (e.g. existing knowledge)<br>• Personnel Quantity (e.g. manpower requirements)<br>• Personnel Qualification (**e.g. key qualifications**) |
| **Technology (Development)** | • IT Systems (e.g. Servers, Content Management Systems)<br>• Technical Standards (e.g. UDDI, WAP, **UMTS**)<br>• Experience with the Integration of Emerging Technologies |
| **Procurement** | • Content Acquisition (e.g. Contacts, Relationships)<br>• Information Retrieval (**e.g. Information**, News, Location Information)<br>• Technical Procurement (e.g. Server, OS, DB, Software) |


# Process Dimension

## Regarded Approaches for a Subdivision:

- ✓ **Primary Activities of Porter's Value Chain Model (Porter 1995)**
- Value Chain Model (Fantapiè Altobelli, Bouncken 1998)
- Value Shop (Stabell, Fjeldstad 1998)
- Value Network (Stabell, Fjeldstad 1998)




*Value Chain Model (Source: Porter)*

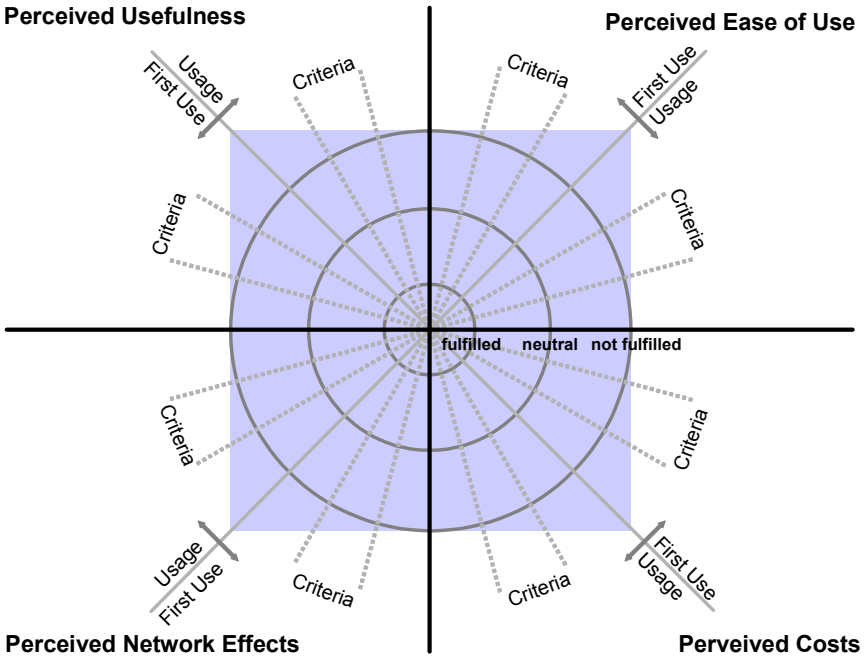

# Process Dimension

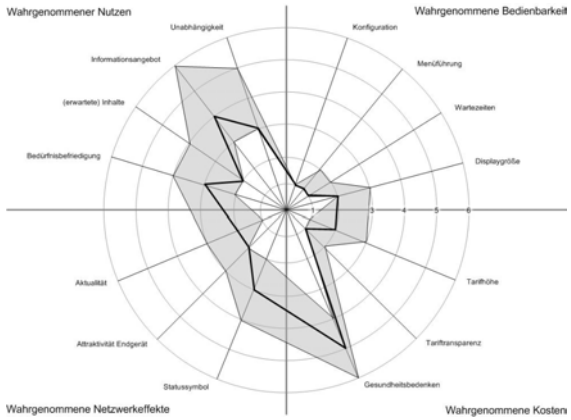
| Sub-Dimensions | Examples for Influencing Factors |
|---|---|
| **Information Handling (Inbound Logistics)** | • Content Handling (e.g. Storage, Databases)<br>• Transaction Standards (e.g. Interfaces, Technologies)<br>• Handling of Situation Determinants (**e.g. Location Information**) |
| **(Technical) Operations** | • Service Generation (e.g. Databases, **Content Management**)<br>• Reliability (e.g. Security, System Stability)<br>• Situation Dependency Concepts (e.g. Location, Personalisation) |
| **Service Distribution (Outbound Logistics)** | • Co-operations (e.g. Portals, MNO's, SP's)<br>• Distribution Concepts (**e.g. Push, Pull**)<br>• Access Technologies (e.g. GSM, GPRS, UMTS) |
| **Marketing (and Sales)** | • Promotion (**e.g. Advertisement**, Public Relations)<br>• Placement (e.g. Target Groups and Markets)<br>• Price (e.g. Elasticity, Structure) |
| **Customer Care (After Sales Services)** | • Customer Support (e.g. Help Systems, **FAQ's**, Hotlines)<br>• Customer Relations (e.g. Controlling, CRM)<br>• Service Enhancement (e.g. Ideas, Adaptation Mechanisms) |


