EXPERIMENTAL CONSUMER TEST OF THE NEW PRODUCTS

PRELIMINARY RESULTS

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AIM

- What end-product attributes could influence European consumer choice of new aquaculture products?
- Are the factors influencing consumer choice the same for different products and across countries?
- How can this knowledge inform development of new aquaculture products?

OBJECTIVE D29.6:
OPTIMIZATION OF INTRINSIC-EXTRINSIC PRODUCT QUALITY PROFILES

Development of the actual DIVERSIFY products from the selected species: Greater Amberjack, Grey mullet, Pikeperch, & Meagre

- D28.1 (AU): **Focus groups** with consumers and experts regarding ideas for new products (Banovic et al., 2016a; Banovic et al. 2015a)
- D28.2-4 (HCMR/IRTA): **Development of physical prototypes** of new products from the selected species

Development of the product mock-ups for use in the experimentation with consumers

- D29.1 (AU): **Consumers' perceptions, attitudes,** buying intentions, consumption, willingness to buy and pay, and value perceptions towards the selected species (Banovic et al., 2016b,c)
- D29.2 (AU): **Segmentation** analysis based on consumer value perceptions about the selected species (Reinders et al., 2016; Banovic et al. 2015b; Krystallis et al., 2015)
- D29.3-4 (IRTA): Development of the actual product samples and **sensory profiling**
- D29.5 (AU): **Development of the product mock-ups** for use in the experimentation with consumers

PRODUCT MOCK-UPS:
PHYSICAL PRODUCT PROTOTYPES BEFORE MANIPULATION
(D28.1, D28.2)

Fish species	Developed DIVERSIFY prototypes
Meagre	Idea 6: Fish burgers shaped as fish (High processing)
	Idea 4: Ready to eat meal: salad with fish (Low processing)
Pikeperch	Idea 9: Fish spreads/pate (High processing)
Grey mullet	Idea 2: Thin smoked fillets (Medium processing)
	Idea 33: Ready-made fish fillets in olive oil (Medium process.)
Greater Amberjack	Idea 34: Fresh fish steak for grilling in the pan (Low processing)


Idea 6: Fish burgers shaped as fish


Idea 4: Ready to eat meal: salad with fish


Idea 9: Fish spreads/pate


Idea 2: Thin smoked fillets


Idea 33: Ready-made fish fillets in olive oil


Idea 34: Fresh fish steak for grilling in the pan

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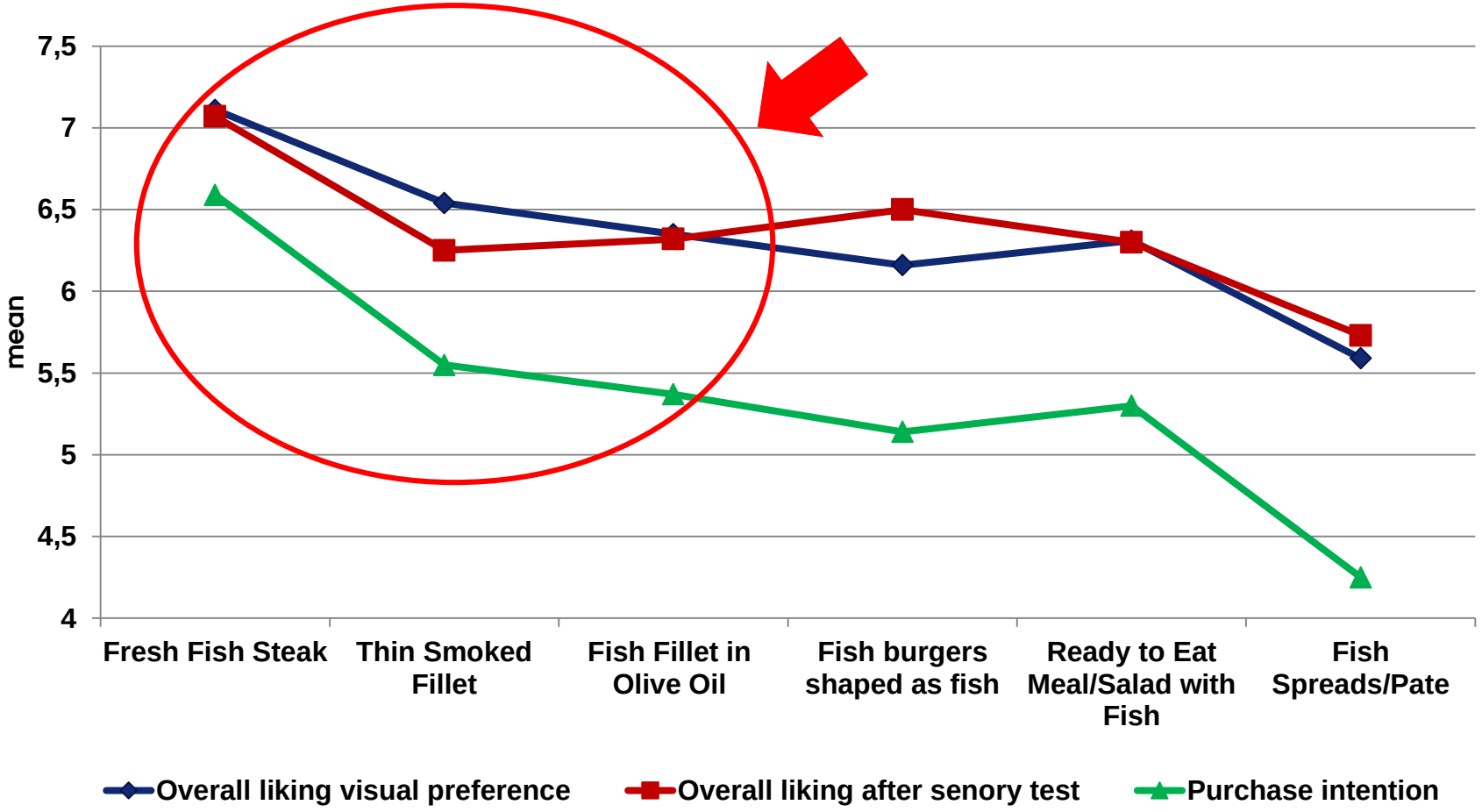
PRODUCT MOCK-UPS: (C'ONT 1)
PHYSICAL PRODUCT PROTOTYPES' SENSORY TESTING
(D29.3-4)

