

Universidade de Vigo

# ActInPak

COST Action FP1405

## THE CONSUMER PERCEIVED VALUE: DEVELOPMENT OF A MEASUREMENT SCALE FOR PACKAGE FUNCTIONS.

Ana Dopico- University of Vigo  
Spain

Israel 8-9 November 2017

# DEVELOPMENT OF A MEASUREMENT SCALE FOR PACKAGE FUNCTIONS

Universidade de Vigo

H-Mark

ECOBAS



# INTRODUCTION

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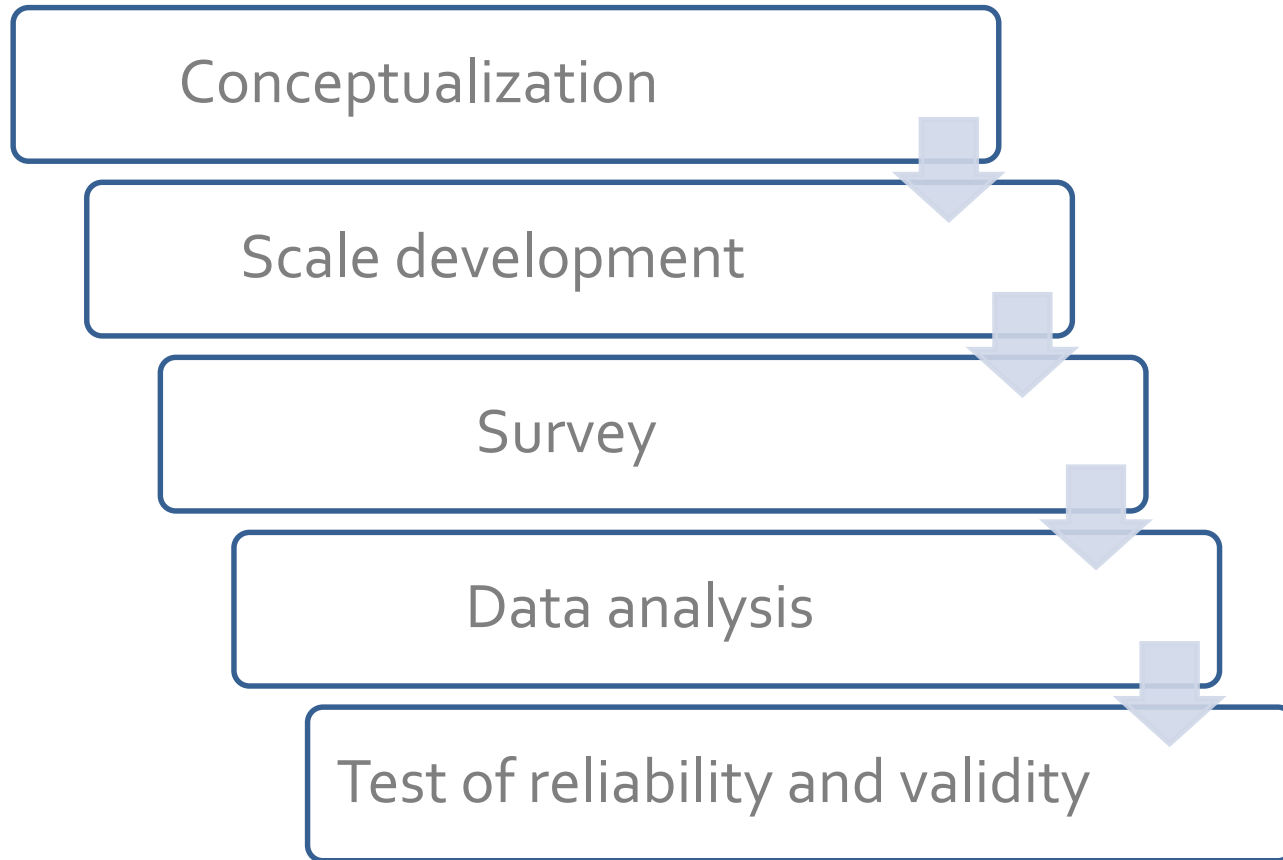
Consumer research in packaging is so important as difficult task because:

- The element of study is a part of another final product
- Some AIP solutions are not yet in the market
- AIP have a high technology content (chemistry and engineering)
- The consumer perception of packaging functions are multidimensional.

# INTRODUCTION

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- The packaging literature does not provide a measurement scale of packaging with psychometric properties (reliable and valid)
- To obtain a tool to be able to measure the function properties of packaging it could be a great contribution to researchers and professionals of the industry



