

Factors driving the spatial layout of distribution channels

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Factors driving the spatial layout of distribution channels

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Spatial layout of distribution channels – impacts

Inditex to Build Distribution Hub in Lelystad

Distribution hub in central Europe needed to complement Central Logistics Platforms in Spain



Inditex, one of the world's largest fashion retailers, is set to build a new distribution hub in Lelystad, the Netherlands. The new hub will complement the activities by the Inditex Central Logistics Platforms in Spain. Construction will require an initial investment of approx. €100 million. Inditex will initially purchase a 35-hectare plot at the Lelystad Airport Businesspark (LAB) currently under development. This plot borders on the airport which, in April 2019, will begin offering passenger flights as a twin airport to Schiphol.



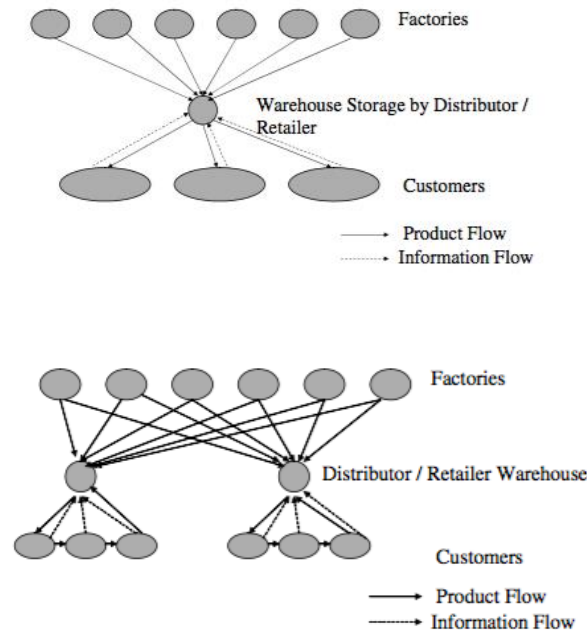
MAP OF FULFILLMENT CENTERS AND EXISTING SAME-DAY SHIPPING REGIONS
Same-Day Shipping Locations in Blue, Fulfillment Centers in Red



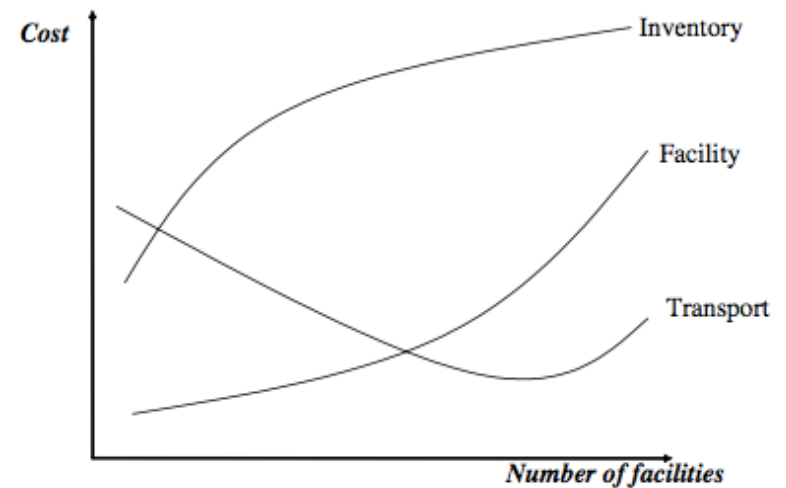
Source: Piper Jaffray, gubins, METRA Logistics