- Final choice of products for the experiments based on sensory profiling of the prototypes



PRODUCT MOCK-UPS: (C'ONT 2)
REVIEW OF THE RELEVANT CONSUMER STUDIES

- **Most important attributes in relation to fish products:**
  - Country of Origin - COR (e.g. domestic - imported);
  - Price (varies depending on species and countries);
  - Brand (e.g. manufacturer *vs* retail brand);
  - Storage conditions (e.g. fresh - frozen);
  - Production method (e.g. wild caught - farmed);
  - Certification labels (e.g. sustainability - quality - uncertified);
  - Organic and natural claims (e.g. organic salmon: yes - no);
  - Fish welfare claims (e.g. suffer less from external injuries: yes - no)

(*Uchida et al., 2014; Davidson et al., 2012; Grimsrud et al., 2013; Olesen, 2010; Claret et al., 2012; Ariji, 2010, etc.)*

PRODUCT MOCK-UPS: (C'ONT 3)
SECONDARY DATA ON NEWLY LAUNCHED FISH PRODUCTS

- Analysis based on **prices** and most often used **claims** & **logos** (Mintel gNDP, 2016)

Example: Most often used claims for new products similar to DIVERSIFY prototypes

Category	Claim	France	Germany	Italy	Spain	UK
Ethical & envir.	Responsibly sourced	3	7	6	3	6
	Ethical animal (Fish welfare)	1				
Nutrition	Omega3	6	2	7	9	1
	High in protein	3		1	1	2
	Reduced fat	2		1		
	No gluten		1	1	7	
	No lactose		1		1	
	No allergen			1		
	Less salt/ iodine				2	3
Health	Improves cardiovascular function	2	1	4	4	
	Good for bones					2
	Brain Function					3
	Improves Immune System					2
Natural	No GMO fed	4	1	2		
	No hormones			1		

PRODUCT MOCK-UPS: (C'ONT 4)
SELECTION OF ATTRIBUTES & ATTRIBUTE VERSIONS (LEVELS)

- Based on the previous literature review and secondary data analysis, the suggested **attribute versions** for product mock-ups, are as follows:

Attribute	Attribute version
Country of origin - COR	EU-made
	Own country-made
	None
Price	Average price
	+15% of average price
	+30% of average price
Nutrition claim	High in protein
	Omega 3
	None
Health claim	Improves cardiovascular function
	Improves brain function
	None
Responsible - Environmental	ASC logo
	None

PRODUCT MOCK-UPS

- Examples of the three products created for the consumer experiments

Mild processing

Unprocessed

EXAMPLE OF ATTRIBUTE MANIPULATION

Nutrition claim

Health claim

Certification logo

Price

Country of Origin

THE STUDY: EXPERIMENTAL DESIGN

- 3^4x2^1 orthogonal design produced in SAS statistical software producing 36 experimental sets
- 36 sets were partitioned into 12 versions of choice sets of three (Hair, 2009; Train, 2009)

- **Example of the choice sets:**

HELLENIC RESEARCH HOUSE

THE STUDY: FIELD WORK

- **Online survey in five EU countries:** France, Germany, Italy, Spain, UK
- **N ~ 100 per product per country -> N ~ 300 /country, N ~ 1500/overall**
- **Two consumer segments** ~ 50/50%, **D29.2**: involved innovators; involved traditionals

- **The questionnaire**
  - Product design
  - Intrinsic & expected quality
  - Extrinsic & expected quality
  - Fish species knowledge & liking
  - Fish beliefs (wild *vs* farmed fish)
  - Purchase & consumption behaviour
  - Sociodemographics

You are standing in front of the supermarket shelf.

Which one of the following three products would you

MOST LIKELY CHOOSE and LEAST LIKELY CHOOSE

to purchase for dinner on a typical day?