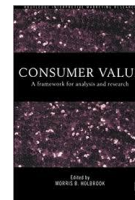
# CONCEPTUALIZATION

## Four primary functions has been the starting point



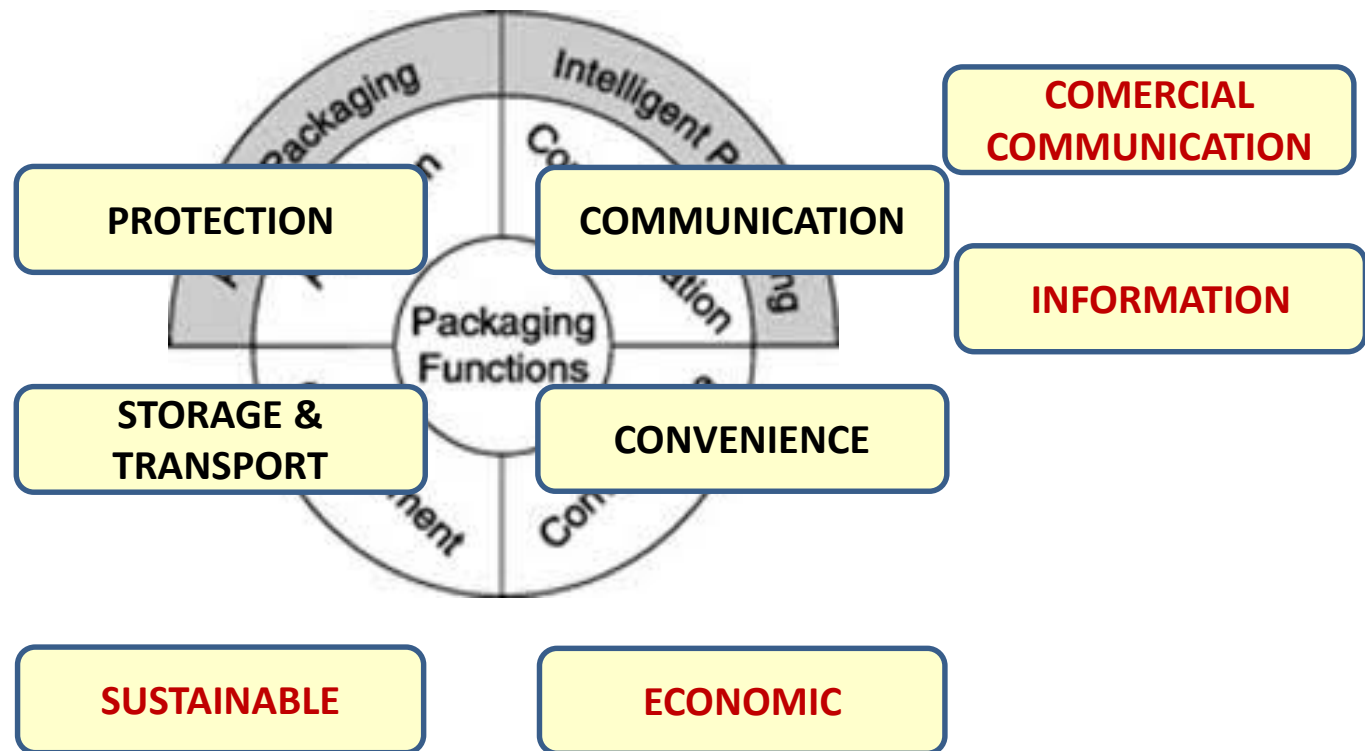
## Food Sector

- Holbrook, M (1999). *Customer Value- A framework for analysis and research*.
- Lockhart, H. (1997). A paradigm for packaging. *Packaging Technology and Science*. Volume 10, Issue 5.
- Yim, Takhistov and Miltz (2005). *Journal of Food Science*. Vol, 70, nº 1.
- Gordon, R. (2012). *Food packaging: Principles and Practice*. Routledge, 3<sup>a</sup> Edition.



# CONCEPTUALIZATION

And we have added some other functions...



# SCALE DEVELOPMENT: 7 CONSTRUCTS AND DIMENSIONS

**STORAGE  
& TRANSPORT**

**PROTECTION**

**CONVENIENCE**

**COMMUNICATION**

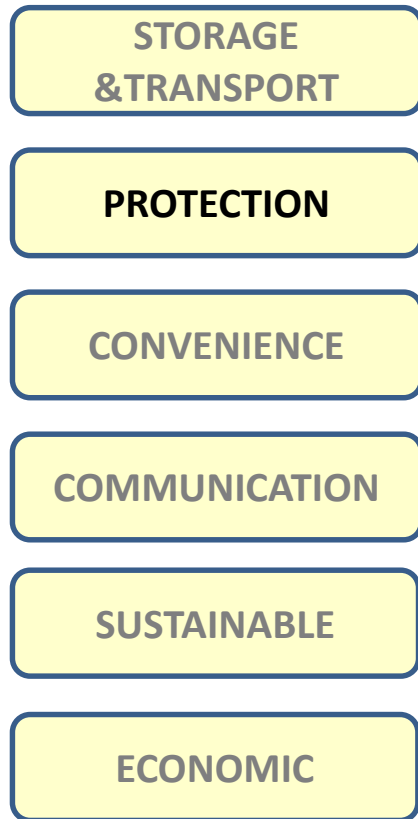
**SUSTAINABLE**

**ECONOMIC**

STOR&TRA1	Facilitates the storage in the pantry reducing the need for space
STOR&TRA2	Makes very visible the date of preferential consumption
STOR&TRA3	Decreases in size after partial consumption of the product
STOR&TRA4	Makes the product easy to carry



# SCALE DEVELOPMENT: CONTRUCTS AND DIMENSIONS



EXTERNAL

PROT1 Prevents deterioration of the product

PROT2 Resists the bumps

PROT3 Ensures the safety of ingredients and the product

PROT4 Ensures the quality of the preserving the taste and the taste of the ingredients

PROT5 Prevents from coming out or penetrating liquids, vapors, gases and / or external smells ACTIVE

INTERNAL

PROT6 Has antimicrobials properties that extent the product life ACTIVE

PROT7 Preserves hygiene by avoiding the chemical interaction of product with other elements ACTIVE

PROT8 Provides greater freshness of the product

# SCALE DEVELOPMENT: CONTRACTS AND DIMENSIONS

STORAGE &  
TRANSPORT

PROTECTION

CONVENIENCE

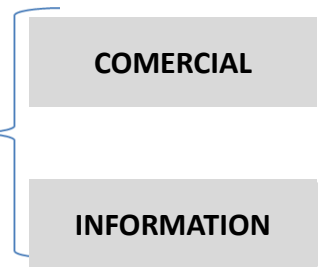
COMMUNICATION

SUSTAINABLE

ECONOMIC

HAND1	Facilitates the opening and closing of the product
HAND2	Facilitates the handling of product (packaging and /or lid ergonomic)
HAND3	Provides a good system of dispensing the product
HAND4	<b>Provides comfort and fast consumption of product: cooling, heating, incorporating utensils, etc. (Ex. Ready to eat ...)</b> <b>ACTIVE</b>
HAND5	Size suits the consumption needs

# SCALE DEVELOPMENT: CONTRUCTS AND DIMENSIONS



PROM1	<b>Stimulates the senses: emitting lights, sounds, voices, smells, etc.</b>	<b>INTELLIGENT</b>
PROM2	<b>Provides experiences of leisure (games, QR, 3Ds, virtual reality, etc)</b>	<b>INTELLIGENT</b>
PROM3	Makes it suitable and in the esthetic line of its content	
PROM4	Provides entertainment and consumer fun	
PROM5	Contains information that help a pick at the point of sale	
PROM6	Is innovative or different from other packaging	
PROM7	Makes an element to keep it or to do a collection.	

INFO1	Reports rigorously on its content	
INFO2	Indicates the benefits obtained after consumption of product	
INFO3	Contains information on prices	
INFO4	Informs about the legal regulations	
INFO5	Transmits the ethical values of brand (fair trade, social responsibility, sustainability, etc.)	
INFO6	<b>Reports the product temperature avoiding, for example, the damaged chain cold.</b>	<b>INTELLIGENT</b>
INFO7	Reports about the origin of the product	
INFO8	<b>Guarantees the authenticity of the product</b>	<b>INTELLIGENT</b>
INFO9	<b>Informs about the freshness of food.</b>	<b>INTELLIGENT</b>

# SCALE DEVELOPMENT: CONTRACTS AND DIMENSIONS

STORAGE  
& TRANSPORT

PROTECTION

CONVENIENCE

COMMUNICATION

**SUSTAINABLE**

ECONOMIC

SUS1	No contaminate the environment in its manufacture process
SUS2	No waste resources in its manufacture process.
SUS3	Makes accessible to people with vision impairment or in the handling objects (eg easy open, braille, reliefs and textures special, etc)
SUS4	Biodegradable
SUS5	Reusable, recyclable or returnable

