Ministerie van Infrastructuur en Milieu

Kennisinstituut voor Mobiliteitsbeleid

Understanding e-shopping: analysis of ICT relation with shopping and shopping mobility behaviour

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E-shopping

- E-shopping has become increasingly common
  - The number of residents that shopped online increased to 10.6 million - 63% of the total population - in 2014 (Statistics Netherlands, 2015).
  - Their frequency of online shopping increased as well.
- This might affect mobility.

Contribution

Previous research: various results

- E-shopping reduces the number of personal trips and the distance travelled for shopping.
- E-shopping leads to more personal trips and the distance travelled for shopping.
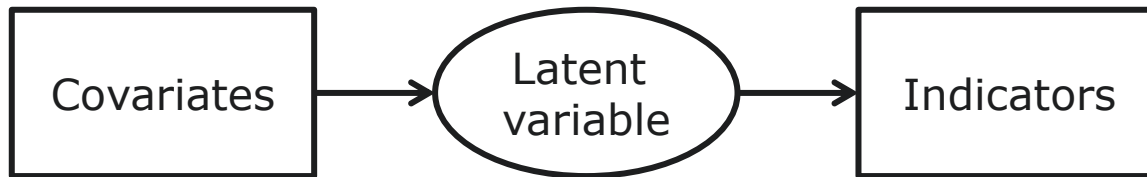- Combined effects.

The added value of this research

- Shopper segmentation to try to understand the various results.

Method

Latent class analysis

- Latent variable determines a number of classes.
- Indicators define the behaviour explained by the latent variable.
- Covariates allow to predict class membership for the latent variable.

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│  Covariates  │ ───► │  Latent  │ ───► │  Indicators  │
│              │      │ variable │      │              │
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Posterior analysis

- Latent class clusters are probabilistic clusters.
- Posterior membership probabilities allow to assign a cluster to each respondent.
- Classification used to analyze mobility indicators for every cluster.

The latent class analysis

Indicators representing the shopping process

- In-store shopping frequency
- E-shopping frequency
- In-store need recognition and information search
- Internet need recognition and information search

Covariates

- Built environment: urbanization level
- Sociodemographics: gender, age, income and education

Covariates → Latent variable → Indicators
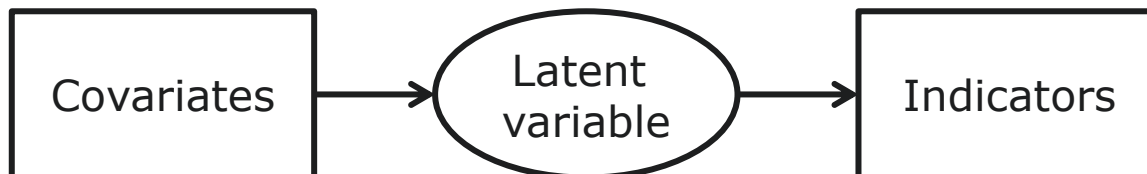
MPN data

Questionnaires and diaries
- Personal questionnaire (characteristics like age and gender, shopping frequencies)
- Shopping questionnaire (need recognition and information search)
- Diary data (mobility: number of shopping trips)

Year
- 2015

Sample size
- 1205 respondents

Resulting shopping clusters (1/2)

	1 Typical shoppers	2 Reluctant e-shoppers	3 Occasional shoppers	4 Reluctant in-store shoppers
Size	25%	20%	13%	13%
E-shopping frequency	Above average	Low	Low	Above average
In-store shopping frequency	Above average	Above average	Low	Low
Internet ideas and information search	Average	Below average	Average	Above average
In-store ideas and information search	Average	Average	Average	Below average

Resulting shopping clusters (1/2)

	5 Store regulars	6 Active shoppers	7 Remote shoppers
Size	12%	9%	8%
E-shopping frequency	Average	Very high	Average
In-store shopping frequency	Very high	High	Very low
Internet ideas and information search	Above average	Above average	Below average
In-store ideas and information search	Above average	Above average	Below average

Characteristics of the shoppers (1/2)

	1 Typical shoppers	2 Reluctant e-shoppers	3 Occasional shoppers	4 Reluctant in-store shoppers
Size	25%	20%	13%	13%
E-shopping frequency	Above average	Low	Low	Above average
In-store shopping frequency	Above average	Above average	Low	Low
Internet ideas and information search	Average	Below average	Average	Above average
In-store ideas and information search	Average	Average	Average	Below average
Urbanization	+	+	-	-
Gender	Women +	Women +	0	0
Age	39	44	42	40
Education	+	-	-	+

Characteristics of the shoppers (2/2)

	5 Store regulars	6 Active shoppers	7 Remote shoppers
Size	12%	9%	8%
E-shopping frequency	Average	Very high	Average
In-store shopping frequency	Very high	High	Very low
Internet ideas and information search	Above average	Above average	Below average
In-store ideas and information search	Above average	Above average	Below average
Urbanization	+	+	0
Gender	Women +	0	Men +
Age	48	37	44
Education	0	+	0

Mobility of the shoppers (1/2)

	1 Typical shoppers	2 Reluctant e-shoppers	3 Occasional shoppers	4 Reluctant in-store shoppers
Size	25%	20%	13%	13%
E-shopping frequency	Above average	Low	Low	Above average
In-store shopping frequency	Above average	Above average	Low	Low
Internet ideas and information search	Average	Below average	Average	Above average
In-store ideas and information search	Average	Average	Average	Below average
# Shopping trips	0	+	-	0

Mobility of the shoppers (2/2)

	5 Store regulars	6 Active shoppers	7 Remote shoppers
Size	12%	9%	8%
E-shopping frequency	Average	Very high	Average
In-store shopping frequency	Very high	High	Very low
Internet ideas and information search	Above average	Above average	Below average
In-store ideas and information search	Above average	Above average	Below average
# Shopping trips	+	-	0

Conclusions

The clusters

- The clusters show that there are different kind of shoppers.
- Characteristics of the clusters with a high e-shopping frequency:
  - Low average age
  - Above average education

Mobility

- The average number of trips of some clusters are not consistent with their shopping behaviour.