Most likely to buy ☐ ☐ ☐

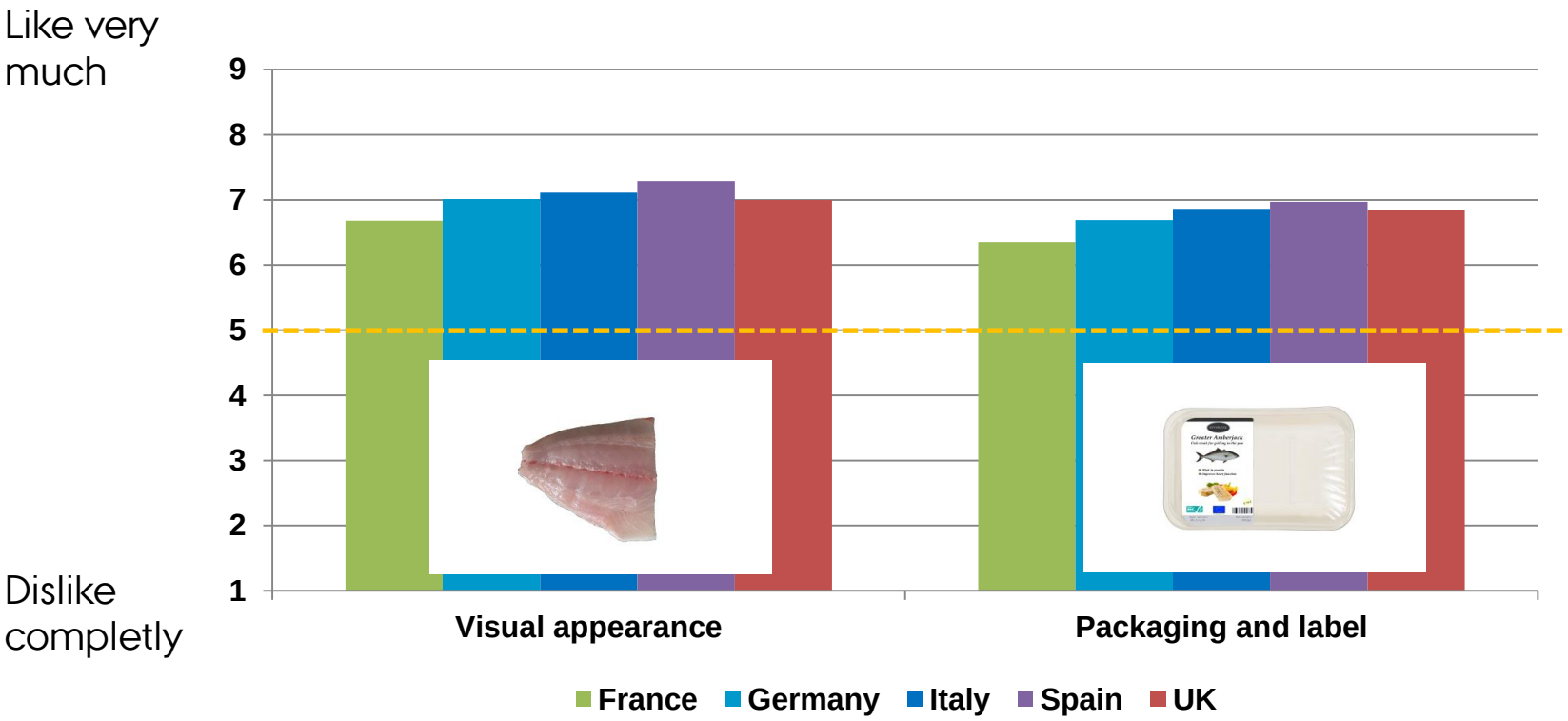
Least likely to buy ☐ ☐ ☐

THE STUDY: DEMOGRAPHICS

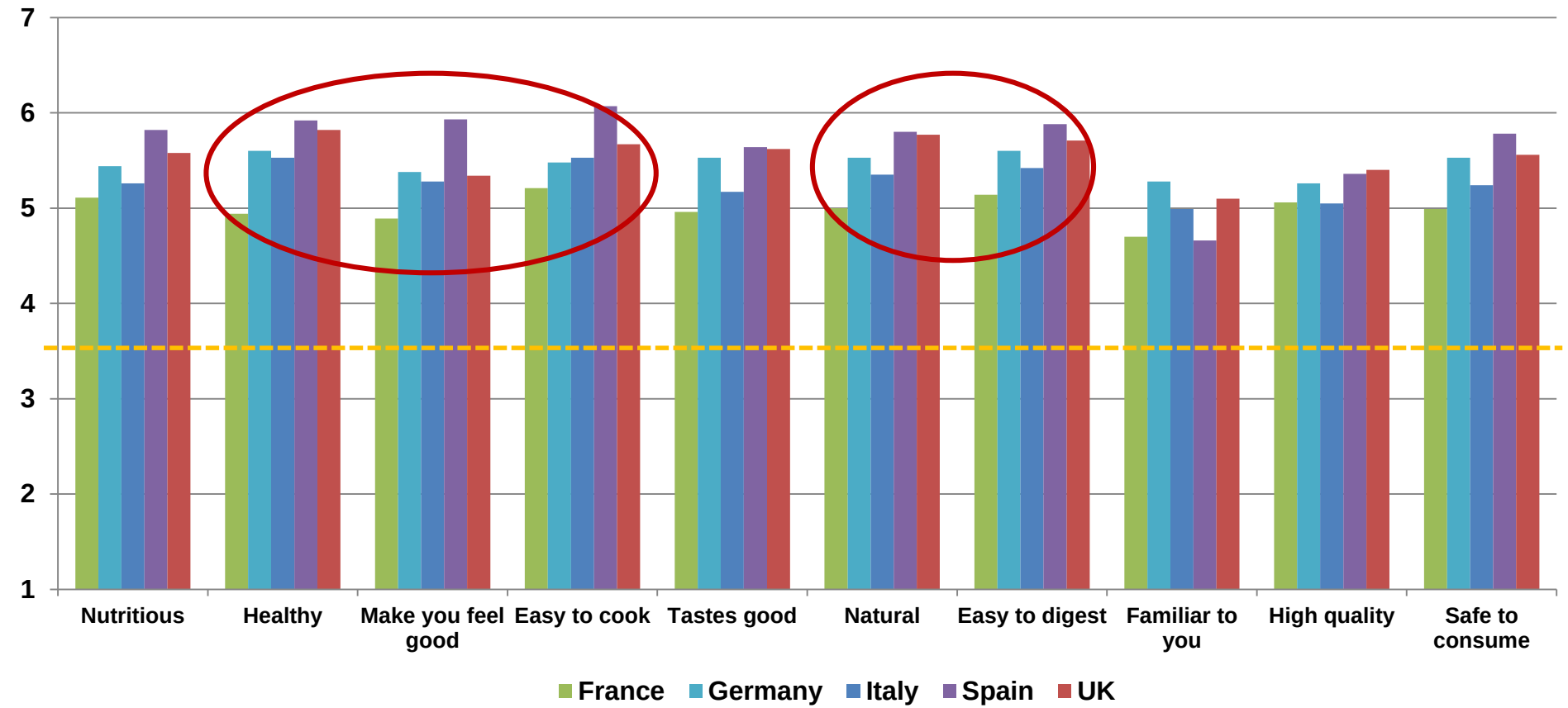
Characteristics	Fresh fish steaks (N=532)	Fillet in olive oil (N=536)	Thin smoked fillet (N=528)	Sig.
Age				
(mean in years)	41.1	40.5	41.1	.572
Age group				
(20-40)	49.8	50.0	49.4	
(41-60)	50.2	50.0	50.6	.982
Gender				
(male)	49.8	51.3	50.2	.879
Marital status				
(Married/co-habiting)	63.5	64.4	66.1	
(Single at parents home)	10.3	12.5	10.8	
(Single, living independently)	18.4	16.2	16.1	.909
(Separated/divorced)	6.7	6.3	6.1	
(Widowed)	0.9	0.6	0.9	
Existence of children				
(yes)	53.6	52.1	54.9	.643
Level of education				
(Primary school)	3.4	3.9	5.7	
(Secondary school)	20.6	19.4	20.6	
(Higher education)	33.0	29.5	30.9	.511
(University- first degree, BSc)	29.8	33.8	29.0	
(University Post graduate, PhD)	13.3	13.4	13.8	
Income				
(more than average)	13.3	14.7	13.4	
(average)	65.0	64.4	67.0	.836
(less than average)	21.6	20.9	19.5	