# SCALE DEVELOPMENT: CONTRACTS AND DIMENSIONS

STORAGE &  
TRANSPORT

PROTECTION

CONVENIENCE

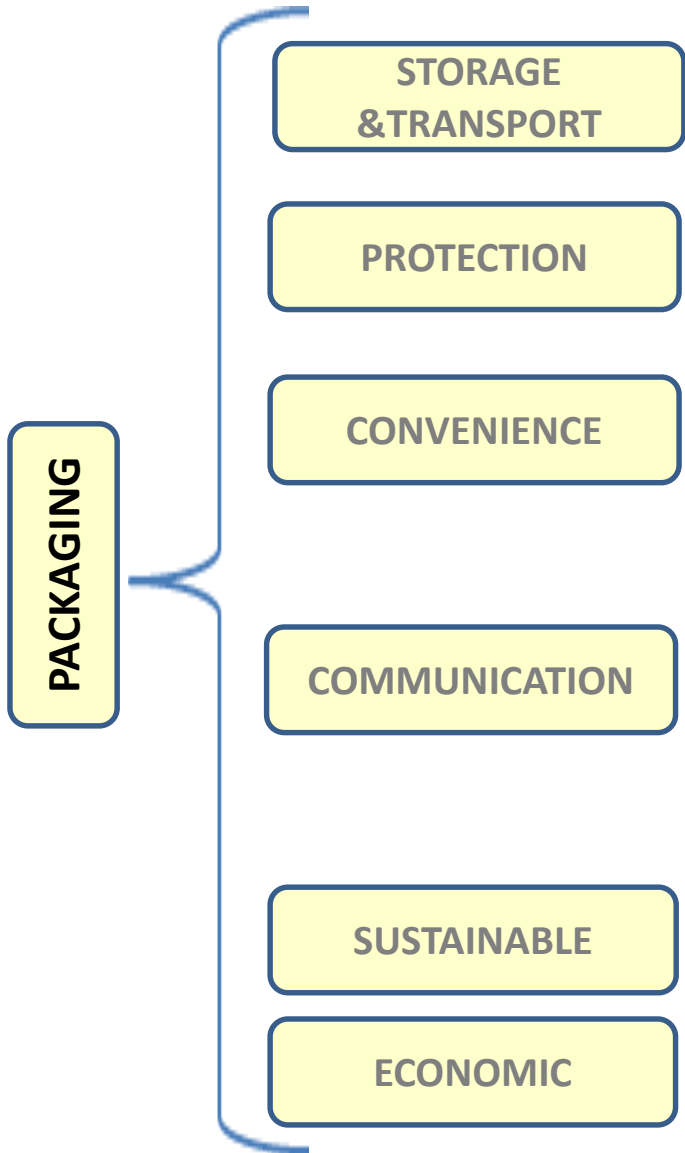
COMMUNICATION

SUSTAINABLE

**ECONOMIC**

COS1	Economical
COS2	Offers a good value
COS3	No increase too much the product price
COS4	Rational with the use of resources, without wasting them

# THE PROPOSED SCALE OF PACKAGING



STOR&TRA1	Facilitates the storage in the pantry reducing the need for space
STOR&TRA2	Makes very visible the date of preferential consumption
STOR&TRA3	Decreases in size after partial consumption of the product
STOR&TRA4	Makes the product easy to carry

PROT1	Prevents deterioration of the product
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PROT4	Ensures the quality of the preserving the taste and the taste of the ingredients
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COS4	Rational with the use of resources, without wasting them

**42 items**

# THE SCALE

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A scale needs sophisticated instruments to demonstrate psychometric properties.

## Reliability & Validity

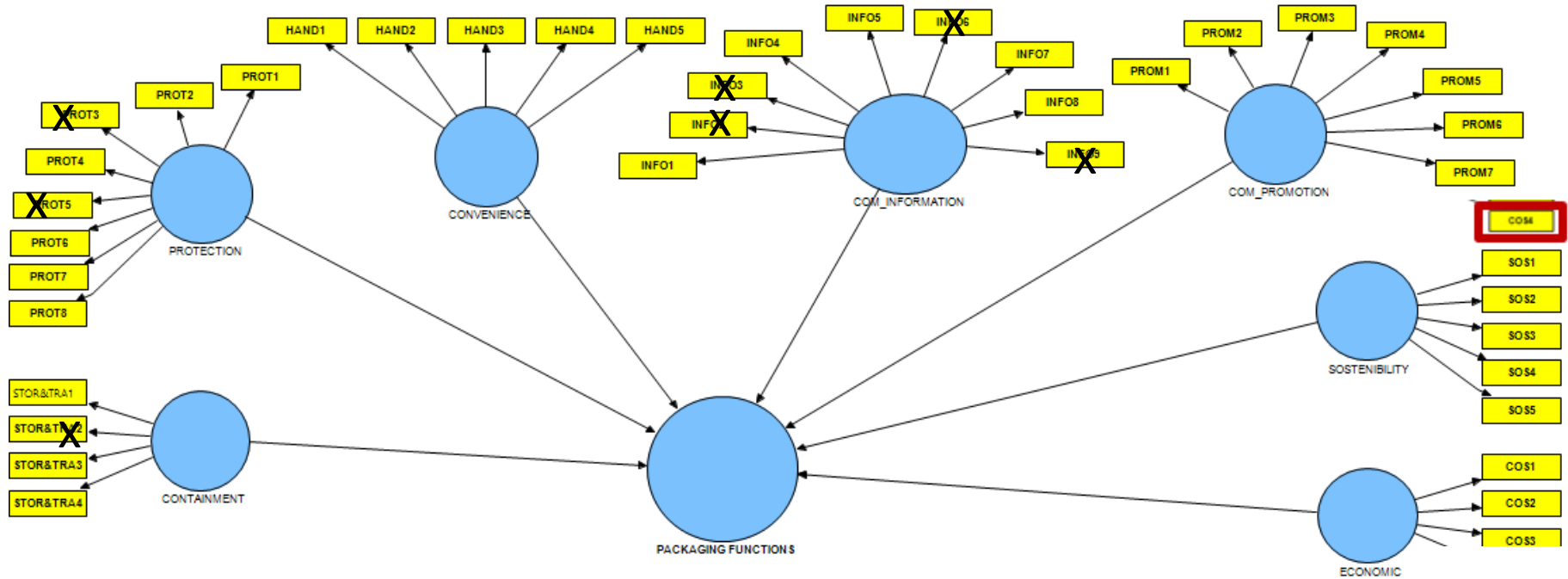
- **Reliability** - extent a measuring procedure yields consistent results on repeated administrations of the scale
- **Validity** - degree a measuring procedure accurately reflects or assesses or captures the specific concept that the researcher is attempting to measure