Spatial layout of distribution channels – strategic decision problems

- Centralization degree
- DC locations



Chopra, 2003



Outline

Research Gap

- Hardly any descriptive research, no quantitative research on factors

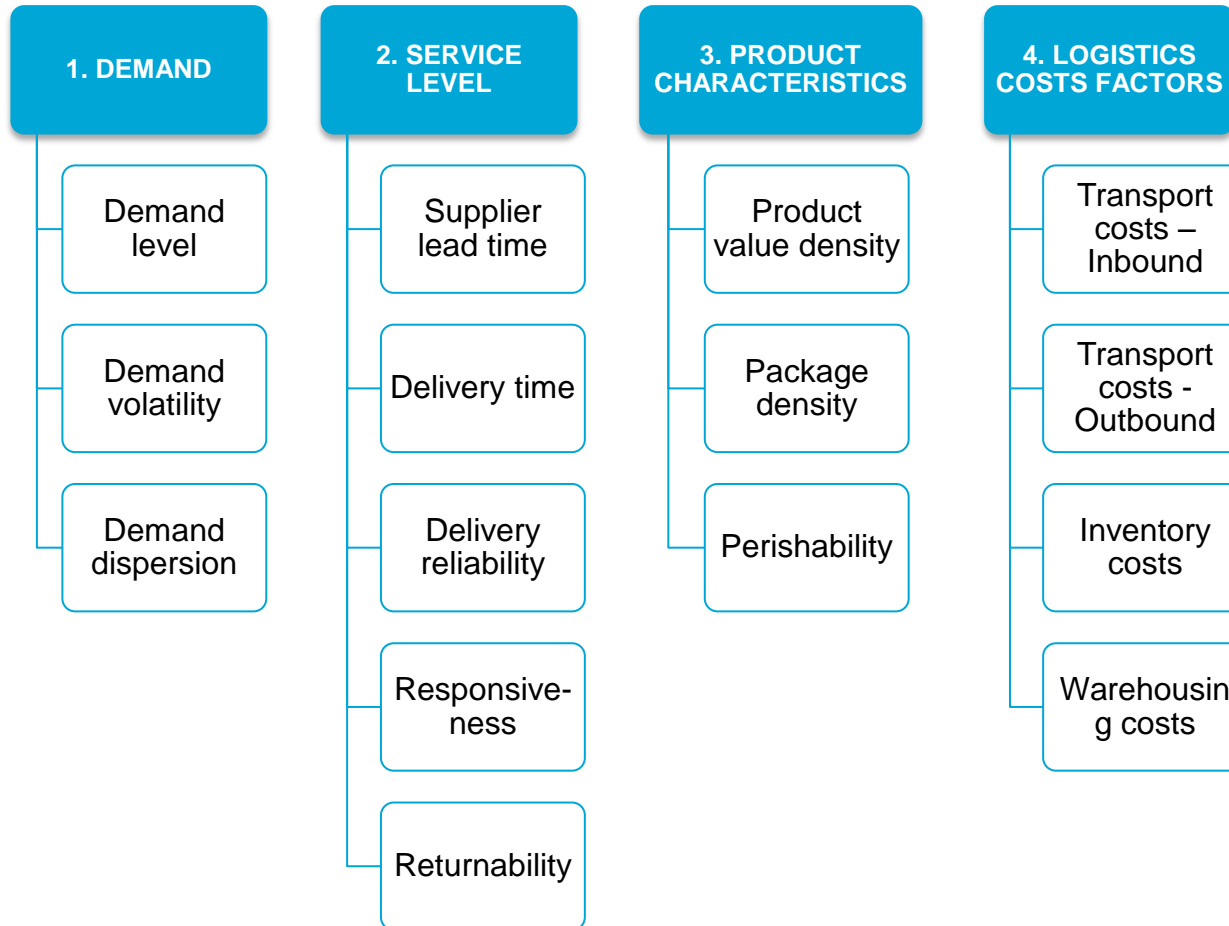
Objectives

- List factors that drive spatial layout of distribution channels
- Determine the importance of these factors

Approach:

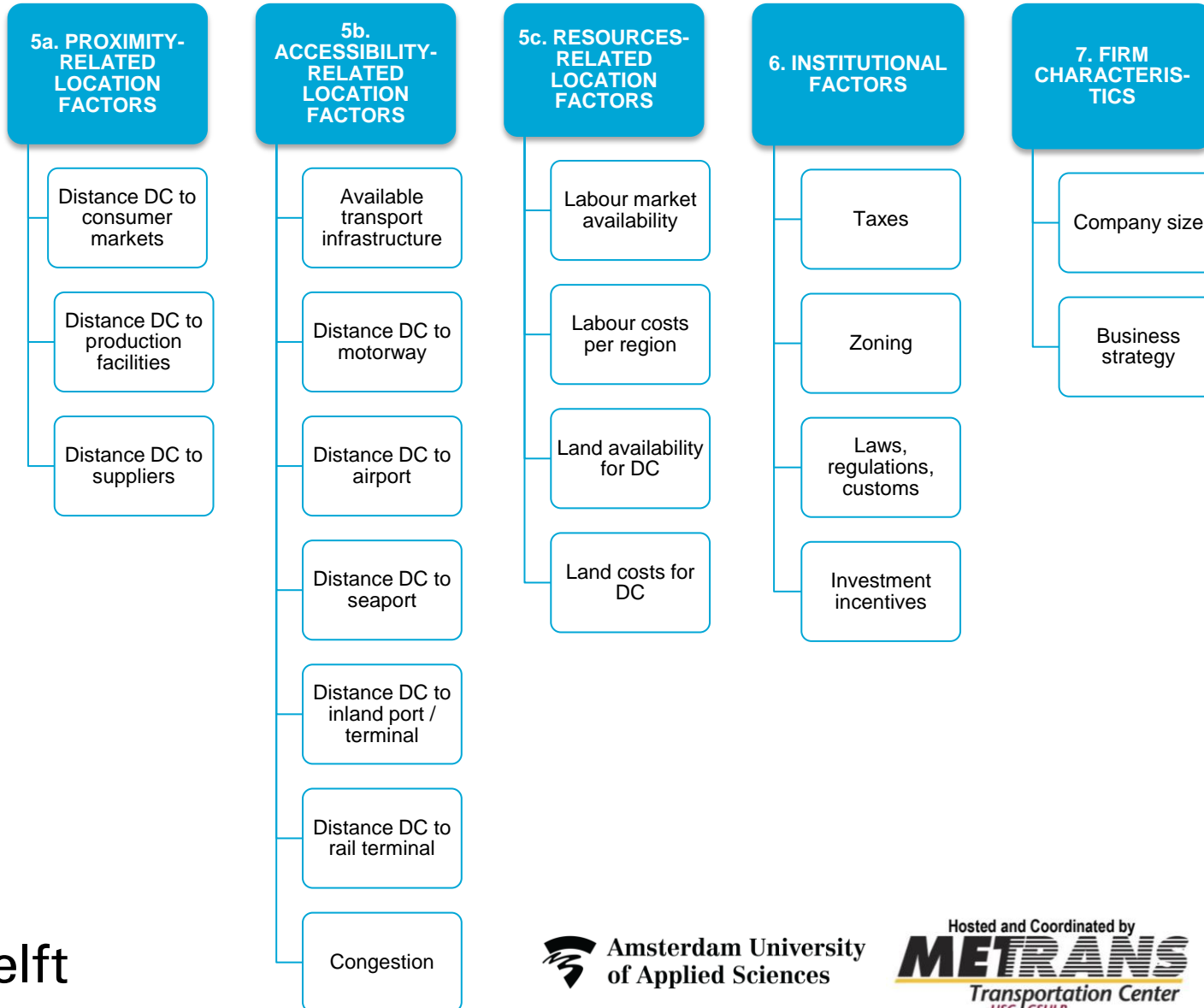
- Literature review
- Decision model
- Survey based estimation

Factors (1)



- Factor selection based on literature review and interviews with logistics experts

Factors (2)



Decision model

- Objective = to determine importance of factors
- Many choice modelling approaches or multi-criteria decision methods available
- Here: Best-Worst Method (Rezaei, 2015)
 - Simple approach: weighted sum of factors will reveal best structure
 - To identify weights: survey based identification of importance of factors
 - Estimation of overall weights
- Advantages:
 - Fewer comparisons needed
 - More consistent comparisons