FRESH FISH STEAK – LOW PROCESSING LEVEL

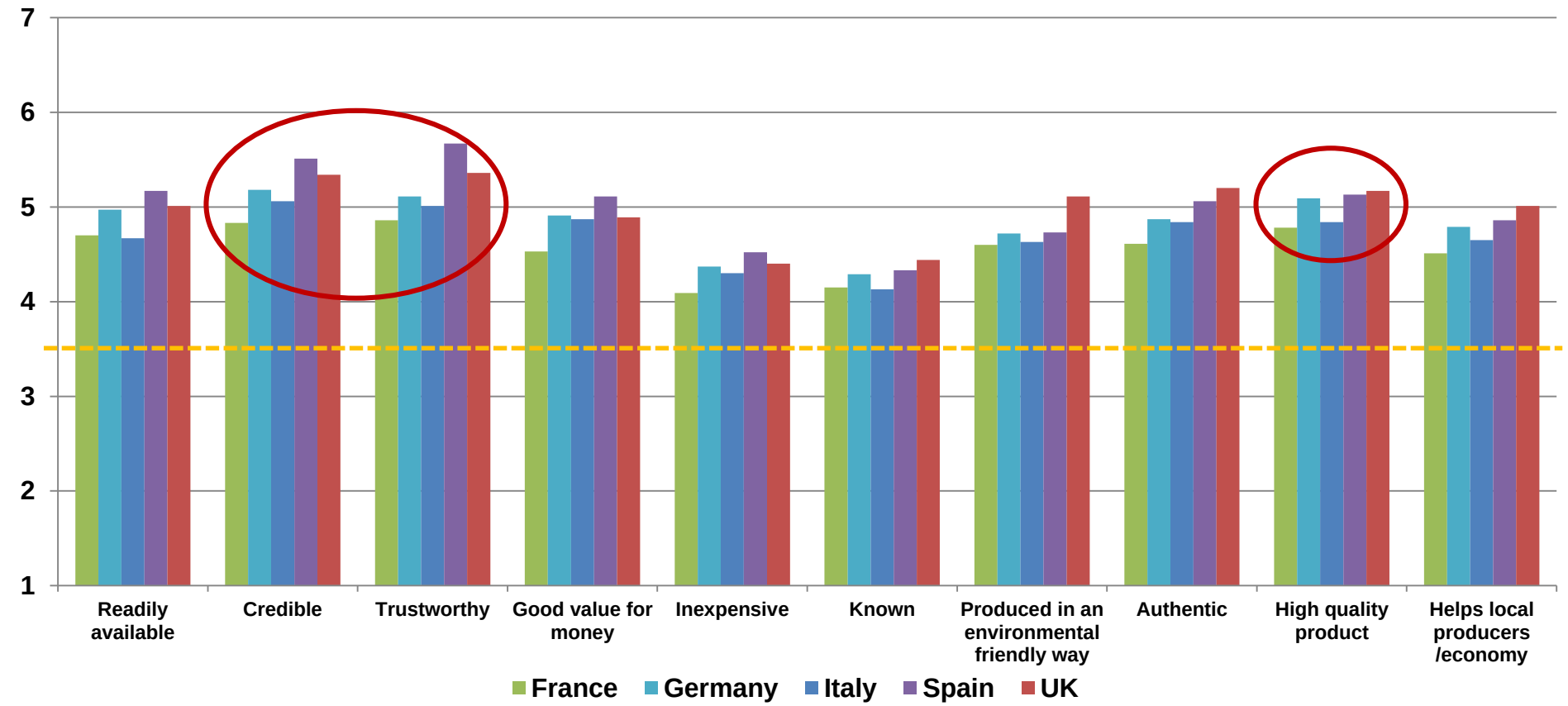
FRESH FISH STEAK: INTRINSIC/ EXTRINSIC QUALITY