**Reliable**  $\neq$  **Valid**

**Convergent**

**Discriminant**

# THE PACKAGING SCALE ( PLS GRAPHIC)





# SURVEY: RELIABILITY TEST

## Fiability of ítems (more tan 0.7)

	OUTER LOADINGS (> 0,7)	OUTER WEIGHTS
<b>CONTAINMENT</b>		
STOR&TRA1	0,7543	0,3628
STOR&TRA3	0,7798	0,3709
STOR&TRA4	0,8574	0,5098
<b>PROTECTION</b>		
PROT1	0,6621	0,0777
PROT2	0,7138	0,2628
PROT3	0,7591	0,0594
PROT4	0,7223	0,1101
PROT5	0,8021	0,183
PROT6	0,7715	0,3076
PROT7	0,8057	0,1266
PROT8	0,773	0,1944
<b>CONVENIENCE</b>		
HAND1	0,7315	0,2288
HAND2	0,7461	0,2601
HAND3	0,7278	0,2506
HAND4	0,7694	0,4114
HAND5	0,6767	0,2064

	OUTER LOADINGS (> 0,7)	OUTER WEIGHTS
<b>COMERCIAL COMUNICATION</b>		
PROM1	0,7713	0,2491
PROM2	0,8807	0,2877
PROM4	0,848	0,2615
PROM6	0,7972	0,2443
PROM7	0,7124	0,1937
<b>COMMUNICATION INFORMATION</b>		
INFO1	0,66	0,1012
INFO4	0,7504	0,2236
INFO5	0,7464	0,287
INFO7	0,8807	0,4373
INFO8	0,7812	0,2126
<b>SOSTENIBILITY</b>		
SOS1	0,9083	0,2641
SOS2	0,8866	0,1838
SOS3	0,8385	0,1606
SOS4	0,8902	0,1676
SOS5	0,8704	0,12
COS4	0,781	0,2673
<b>ECONOMIC</b>		
COS1	0,8763	0,4561
COS2	0,8797	0,4646
COS3	0,807	0,2374

# SURVEY: RELIABILITY TEST

	Composite Reliability	Cronbachs Alpha
CONTAINMENT	0,8402	0,7187
PROTECTION	0,9124	0,8984
CONVENIENCE	0,8513	0,7882
COM_PROMOTION	0,901	0,8623
COM_INFORMATION	0,8763	0,8331
SOSTENIBILITY	0,9461	0,9329
ECONOMIC	0,8906	0,8234

All dimensions of the scale are acceptable ( $>0,7$ ), good ( $>0,8$ ) and excellent scores ( $>0,9$ )

**The scale is RELIABLE!**

# SURVEY: VALIDITY TEST

## CONVERGENT VALIDITY

	AVE
CONTAINMENT	0,6374
PROTECTION	0,5664
CONVENIENCE	0,5342
COM_PROMOTION	0,6465
COM_INFORMATION	0,5884
SOSTENIBILITY	0,7457
ECONOMIC	0,731

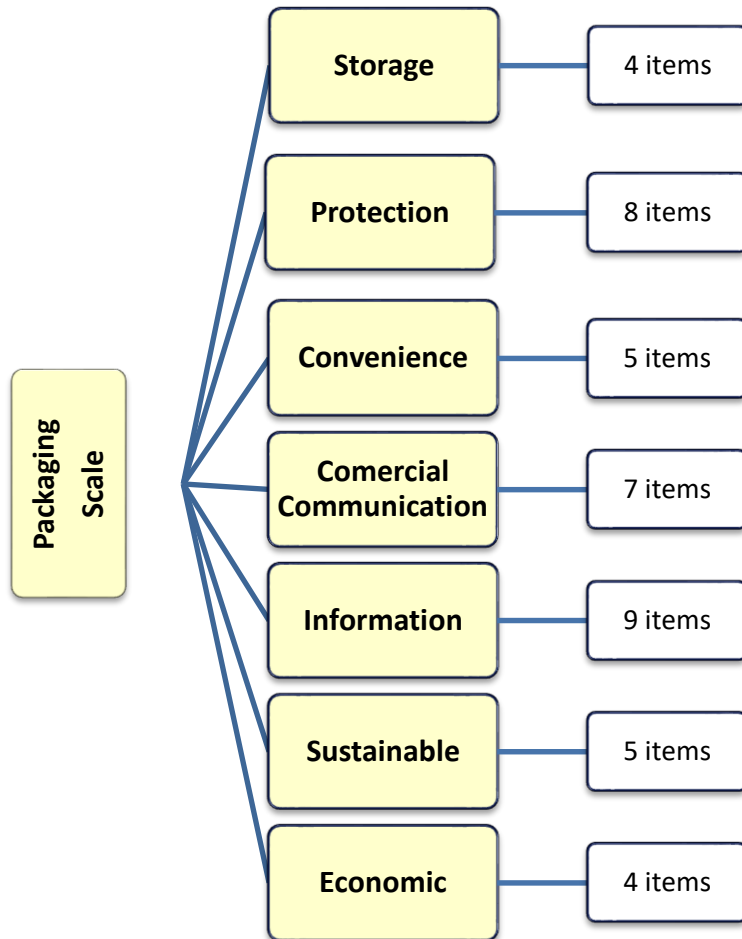
AVE > 0.5

## DISCRIMINANT VALIDITY

	com_informa tion	com_promot ion	containme nt	convenie nce	economi c	protectio n	sostenibilit y
com_information	1	0	0	0	0	0	0
com_promotion	0,1172	1	0	0	0	0	0
containment	0,2614	0,2185	1	0	0	0	0
convenience	0,2469	0,3732	0,4849	1	0	0	0
economic	0,3546	0,231	0,2891	0,3965	1	0	0
protection	0,4096	0,2231	0,4858	0,5291	0,383	1	0
sostenibility	0,5942	0,071	0,3514	0,2828	0,4132	0,3712	1

Correlation between variables are less than 0.8

# FINDINGS



**items**

The final scale to measure the packaging consumer perception of functions has got psychometric properties after tested with *millennials* in the food sector



# SURVEY: 4 SECTIONS

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1. **PRELIMINAR QUESTIONS:** Questions 1-3.

2. **SCALE-VALUE OF PACKAGING FUNCTIONS.** Questions 4-10

Can you value the important of XXX packaging function?

(7 dimensions-42 items total).

(7 point Likert Scale from not important to very important).

3. **PURCHASE INTENTION:**

- Would you buy packages with this properties? AIP (12-15)

- How much would you be willing to pay extra for a package like this ? AIP (2 questions)

4. **PROFILE DATA:** Year of birth. gender, place of residence, country, people at home, childrens, incomes, actual situation, level of studies. (24- end )

PREGUNTAS RESPUESTAS 3

Sección 1 de 5

## SURVEY ON THE PERCEPTION OF YOUNG PEOPLE ABOUT ACTIVE AND INTELLIGENT PACKAGING IN FOOD PRODUCTS

This questionnaire is part of an investigation by the Department of Business Organization and Marketing of the University of Vigo in the framework of the European project COST Action FP1405.


In any case, the anonymity of the respondents will be preserved.

Please, if it is possible it would be interesting for us that you answer all the questions so this survey is not cancelled

Título

NOTE: This questionnaire is intended for those who were born between 1980 and 2000. If you were not born in this interval we thank you for your collaboration but your response is not valid for this research.

