Geomarketing
Location Intelligence and Spatial Decision Support Systems in Business

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Agenda
- Why Location Intelligence in Business?
- Basic Concepts of Business-GIS & Geomarketing
- Business-GIS Applications Overview - What Location Intelligence can do for you?
- A Basic Range of Queries and Concepts of Reasoning with a GIS
- Business Location Intelligence
  - Site Selection
  - Demographic Indexing
  - Cannibalization Studies
- Address-related Applications
- Geomarketing
- Location Based Services
- Routing and Fleet Management
- Related Materials

The 5th P in the Marketing Mix: Processing Product, Price, Promotion, and Place

Product Policy
- Quality
- Quantity
Sales Mix
- Advertising
- Personal Selling
- Communications Policy
Sales Promotion
- Price Policy
- Sales Discount
- Cash Discount
Price
- Physical Distribution
- Sales Organization
Distribution Policy
- Distribution Channel
- Sales Promotion
- Public Relations
Marketing Mix

P. Staufer-Steinnocher (2002-2007); Institute for Economic Geography and GIScience, WU Wien
Why Geomarketing?

- These and many more business-related questions can be answered efficiently and graphically by means of Geomarketing tools:
  - How is the distribution of my A, B and C type customers?
  - In which areas does my turnover grow?
  - Which sales representatives are in charge of which customers?
  - What is the size of my branches’ catchment areas?
  - How can I guarantee optimal services to my customers?
- Company-owned data as well as population, economic and potential data are analyzed by means of digital maps.
- Geomarketing thus offers a goal-oriented knowledge and information analysis and the processing of business specific and market specific data.
Information Processing Concept in Business-GIS

- A Business-GIS stores information about the company’s business activities and its environment as a collection of thematic layers, which are connected to each other via the geographic location of their objects (e.g., addresses, geographic coordinates).
- Simple, but extremely powerful and flexible concept for entrepreneurial decision support, e.g.,
  - customer analysis,
  - market analysis,
  - location and territory analysis
  are typical areas where geomarketing is used.

Typical Questions for Business-GIS & Geomarketing

- **Where** is a (geographic) object or event located?
  - e.g., customer addresses, competitors, micro-markets
- **What is the characteristics** of a specific geographic object/event?
  - e.g., demographic profile and socio-economic characteristics of the population in a neighborhood / sales area
- **Which** geographic objects/events are located in a **specific distance to a center**?
  - e.g., potential customers, who live in max. 5 minutes driving distance from a service center

How Business-GIS Tools work ...

- Geographic Data
- Market Data (internal/external)
- Problem Specific Data Processing
- Link via Spatial Key Variables
- Spatially Differentiated Market View
Micro-Geographic Market Segmentation

... is a data analysis concept in the market segmentation arena protecting the privacy of individuals/consumers.

- Analysis of segmentation criteria not based on the individual customer but – for the reason of protecting data privacy – based on small-scale geographic neighborhoods
  - Behavioral and lifestyle criteria
  - Socio-demographic and socio-economic criteria
  - Geographic criteria

Examples
- Devonshire Economic Data
  - providing a full picture of consumer spending and actual sales activity in any market: supply and demand.
- Bank Summary and Location Data
- Consumer Expenditures
  - average annual dollars spent and aggregate dollars spent on retail and services

The MOSAIC Lifestyle Segmentation

Objectives of the Classification (Spatial Insights, Inc., 1997-2007)

- To create a series of neighborhood types that provide the most powerful discrimination of consumer behavior, lifestyles, and attitudes.
- To build types that are as recognizable and meaningful as possible to marketers.
- To ensure that each of the types contain sufficient numbers of households to be statistically reliable for most analyses.
- To ensure that each cluster is homogeneous in terms of demographics and consumer behavior.
- To avoid an excessive concentration of individual U.S. MOSAIC types within particular geographic regions, except where appropriate.

For more information about how MOSAIC was developed, please click here.

Range of Business-GIS Applications

- Geographic Data
  - Market Data: e.g., demography, competitors, potentials
  - Business Data: e.g., locations, customers, suppliers
  - Geocoding
- Location Intelligence
  - e.g., site selection, proximity studies, routing & tracking
- Micro Markets
  - Analysis Building Blocks
    - market structure, customer structure, probability of purchase, etc.
Market Analysis
- characterize the market itself
- characterize geographic market segments
- use internal and external data
- get first insights about the market
  ... for example

Customer Analysis
- Distribution of customers in geographic market segments
- disaggregated by products, sales areas, etc.
- provides a basis for cross-selling activities, media planning, mailings, location analysis, selection of test markets, risk management, sales controlling, etc.
  ... for example
Top 50 Businesses Disaggregated by Industry Sector in the Market Area (500m around Franz-Josefs-Bhf.)