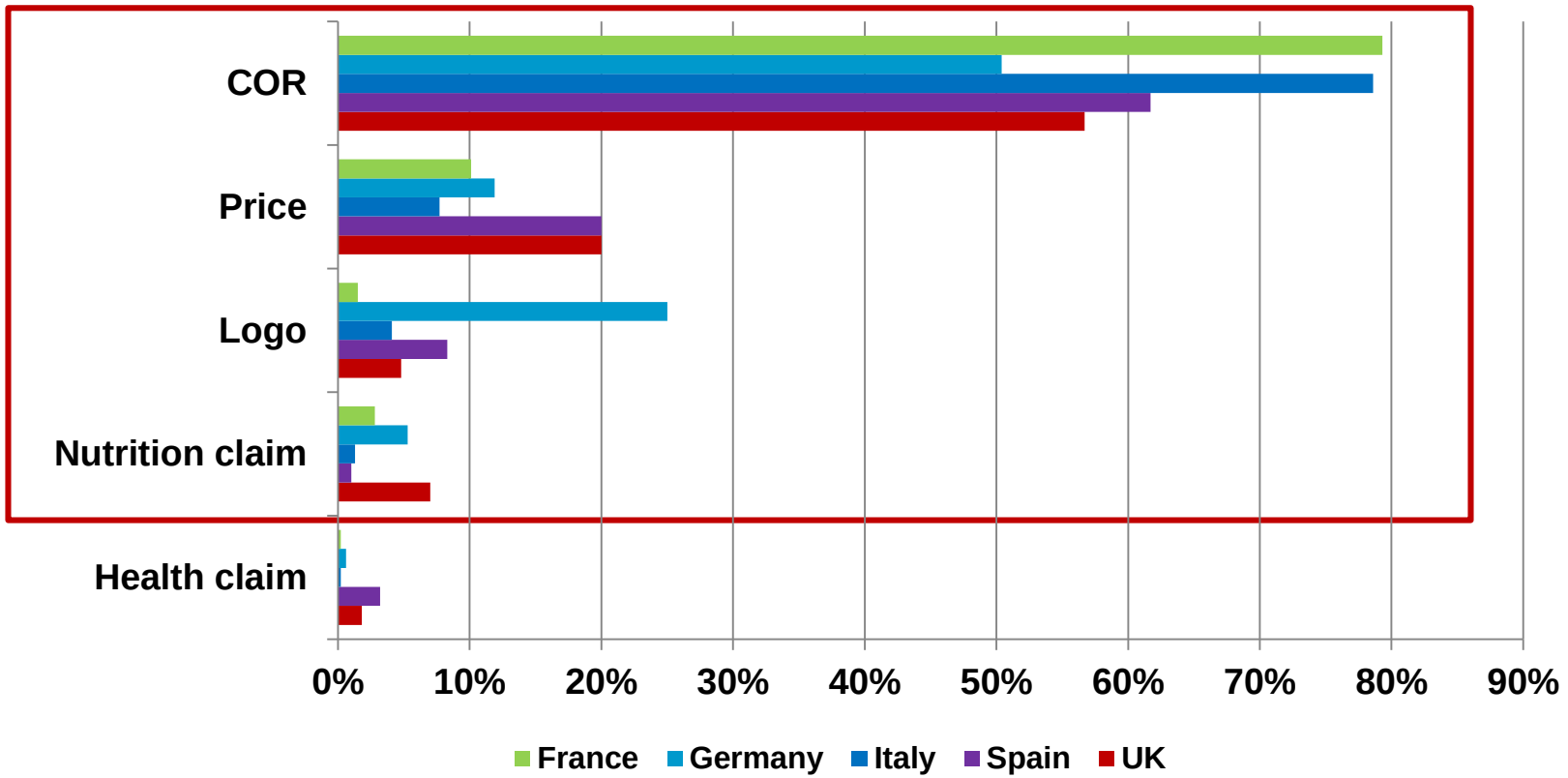
FRESH FISH STEAK: EXPECTED QUALITY (I)
(ASSOCIATIONS AFTER VISUAL INSPECTION OF THE FISH)