Título de la imagen



How important is packaging for you when you buy food products \*

1 2 3 4 5 6 7

Not important        Very important

# SURVEY

**Confidence level:** 95%

**Margin of error:** Confidence interval: 5,5%

**Population:** 479.310 millennials (born 1980-1995)  
(22-37 years now)

**Place:** (Galicia region in Spain)  
(Spain and other Actinpack participants countries).

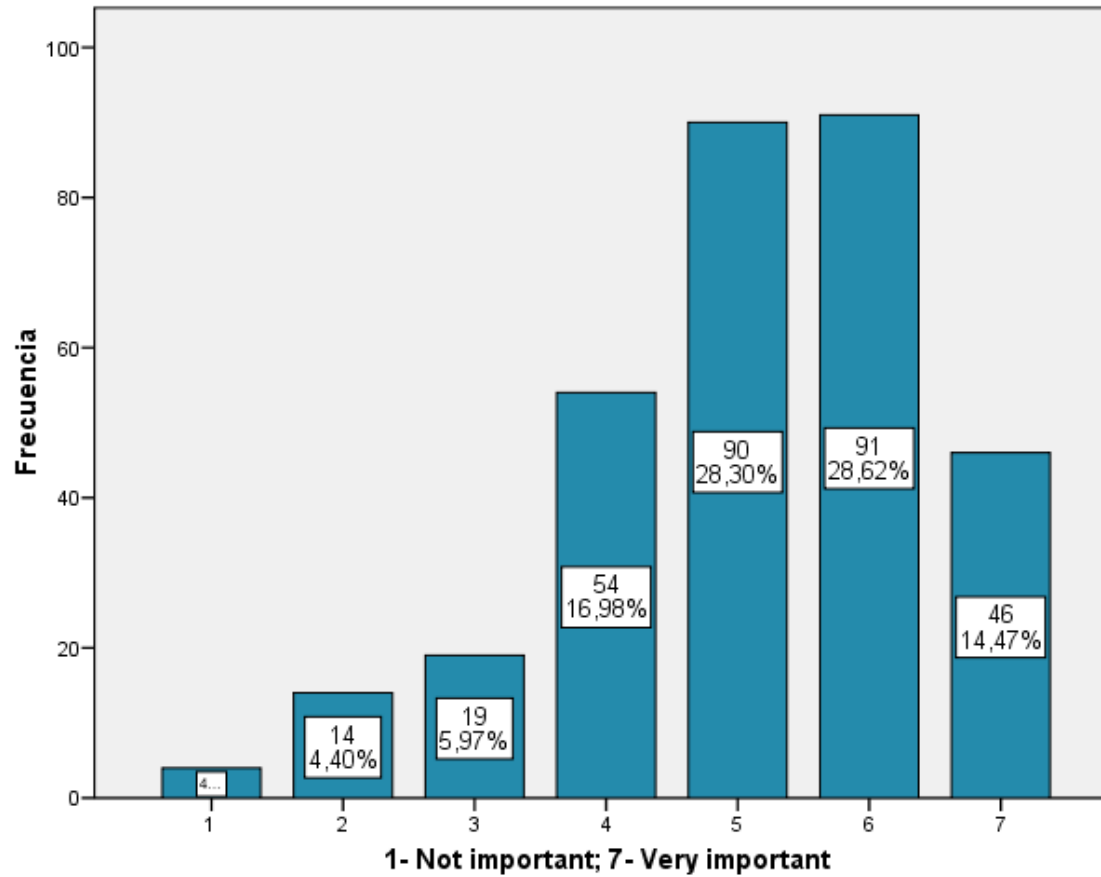
**Sample size:** 318 answers

**Methodology:** Online questionnaire online with Likert scales of 7 points

**Period of time:** 6th to 24th of October

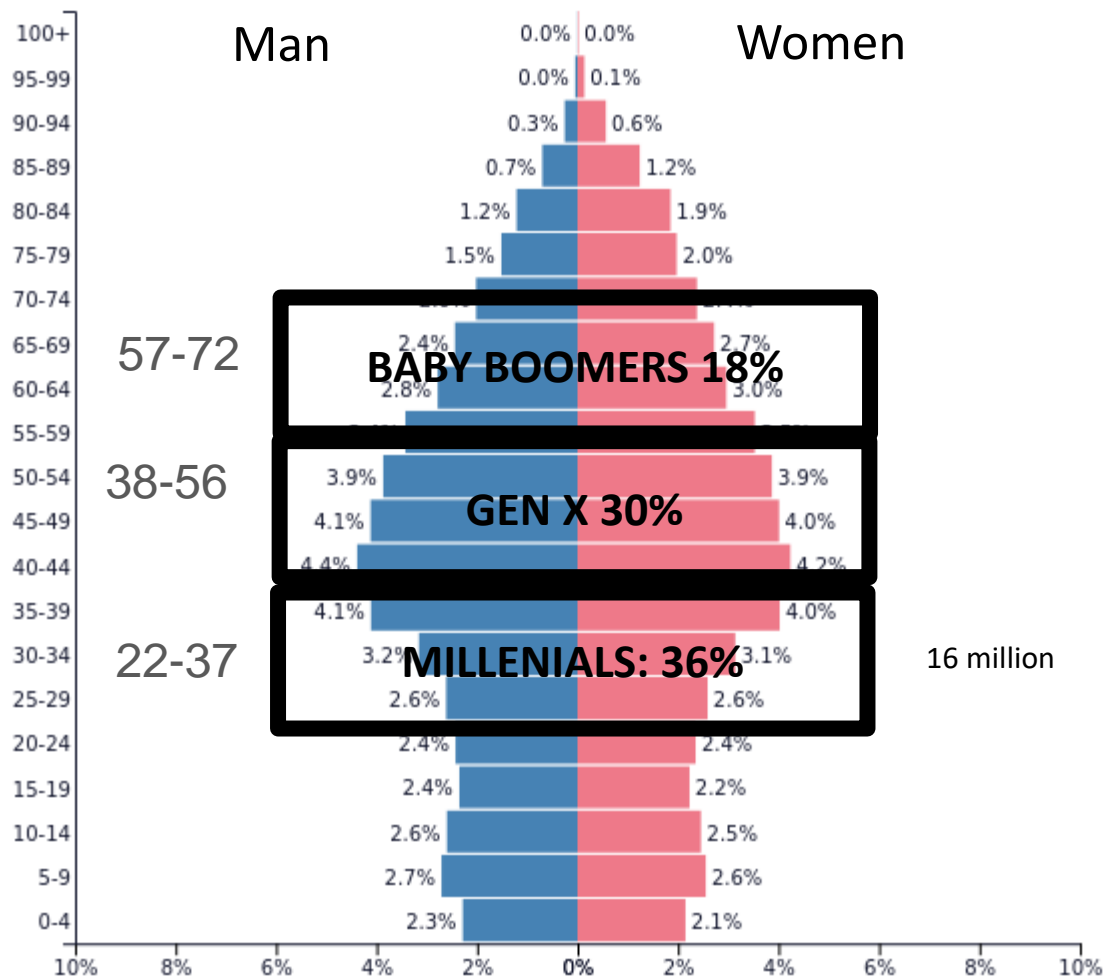
# SURVEY: RESULTS

How important is packaging for you when you buy food products?