# Acceptance Dimension

## Regarded Approaches for a Subdivision:

- Technology Acceptance Model (TAM) (Davis 1989)
- Technology Task Fit Model (TTFM) (Goodhue 1995)
- Dynamic Acceptance Model (Kollmann 1998)
- Procedure Model (Hermann et al. 1999)
- ✓ **DART/Compass Acceptance Model (Amberg et al. 2002)**
- Customer Satisfaction Model (Silberer et al. 2002)



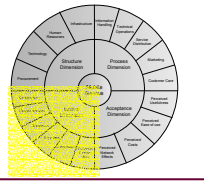




*DART (Compass Acceptance Model)*
*(Source: Amberg et al.)*


# Acceptance Dimension

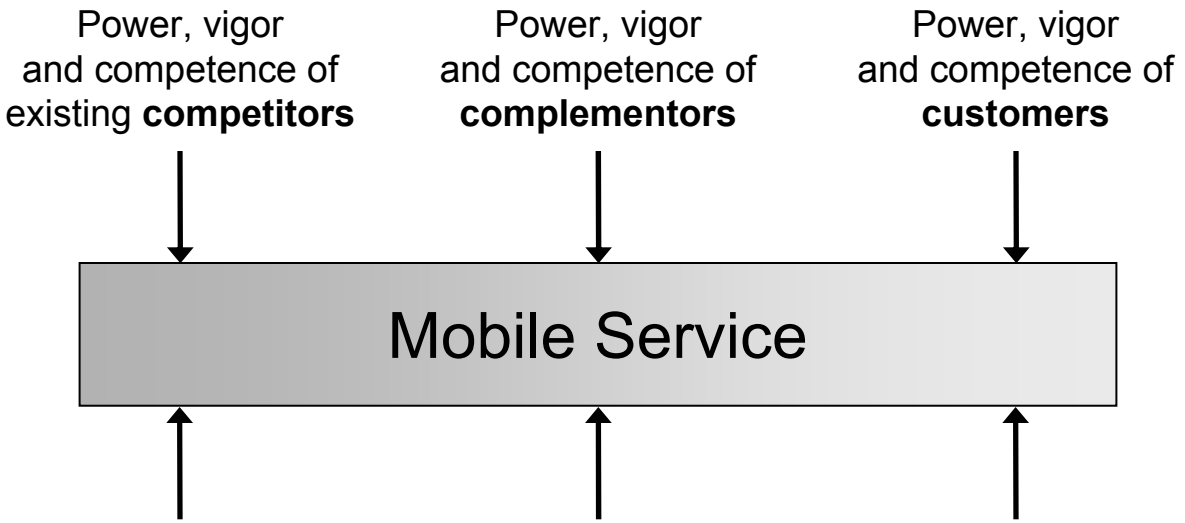
| Sub-Dimensions | Examples for Influencing Factors |
|---|---|
| **Perceived Usefulness** | • Added Value (**e.g. Fun Factor**, Information)<br>• Emotions (e.g. Feeling of Independence)<br>• Information Quality (e.g. Timeliness) |
| **Perceived Ease of Use** | • Initial Operation (e.g. Registration, First Configuration)<br>• Usability Service (**e.g. Intuitive Handling**, Idle Time)<br>• Usability Terminal Equipment (e.g. Display, Keypad) |
| **Perceived Costs** | • Monetary Costs (e.g. Purchasing Costs, Basic Rates, **Usage Costs**)<br>• Transparency (e.g. Tariff Models, Cost per Minute/Request/Bit)<br>• Health Concerns (e.g. Dangerous Radiation) |
| **Perceived Network Effects** | • Network Coverage (e.g. Dissemination, Roaming)<br>• Terminal Equipment (**e.g. Design**, Size, Colour)<br>• Image (e.g. Service as Status Symbol, Group Affiliation) |


# Market Dimension



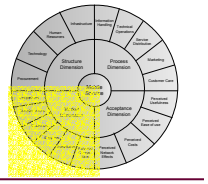
## Regarded Approaches for a Subdivision:

- 5 Forces (Porter 1985)
- ✓ **Six Forces of the Market (Grove 1992)**
- 3 Forces (Downes, Mui 1998)
- Wireless Value Chain (Parlett 2000)