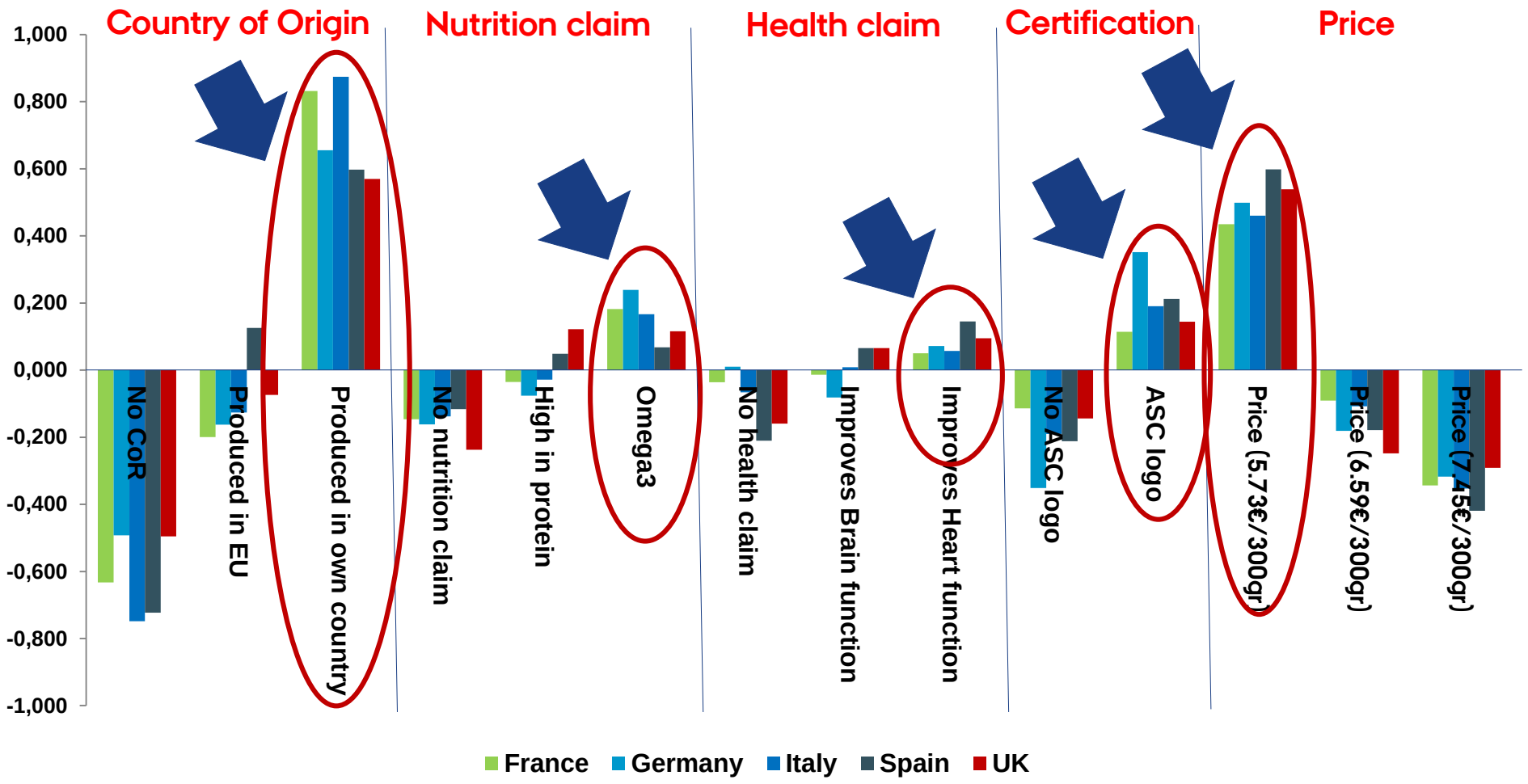
FRESH FISH STEAK: EXPECTED QUALITY (II)
(ASSOCIATIONS AFTER VISUAL INSPECTION OF THE PACKAGE)



FRESH FISH STEAK - CHOICE EXPERIMENTS ATTRIBUTE IMPORTANCE



FRESH FISH STEAK - CHOICE EXPERIMENTS UTILITIES



FRESH FISH STEAK WILLINGNESS TO PAY (WTP) IN €/300G.

- **Baseline:** reference price for fresh fish steak (5.73€/300g.)

	France	Germany	Italy	Spain	UK
COR					
None	-1.56	-1.10	-1.75	-1.29	-1.02
Produced in EU	-0.51	-0.40	-0.33	+0.21	-0.19
Produced in own Country	+2.07	+1.49	+2.08	+1.08	+1.21
Nutrition claim					
None	-0.35	-0.38	-0.33	-0.19	-0.49
Omega3	+0.46	+0.56	+0.46	+0.12	+0.26
High in protein	-0.11	-0.19	-0.13	+0.07	+0.23
Health claim					
None	-0.08	+0.02	-0.14	-0.35	-0.31
Improves Heart function	+0.13	+0.20	+0.15	+0.25	+0.22
Improves Brain function	-0.06	-0.22	-0.01	+0.10	+0.09
ASC logo					
No ASC certified	-0.27	-0.80	-0.44	-0.38	-0.30
ASC certified	+0.27	+0.80	+0.44	+0.38	+0.30
Fully standardized product: Floor price	**3.48**	**3.24**	**3.07**	**3.52**	**3.60**
Fully customized product Ceiling price	**8.66**	**8.79**	**8.85**	**7.57**	**7.72**

MANAGERIAL IMPLICATIONS

GOOD NEWS!

It is possible to create new products targeting similar high-profile segments ACROSS all big EU markets

- Same pattern in consumer choice-drivers, i.e.
  - COR and price come first, followed by quality certification, while nutrition/health claims appear having minimal impact