Best-Worst Method (1)

- **Step 1:** Determine a set of decision factors c_1, c_2, \dots, c_n
- **Step 2:** Determine the best (i.e., most important) and worst (i.e., least important) factors
- **Step 3:** Comparison of the best factor with the other factors
(1: equally important, 9: extremely more important)

Factors	Demand	Service level	Product characteristics	Logistics costs	Location factors	Institutional factors	Firm characteristics
Most important: Demand	X	4	4	3	6	7	7

Best-Worst Method (2)

- **Step 4:** Comparison of the other factors with the worst factor (1: equally important, 9: extremely more important)

Main factors	Least important factor: Institutional factors
Demand	7
Service level	7
Product characteristics	6
Logistics costs	9
Location factors	3
Institutional factors	X
Firm characteristics	4

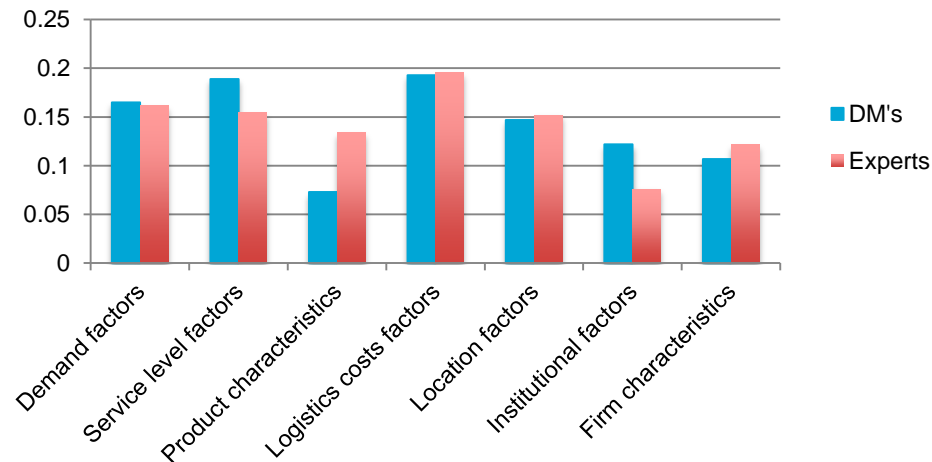
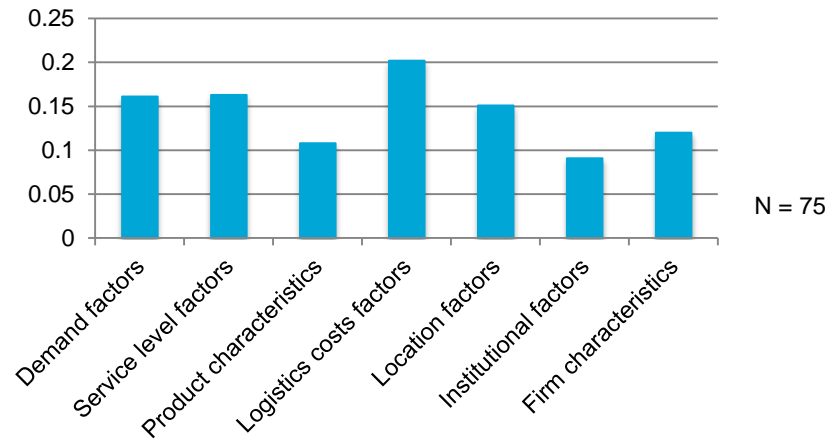
- **Step 5:** Finding the optimal factor weights w_1, w_2^*, \dots, w_n^*