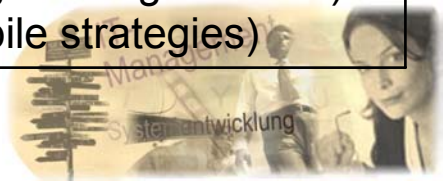



*Six Forces Model (Source: Porter)*


# Market Dimension

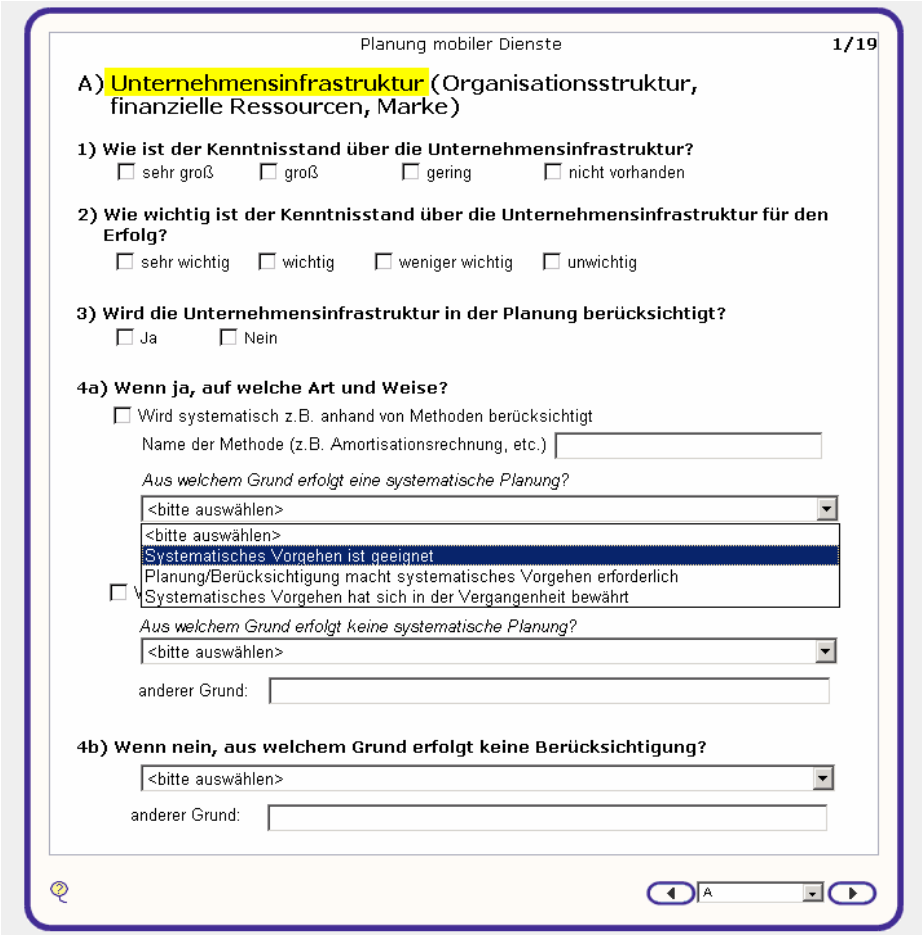


| Sub-Dimensions | Examples for Influencing Factors |
|---|---|
| **Competitors** | • **Other Service Providers** that provide equal services<br>• MNO's (in their role as SP) that provide equal services<br>• Hybrid products (e.g. Service Combinations, Broadcast Information) |
| **Complementors** | • Portals and Platforms (**e.g. Startpage of MNO or Intermediate**)<br>• Mobile Devices (e.g. Required Technologies)<br>• Independent Payment Systems (e.g. PayPal, MoxMo) |
| **Customers** | • Requirements (e.g. Demands, Needs)<br>• Quantity (**e.g. Potential End-Users**, Market Size)<br>• Properties (e.g. Structure and Attributes) |
| **Suppliers** | • **MNO's** (Guidelines, Technology, Location Information)<br>• Content Provider (e.g. Monopoles, Timeliness, Pricing)<br>• Third Parties (e.g. Billing, Encashment) |
| **Substitutes** | • "Non Mobile" Products (**e.g. Map instead of Navigation Service**)<br>• Emerging Technologies (e.g. Faster, Smaller, Better)<br>• New Approaches (e.g. Automation instead of Mobile Service) |
| **Potential Competitors** | • Emerging SP's (e.g. Entrepreneurs)<br>• Existing SP's (**e.g. Me Too-Strategy**, expanding existing services)<br>• Traditional Enterprises (e.g. expanding with mobile strategies) |