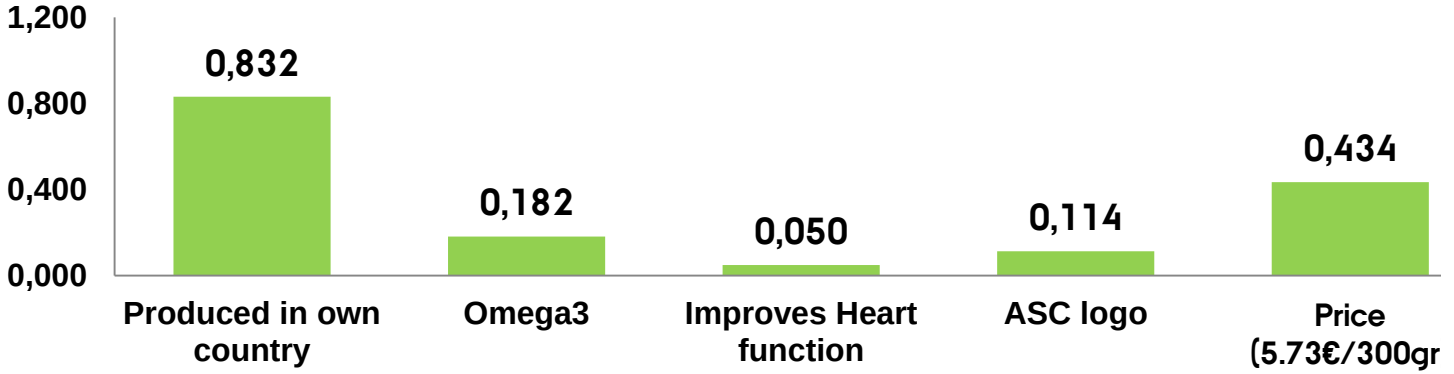
MANAGERIAL IMPLICATIONS

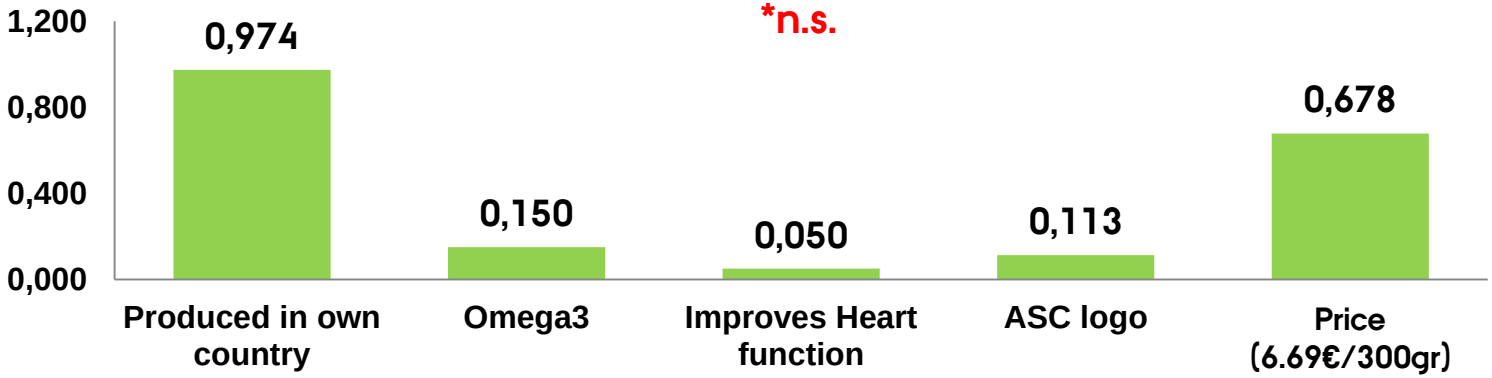
HOWEVER…

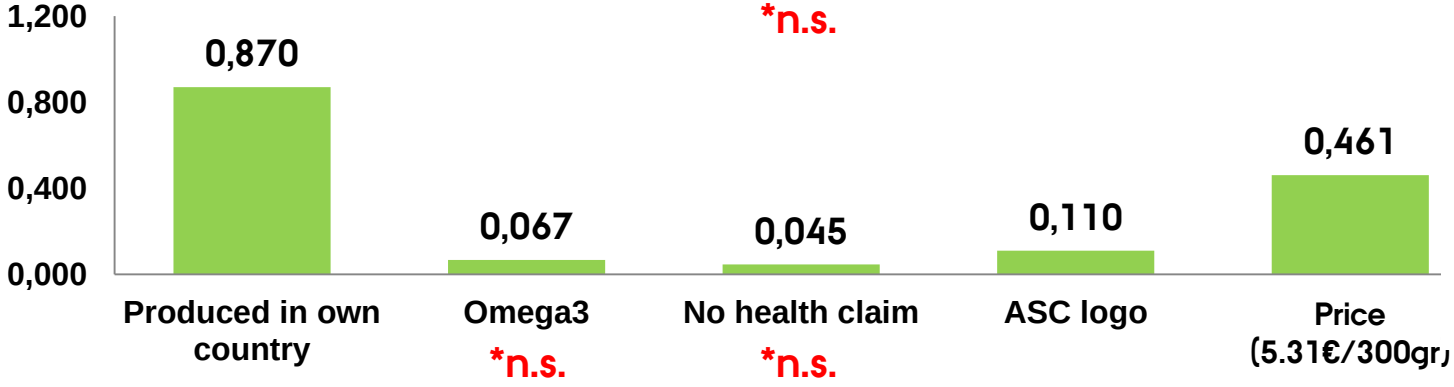
A certain degree of customisation needed across countries

- Results are country-depended, i.e.
  - in the UK, all attribute versions selected do add something to the product, being noticed by the UK consumes
  - in GE, FR & IT, health claims are adding nothing to consumer choice
- Results are product-depended, based on the way processing is perceived by consumers,
  - i.e. nutrition and health claims in smoked fillet (mild-processing product) are important in SP, but not in FR.