Data collection - online survey

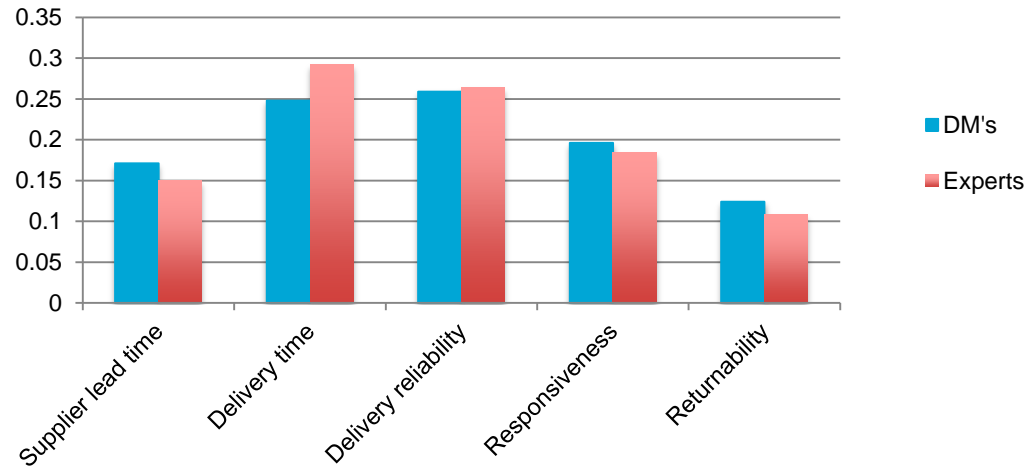
- April – May 2017
- Survey opened 717 times, 75 respondents

Organization type	share
Decision makers	22 (29%)
Experts	45 (60%)
Other	8 (11%)
Total	75 (100%)

Main factor weights – Results

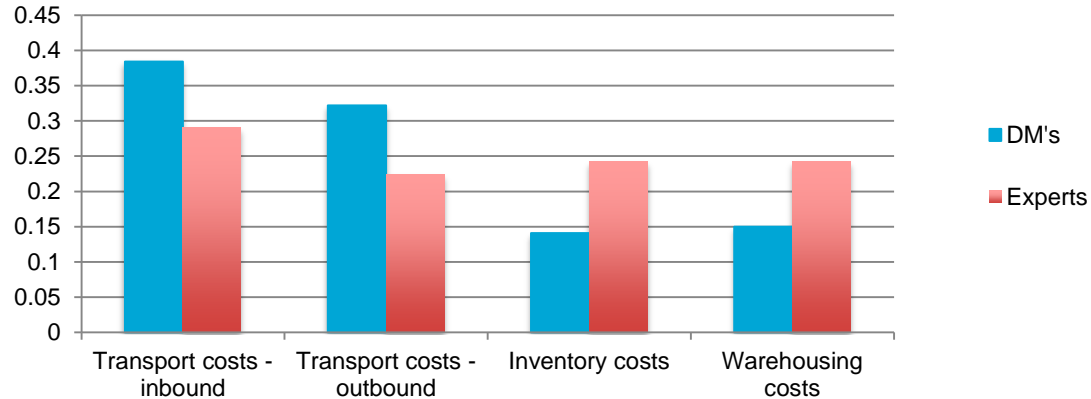


Sub factor weights – Results (1)



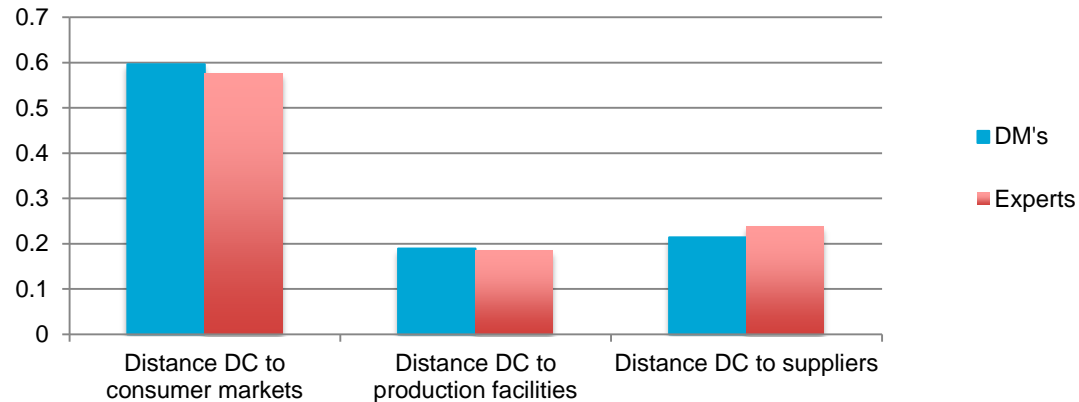
- Customers expect fast and reliable deliveries
- Returnability expected to become more important in e-commerce era (Hjort and Lantz, 2016)