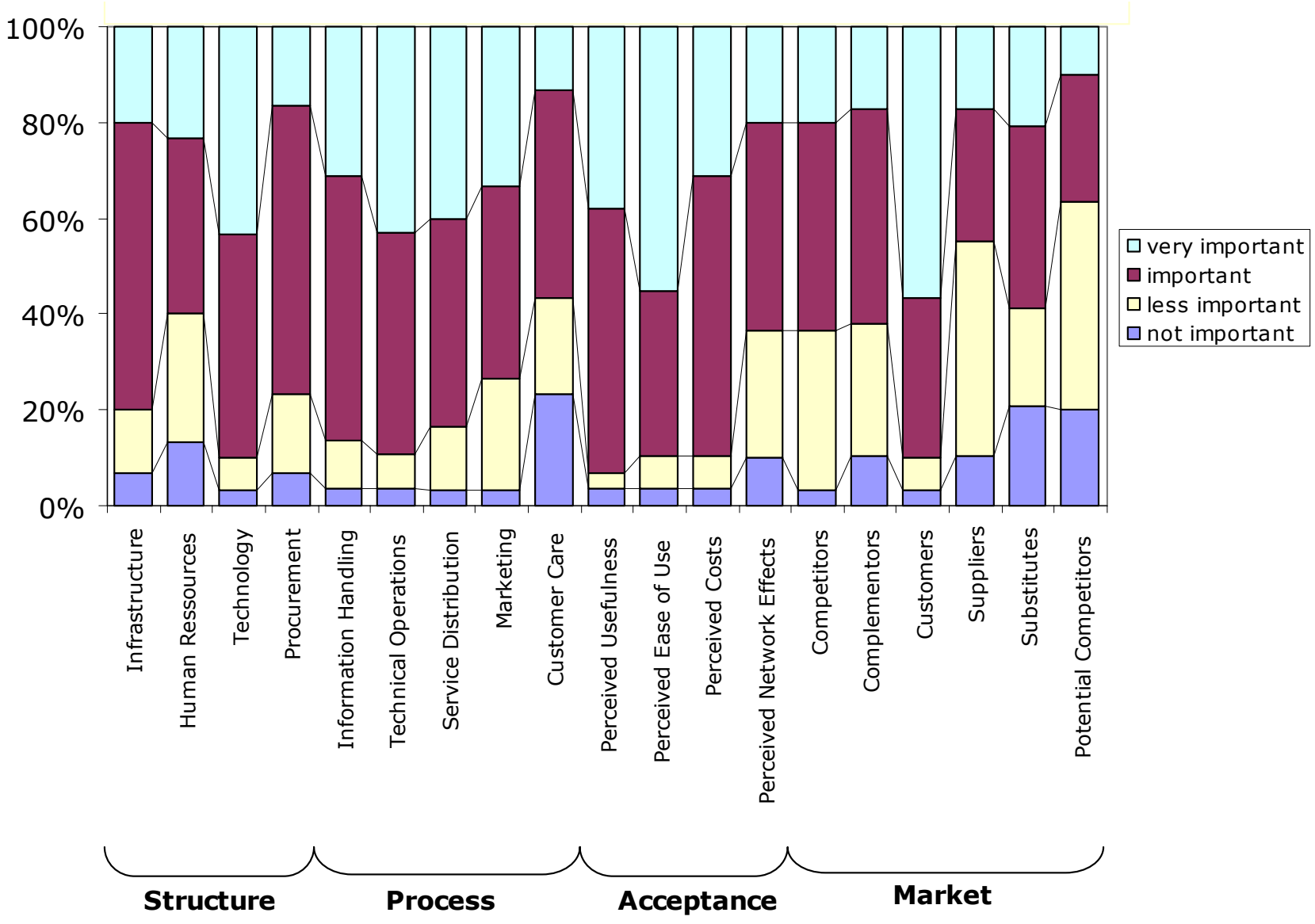

# Empirical Study

- **Basics of the Study**
  - 183 German mobile service providers were asked for participation
  - Participation rate: 17%
  - Method: Internet questionnaire
- **Goals of the Study**
  - Importance of dimensions and sub-dimensions
  - Knowledge about the influencing factors
  - State of the art of existing planning processes
  - State of the Art of applied methodologies