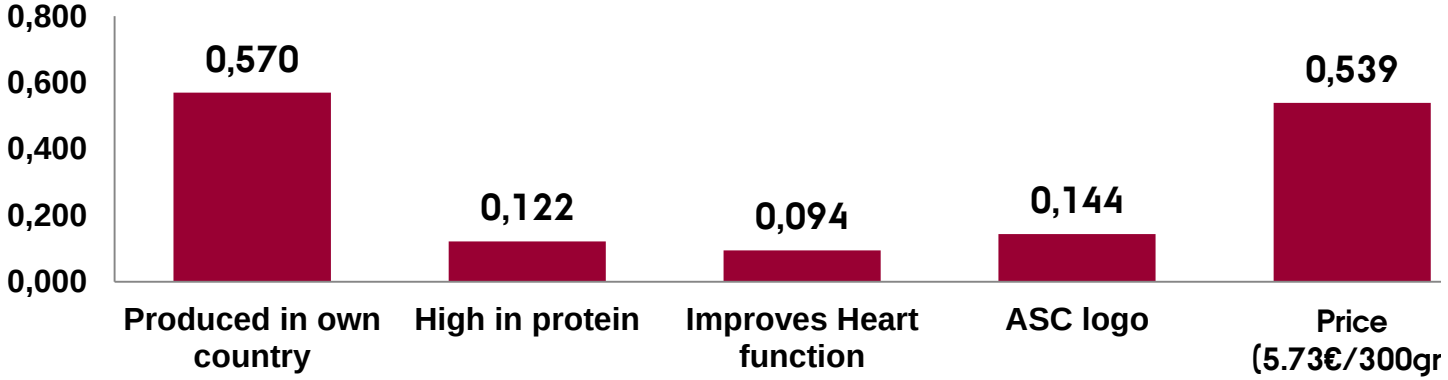
HIGHEST UTILITIES VARY BY COUNTRY AND PRODUCT:
FRANCE

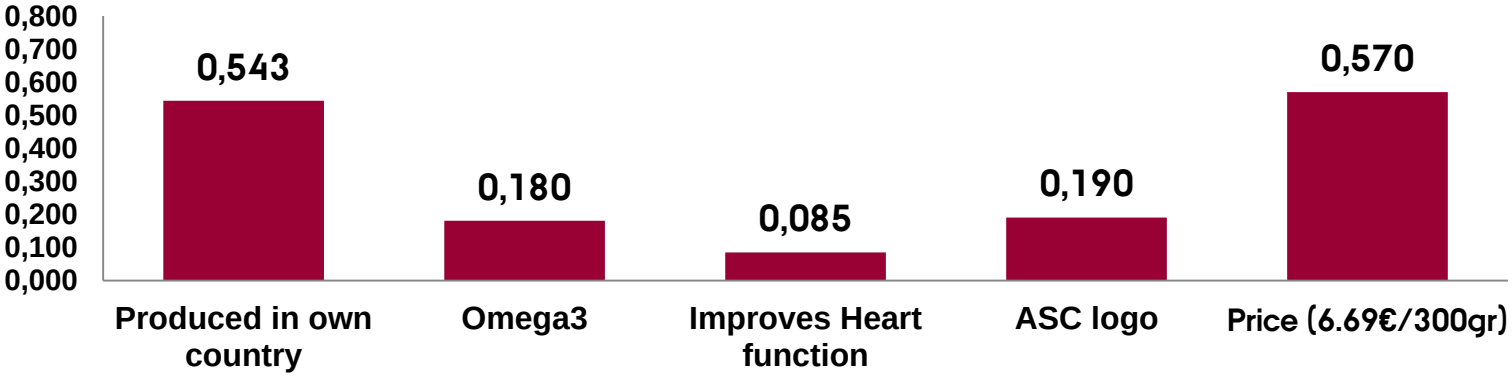






HIGHEST UTILITIES VARY BY COUNTRY AND PRODUCT:
UK





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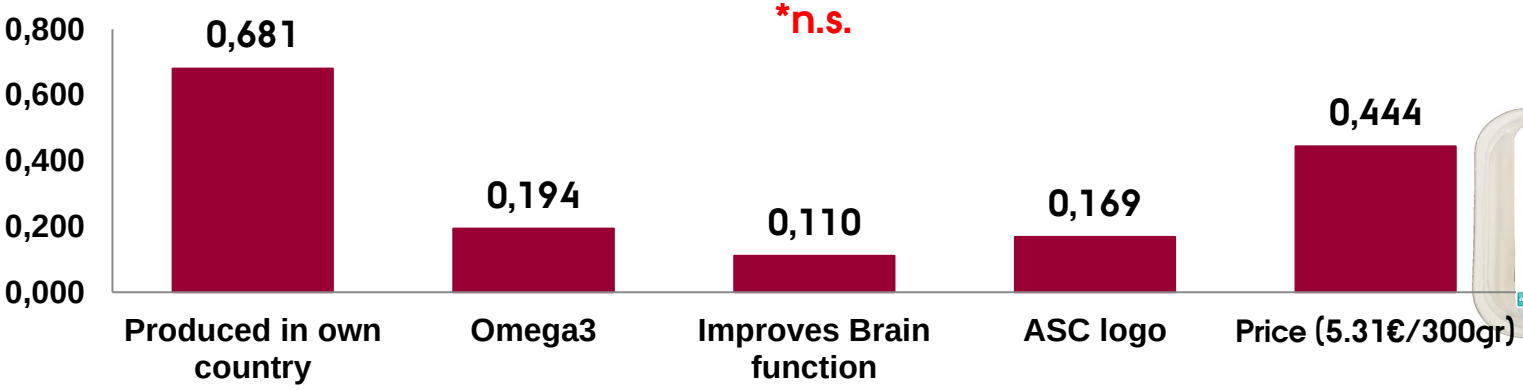

THANK YOU!

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