Sub factor weights – Results (2)



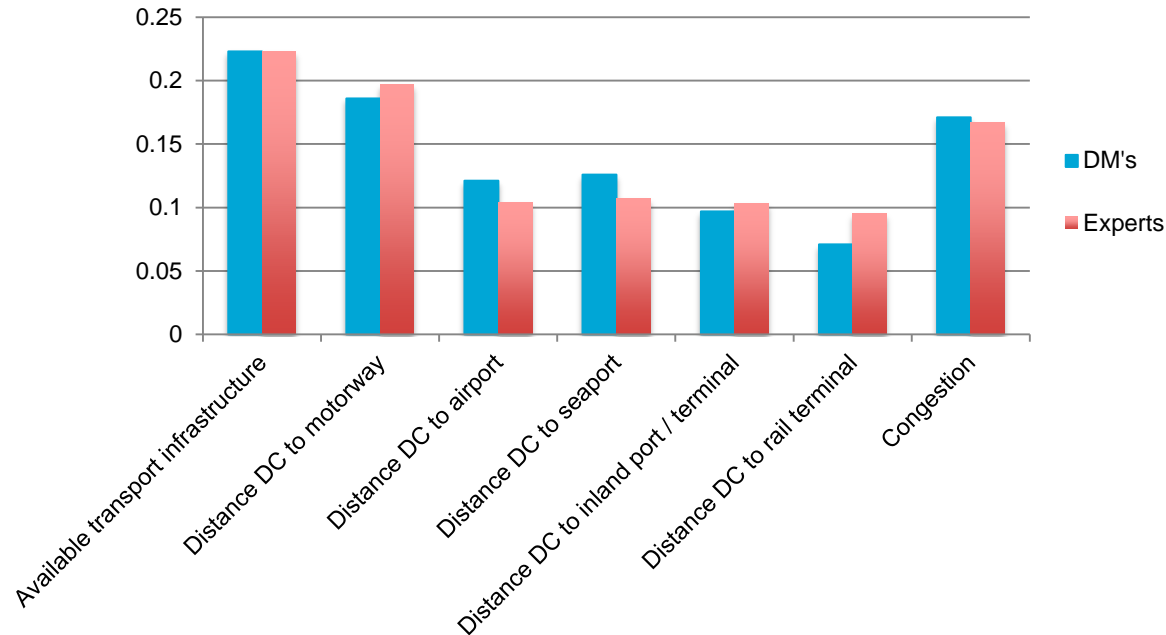
- Decision makers value 'transport costs' more highly than experts
- 'Transport costs – inbound' valued more highly than 'Transport costs – outbound'
 - Inbound transport costs: more potential distribution costs savings

Sub factor weights – Results (3)



- Decision makers accept large distances between DC and production facilities
- 'Distance to suppliers' relatively unimportant: scale economies on inbound transport

Sub factor weights – Results (4)



- Decision makers and experts show similar factor weights
- Rail scores low: large transport modes are seldom used for DC delivery or outbound transport

Conclusions

- ‘Logistics costs’, ‘Service level’ and ‘Demand level’ are the most important factors that drive decision making
- Decision makers value ‘transport costs’ more highly than experts
- ‘Distance to suppliers’ relatively unimportant: scale economies on inbound transport
- Some factors score low but could be very dynamic (e.g. ‘returnability’)

Next steps

- Framework to take into account relationships between factors
- More data collection
 - Representation of important sectors (e.g. e-commerce)
 - To test how respondents from non-Western countries value the importance of several factors