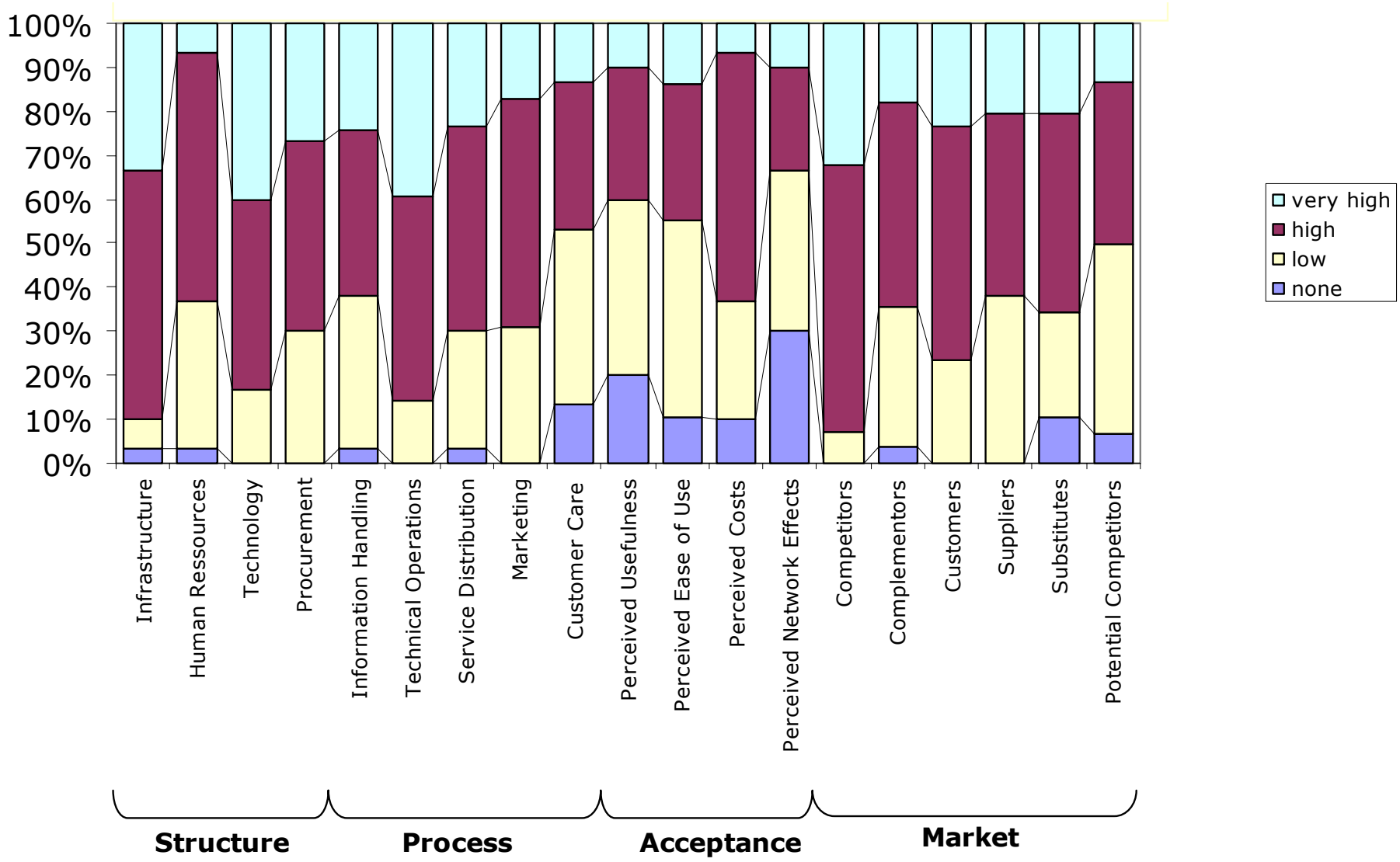

*Example of an internet questionnaire slide*


# Empirical Study: Importance



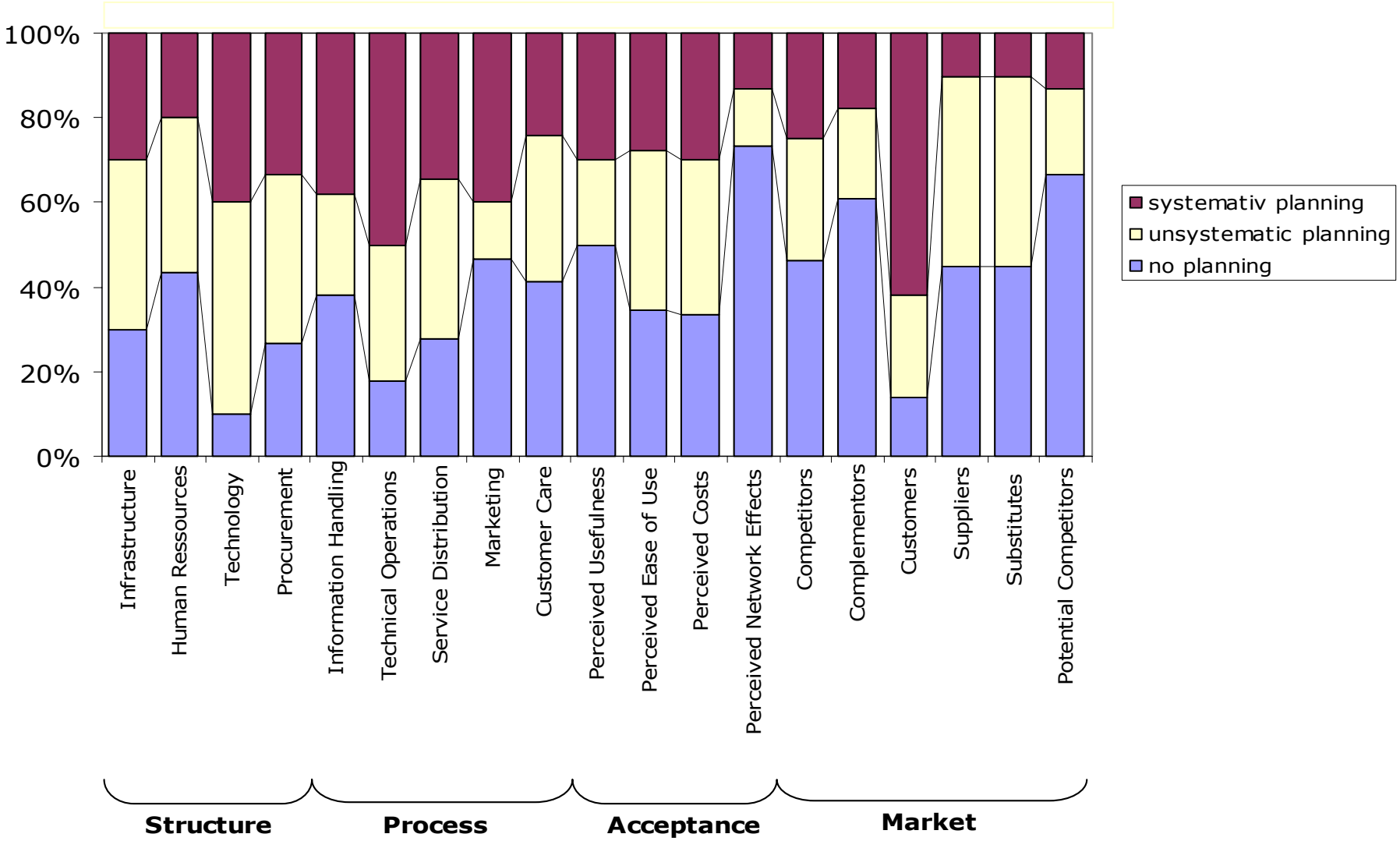


# Empirical Study: Knowledge





# Empirical Study: Planning Process

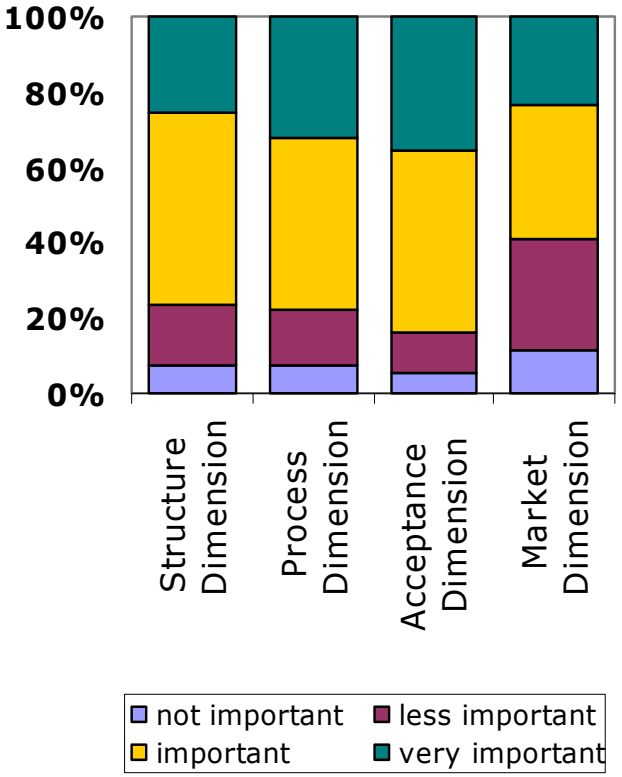