<table>
<thead>
<tr>
<th>Count</th>
<th>Level 1 Industry Sector</th>
<th>Level 2 Industry Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>Associations, Societies, Organizations</td>
<td>Organizations, Public Admin. Offices/Services</td>
</tr>
<tr>
<td>34</td>
<td>Medical Practitioners (Doctors)</td>
<td>Health Care Services</td>
</tr>
<tr>
<td>34</td>
<td>Psychologists, Psychotherapists</td>
<td>Health Care Services</td>
</tr>
<tr>
<td>27</td>
<td>Coffee Houses and Bars</td>
<td>Tourism, Gastronomy</td>
</tr>
<tr>
<td>25</td>
<td>Hairdressers and Beauty Salons</td>
<td>Chemical, Pharmaceutical, Cosmetics Sector Services</td>
</tr>
<tr>
<td>19</td>
<td>Grocery/Retailing</td>
<td>Food and Beverages/Retail</td>
</tr>
<tr>
<td>18</td>
<td>Child’s Ware</td>
<td>Textile and Leather/Retail</td>
</tr>
</tbody>
</table>

Market Analysis (1)

- **Building Block** for numerous Business-GIS Applications
  - Provides basic information about market and customer structures.
  - Establishes the basis for market penetration and proximity studies.
  - Easy to perform.
- **Analysis** of geo-referenced data describing the markets, e.g., block-level geo-demographic data (= micro-geographic neighborhoods) for a market area (see the example on the following slides):
  - Age,
  - Educational level,
  - Ethnicity,
  - Marital status,
  - Household size and type, etc.

Market Analysis (2)

Procedure: analyze geo-demographic key-variables (age, education, household structure, family size) for census blocks or enumeration districts.

- Target group characterized by demographic variables.
- Analyze key-variables for the 5 best-performing micro markets.
- Compare parameter values of 5 best-performers to average-performers.
- Significantly higher than average.
Building Blocks for Business-GIS Applications (II)

Analysis of Market Performance
- Relates geo-demographic structures with customer data
- Provides answers to questions like...
  - What does the regional distribution of my customers look like?
  - Which micro-markets are performing well/badly?
  - Where is a concentration of "important" or "less important" customers?
  - Which customers are visited by which location or by which sales representative?
  - E.g., Territorial Analysis

Proximity Analysis
- Determines catchment areas
- Necessary for analyzing market potentials
- Might consider the locations of competitors
- Supports analysis of
  - Existing points-of-sales
  - Potential points-of-sales
  - Mergers- and acquisition decisions
  - E.g., Site Analysis

Analyzing Market Performance (1)

**Technique**
- Classify key data of your business - calculating business ratios
  - Internal data only
  - Jointly with external market information

**Key figures for market performance**
- **Customer penetration ratios**
  - Level-1 penetration = # customers / household (alternatively, per resident)
  - Level-2 penetration = # customers / target group household
  - Level-3 penetration = # customer / product owners household
- **Sales volume ratios**
  - Sales volume per household, or resident, or target group member, or customer, etc.
  - Gross profit, average spending per household or customer, etc.

Analyzing Market Performance (2): Using GIS-Tools

- Analysis based on vector data resulting in thematic maps
- Cell-based analysis (density- and neighborhood analysis)
Analyzing Market Performance (3): Procedure

- **Step-wise procedure**
  - **Prerequisites**
    - geo-code your internal business data – join with geographic data
    - acquire data describing market characteristics
  - **Step 1: select type of key figure**
    - customer penetration ratio or sales volume ratio
    - decide whether to use internal data only or to enhanced external market data
  - **Step 2: select the type of micro-markets [granularity of markets]**
    - census blocks, block groups, enumeration districts, administrative units, postcode areas, etc.
  - **Step 3: select GIS analysis technique**
    - vector-data based
    - cell-based

Analyzing Market Performance (4):
An example for geo-coded customer data

Granularity of Micro-Markets: census districts
Aggregate customer data and turnover figures to census districts
Vector-Based Analysis results in Choropleth Maps

Figure: Turnover per Inhabitant

Source: Customer data from a retailer (noise added)

Cell-Based Analysis results in Density Maps

Figure: Turnover per Inhabitant

Source: Customer data from a retailer (noise added)

GIS-based Planning of a Direct Marketing Campaign

Step-wise procedure

**Prequisites**
- Geographic boundaries file for direct marketing regions
- Data describing the geo-demographic structure of direct marketing regions

Define target group and quantity of promotion material:
- Option 1: target group is known, quantity of PR materials fixed
  - define target group (geo-demographic market segmentation)
  - select best-matching micro-markets until given quantity of PR material is spent
  - result provides information about losses due to non-selective advertising
- Option 2: target group is known, threshold value for losses due to non-selective advertising is given
  - define target group (geo-demographic market segmentation)
  - select micro-markets which are below the threshold value for losses due to non-selective advertising
  - result provides information about the necessary quantity of PR materials and, hence, costs of the campaign
Target Group

"Families"

Quantity

100,000 Folders

=> threshold for losses due to non-selective advertising: ~25%

Source: DSA

Planning a Direct Marketing Campaign (2)

Planning a Direct Marketing Campaign (2)

Location Intelligence Applications (I)

Location Analysis and Location Planning

- Analyze locations for individual enterprises, retail chains, branch offices of banks, production locations, supply chain partners, etc.

- **Tasks:** evaluation of market areas in terms of potentials, customers, competitors, etc.

Distribution Planning

- Analysis and restructuring of sales and service areas, evaluation of sales performance, monitoring of product profitability, etc.

- **Tasks:** status-quo analysis, analysis of potentials, re-structuring of sales-/service-areas, sales management

Location Analysis (1): Analyzing Potentials ...

- e.g., density/potential of households

Location Analysis (1): Analyzing Potentials ...
Location Analysis (2): Analyzing Potentials …

- e.g., density/potential of travel agencies

Location Analysis (3): Overlaying Potentials …

Regions with high household densities and low density of travel agencies are marked in blue!

A Gallery of Industry Applications .... provided by ESRI.com

- "The application of GIS is limited only by the imagination of those who use it"
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- Clink to www.esri.com
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  - Water/Wastewater

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