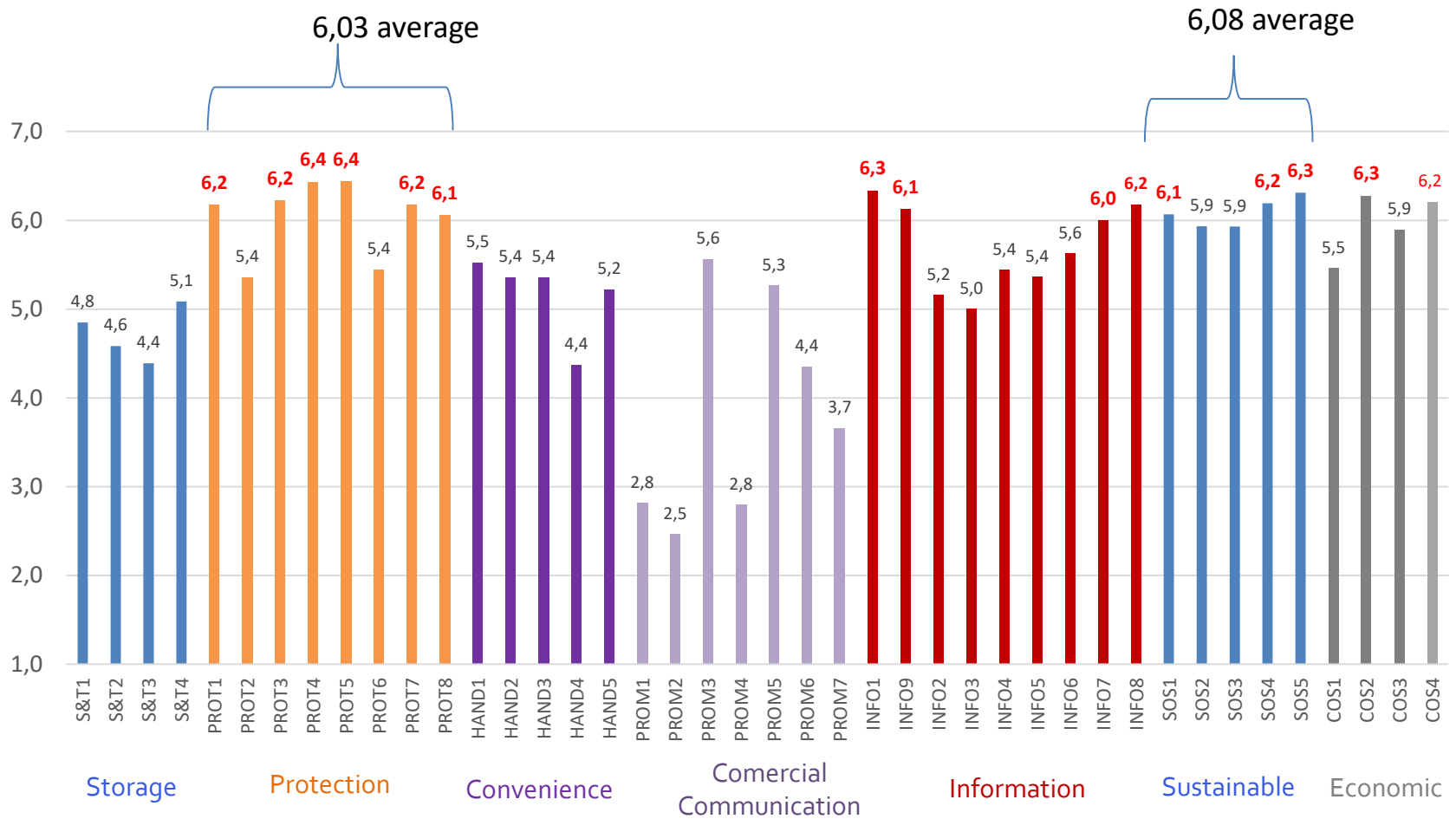
# SURVEY : SPAIN POPULATION PYRAMID



**España - 2016**  
**Población: 46,064,604**

PopulationPyramid.net

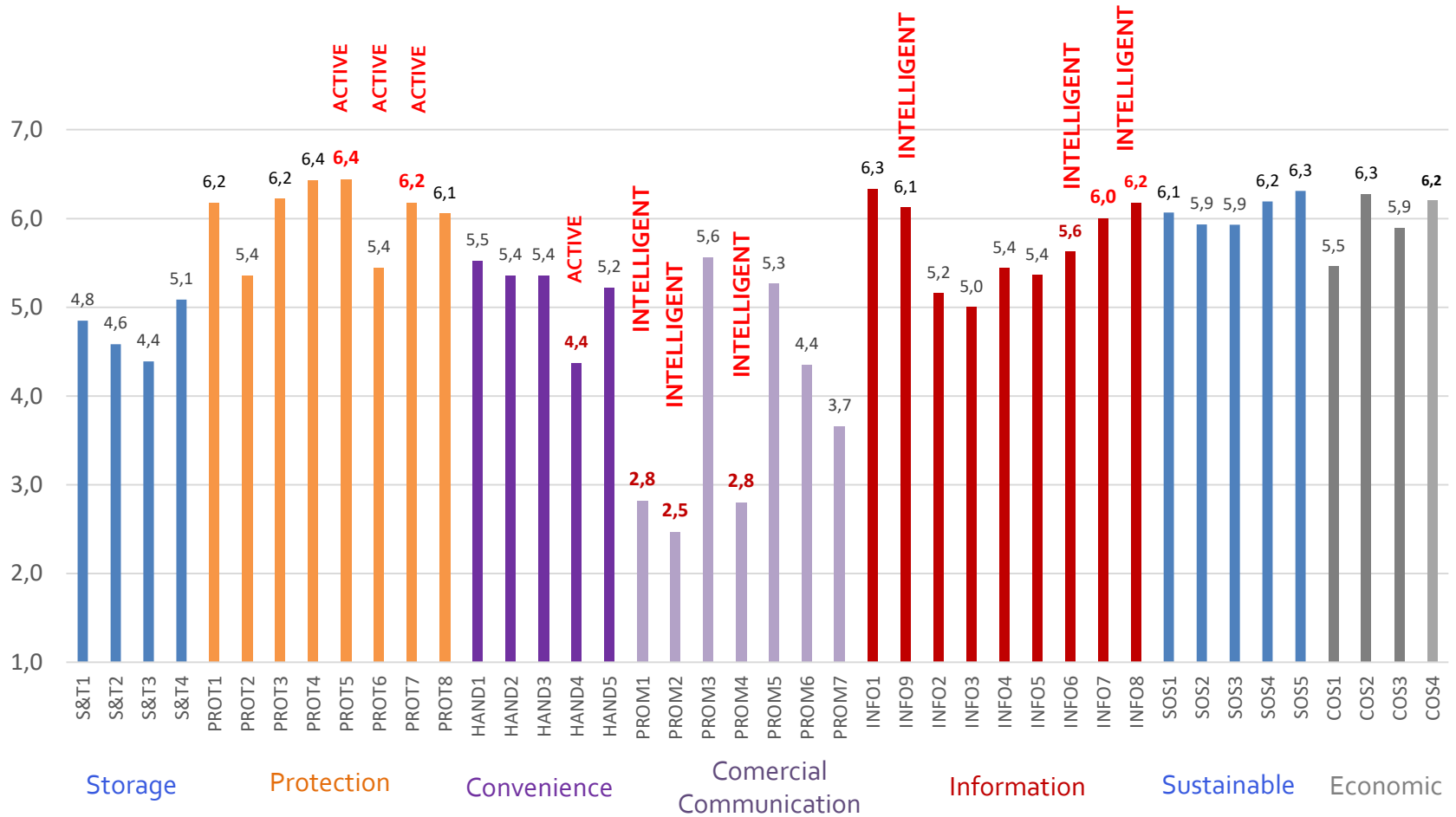
# SURVEY: CONSUMER VALUE OF PACKAGING FUNCTIONS