# Empirical Study: Conclusions

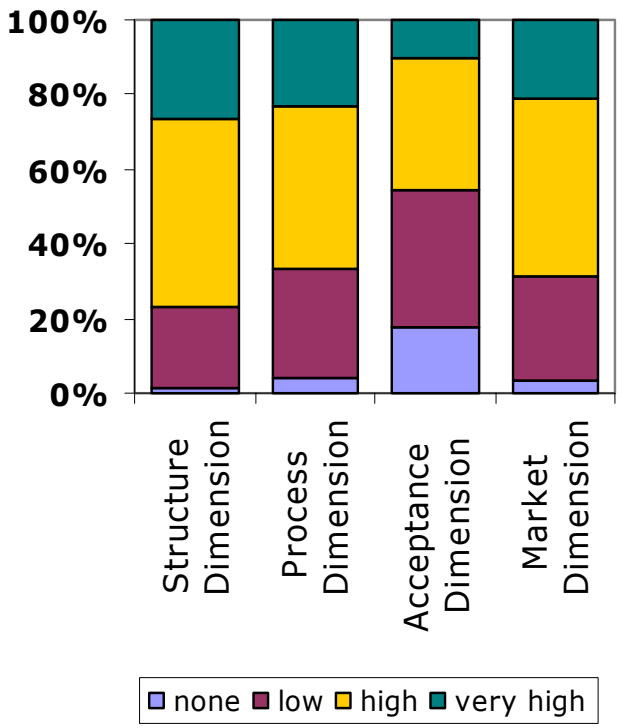
## Importance:

- All dimensions are highly relevant
- Esp. the acceptance is evaluated as very important



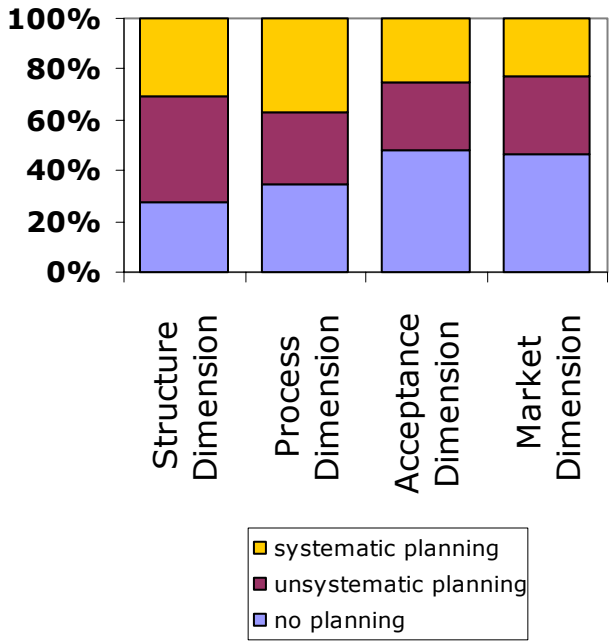

## Knowledge:

- The acceptance dimension has the lowest knowledge




## Planning:

- There are deficits in the systematic planning of the acceptance and the market dimension





# Empirical Study: Methodologies

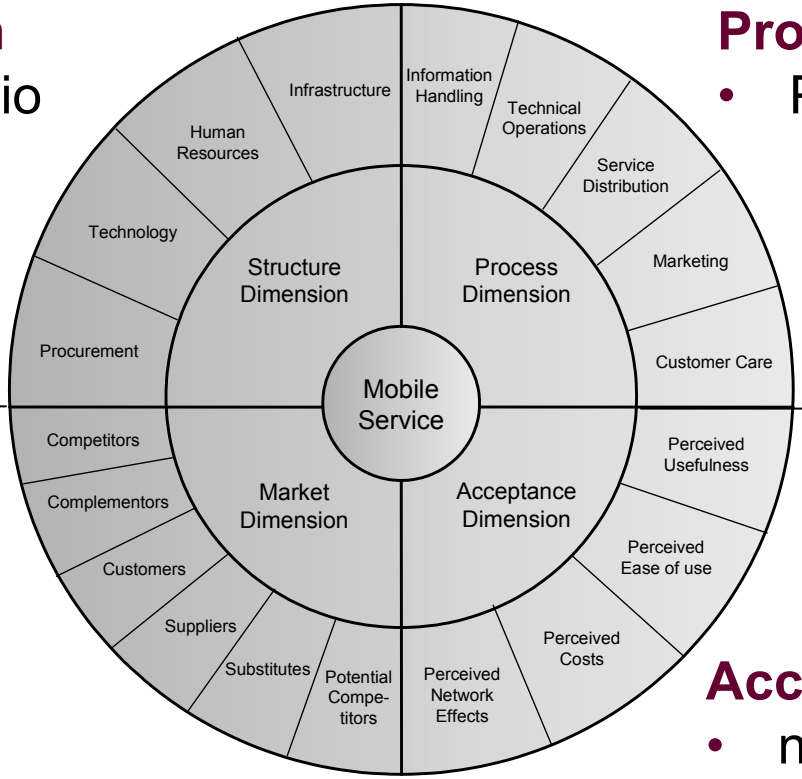
In a **first step** the participants were asked to specify Methods by themselves (in a free text field).