7 points scale

1- Not very important-7-Very important

# SURVEY: CONSUMER VALUE OF PACKAGING FUNCTIONS



7 points scale

1- Not very important-7-Very important

# SURVEY: CUSTOMER BARRIERS FOR ACTIVE PACKAGING

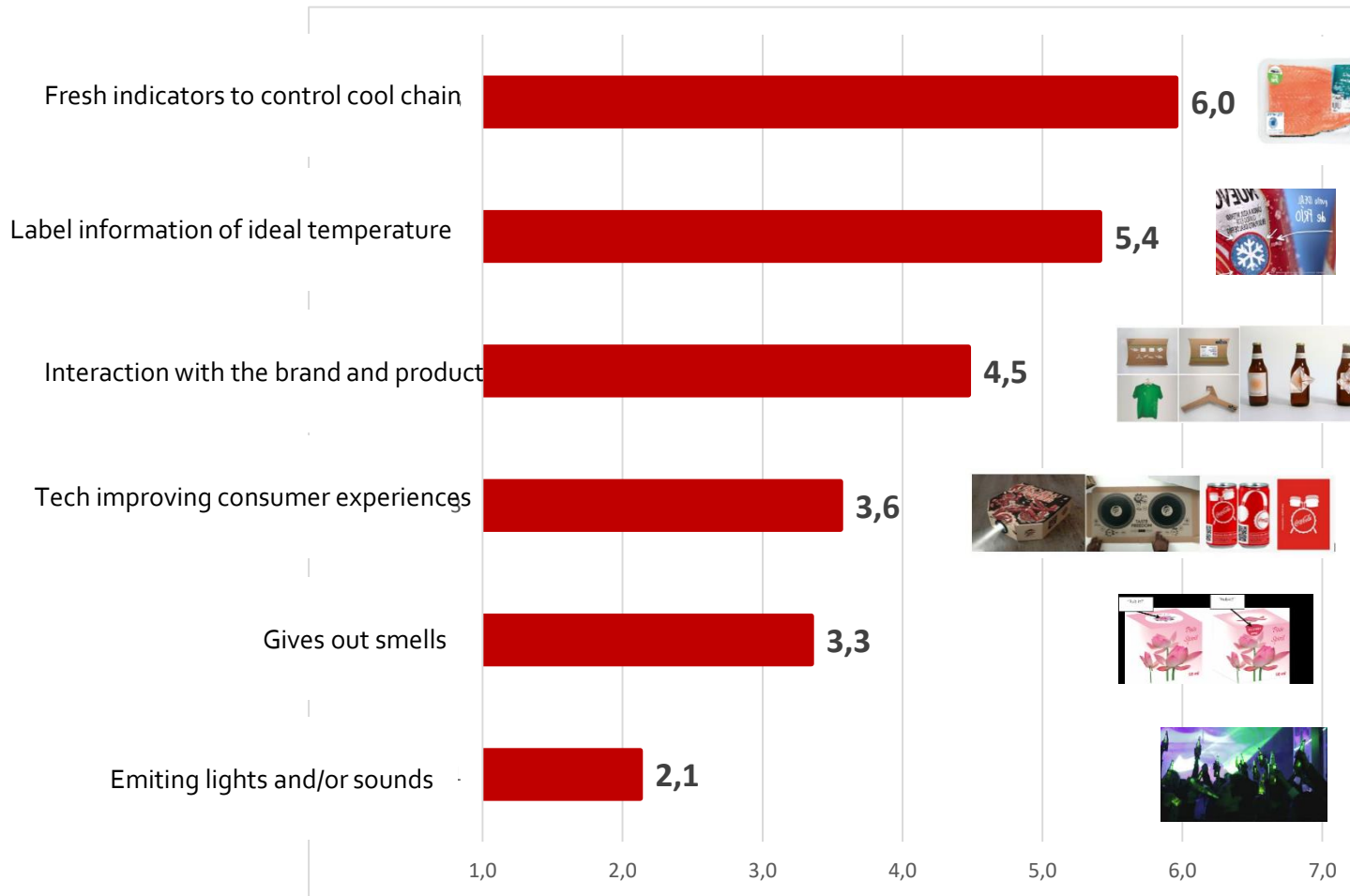


How would you react to a packaging that says  
*"contains substances that interact with the  
product lengthening its life"*?