## Structure Dimension

- Technology-Portfolio
- Amortisation Analysis

## Process Dimension

- Project Management




## Market Dimension

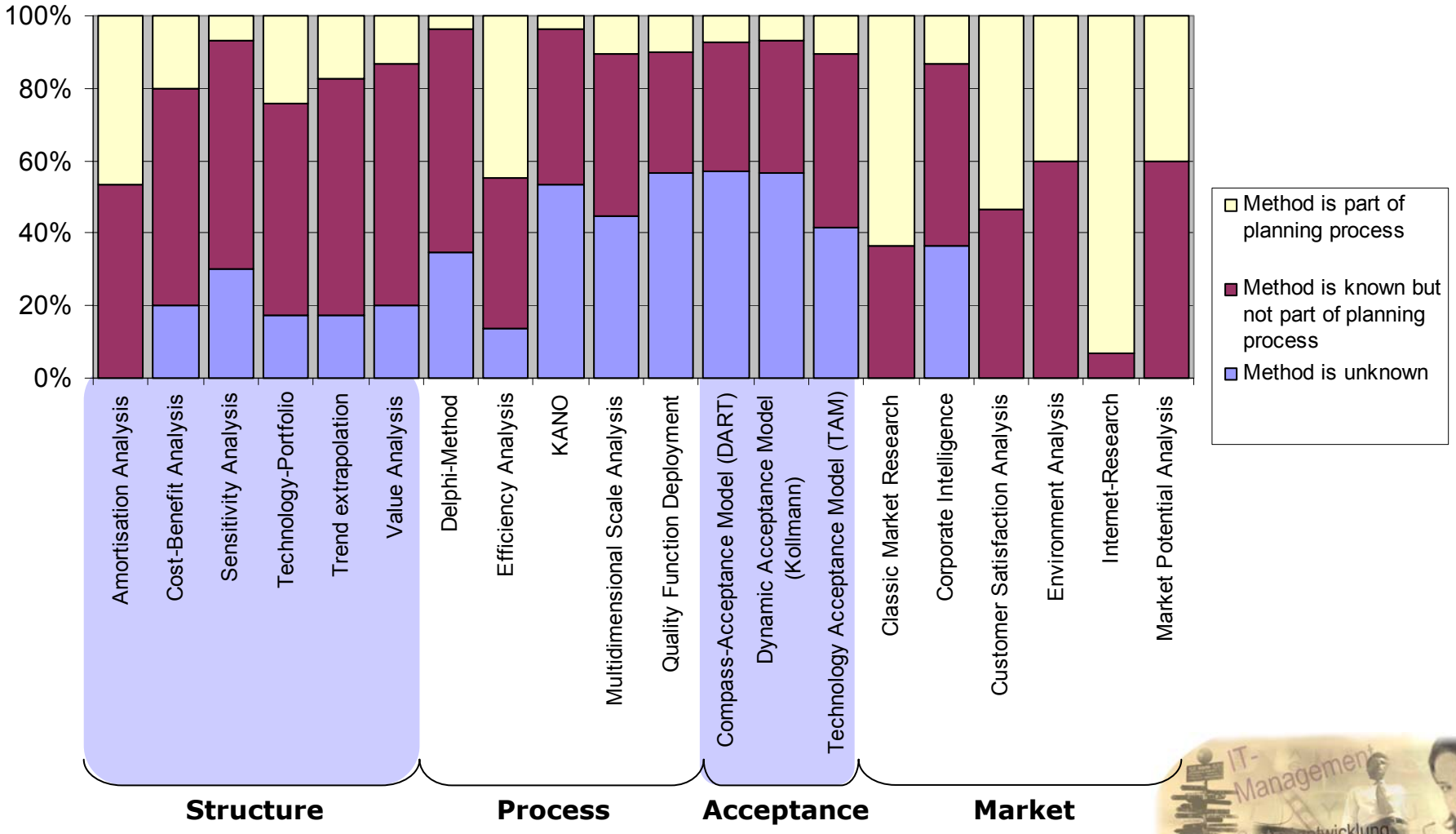
- Market Research
- Customer Analysis

## Acceptance Dimension

- no methods specified


# Empirical Study: Methodologies

In a **second step** the participants were asked to select Methods from a predefined List.




# Conclusions

- The **theory based framework** seems to be appropriate for the systematic classification of influencing factors for the design of mobile services
- Even if the **end-user's acceptance** is highly important, it is mostly not planned
- The most enterprises don't know the relevant **influencing factors** of this dimension
- **Planning methods** for **evaluating the end-user's acceptance** are currently not established