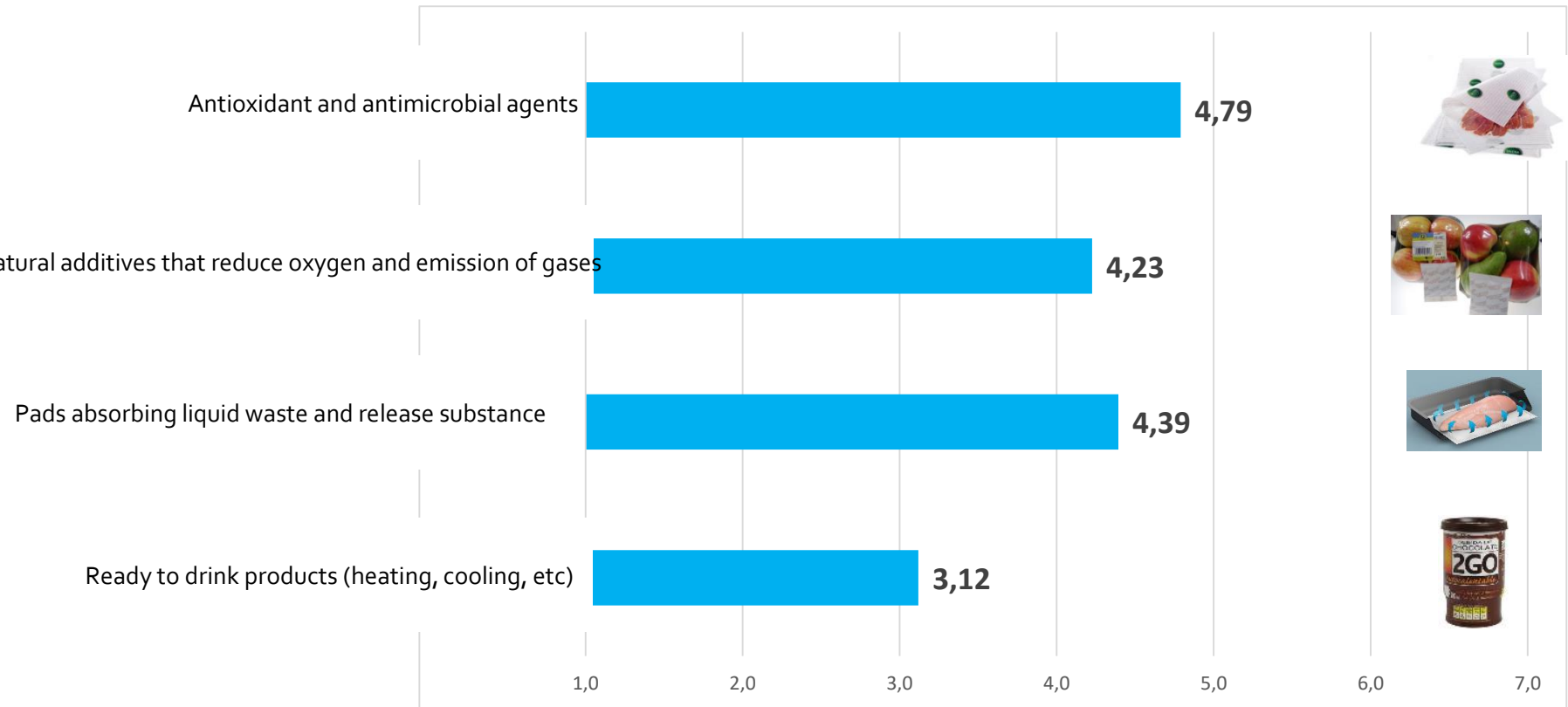
# SURVEY: INTELLIGENT PACKAGING AND PURCHASE INTENTION

Would you buy packages with this properties?



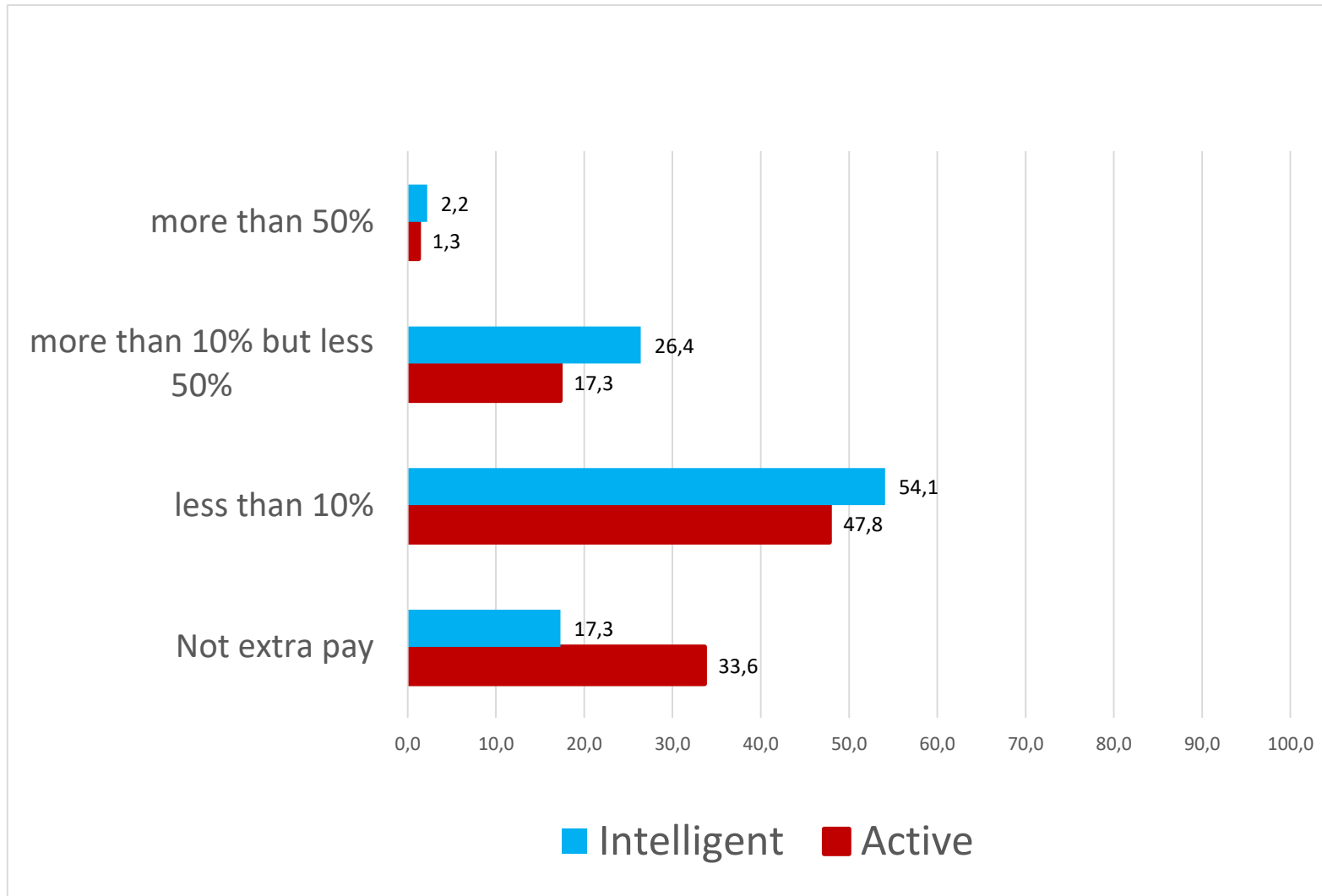
# SURVEY: ACTIVE PACKAGING AND PURCHASE INTENTION

Would you buy packages with this properties?



1- Definitely not buy - 7-Definitely buy

# "WILLINGNESS TO PAY EXTRA"



# COLLABORATION?

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We ask for your collaboration to spread the survey in other participating countries in the COST Action.



# ActInPak

COST Action FP1405

## THE CONSUMER PERCEIVED VALUE: DEVELOPMENT OF A MEASUREMENT SCALE FOR PACKAGE FUNCTIONS.

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