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1 **Marketing strategies to self-sustainability of autochthonous swine breeds from different EU**
2 **regions: a mixed approach using the World Café Technique and the Analytical Hierarchy**
3 **Process**

4

5 **Highlights**

- 6 • Extensive and semi-extensive swine production has decreased enormously in Europe since 1970s.
- 7 • The sustainability of five local swine chains are evaluated using World Café and Analytical
8 Hierarchical Process methods.
- 9 • Some common trends were identified to create added value: diversification of production towards
10 quality, innovation in traditional products, enhanced standardization, PGI and PDO brands.
- 11 • Properties of grazing systems, the heritage dimension, and improved healthiness of products must
12 be emphasised as crucial strategies.

13

14 **Abstract**

15

16 Extensive and semi-extensive production based on local swine breeds such as Majorcan Black
17 Pig, Cinta Senese, Gascon, Krškopolje and Turopolje is becoming extremely rare and on the verge
18 of disappearing in Europe. In this context, the main aim of this study was to assess the potential
19 feasibility of marketing strategies to act as guidelines for stakeholders along the supply chain to
20 create and improve added value and match market demands. The sustainability of five production
21 systems was evaluated together with 60 stakeholders representing five local swine breeds, using a
22 World Café (WC) method combined with an Analytical Hierarchical Process (AHP). The results
23 showed that the proposed strategies could differ slightly depending on each system, while the
24 product strategy was a common marketing priority for most of the stakeholders and represented
25 all the systems evaluated. Diversifying production towards quality, innovative products, enhanced
26 standardization, and quality labelling or seals of guarantee, such as the Protected Geographical

27 Indication (PGI) or the Protected Designation of Origin (PDO), would contribute to the
28 sustainability of these chains. Advertising the storytelling of the meat products and emphasising
29 their healthier properties were also considered as positive strategies. To this effect, promotion
30 should involve improving knowledge of the local systems and raising the profile of the meat
31 products via public relations (networks, web pages, food and gastronomic events, workshops, and
32 so on) in the Hotels, Restaurants and Catering (HORECA) sector, stores selling top-quality
33 products, and local food shops. Better showcasing of these products and keeping the price in the
34 premium segment would indirectly help the primary sector.

35 By way of conclusion, other more developed local swine systems could be strong competitors,
36 hence it is extremely important to have an effectively identify and trace all autochthonous swine
37 breed products throughout the production chain. Furthermore, the entire chain must place greater
38 emphasis on grazing (extensive or semi-extensive), the origin of the swine, and their meat
39 products. However, of utmost importance is cooperation between farms, firms, and institutions.

40	Keywords:
41	Autochthonous swine breeds
42	Local meat products
43	PDO, PGI products
44	Analytical Hierarchy Process
45	World Café Focus Group
46	Marketing
47	
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52 1. Introduction

53 The sustainable conservation of autochthonous swine breeds and local chains could be partly
54 achieved by highlighting the high quality intrinsic and extrinsic properties of the products derived from
55 them and by promoting their consumption by specific market niches (Vitale et al., 2020). Moreover,
56 traditional food products constitute an important element of European culture, identity, and heritage
57 (Ilbery and Kneafsey, 1999; Lebret et al., 2018), and are increasingly being proposed as a way to raise
58 societal awareness of rural landscapes (Soy-Massoni et al., 2019). However, innovation in traditional
59 products may face some challenges related to the likely contested understanding of these concepts
60 (Guerrero et al., 2012), making it particularly difficult to develop innovations acceptable to consumers.
61 Improving breed profitability through niche markets and increased added-value products (i.e. healthier
62 nutritional properties (Romanzin et al., 2013)), ensuring a return to breed populations high enough to
63 maintain adequate genetic diversity and hence safeguard breed survival (Bozzi and Croveti, 2013). Varga
64 et al. (2016) reported that swine grazing had almost disappeared in Europe by the 1970s. In this context,
65 research on market opportunities and analysis of consumer preferences and the factors affecting
66 sustainability will be a key strategy, This will focus on the renewability and resilience, thereby aiming to
67 regenerate the social, environmental and economic impacts (Swisher et al., 2018).

68 Some studies (Brown, 2003; Conner et al., 2009) have concluded that local foods are related to
69 spatial proximity, freshness, and higher sensorial quality, but for the authors the most important “local”
70 promotion message may be “Grown in” and the name of the region or city rather than the distance (from
71 food production to consumers). Howard (2006) also found that consumers prefer to obtain information
72 that includes the word ‘local’ on labels or in brochures rather than through direct interaction with the
73 seller. Unlike intensive production, the swine in the five local systems studied are raised
74 outdoors/extensively and so depend on the resources of their natural surroundings, defined as grazing
75 habitats in the review carried out by Varga et al. (2016). Moreover, consumers perceive pasture-raised
76 products as healthy, natural, and environmentally friendly and some of them are willing to pay a premium

77 price for pasture-raised meat-based products (Font-i-Furnols and Guerrero, 2014; Stampa et al., 2020).
78 These Localized Agro-Food Systems also open new perspectives for territorial and regional development
79 projects (Muchnik et al., 2008).

80 In this context, research on market opportunities, analysis of consumer preferences and the factors affecting
81 their acceptance of different types of product is a crucial strategy to support traditional autochthonous swine
82 breeds and promote their development. Effective promotional and marketing strategies have been defined
83 for potential markets through developing the role of location in promoting more advantageous sales methods
84 for farmers in non-traditional distribution channels (short distribution channels, direct sales). The present
85 study has a twofold objective: first, to carry out a Strengths, Weaknesses, Opportunities and Threats
86 (SWOT) analysis on five European autochthonous swine breed production systems to identify the critical
87 points of the adopted marketing channels; and second, to identify appropriate marketing strategies for each
88 study case to provide stakeholders along the supply chain with guidelines for enhancing added-value
89 products and for developing direct marketing alternatives to analyse viability and feasibility.

90 **2. Material and Methods**

91 The aim of the TREASURE H2020 project (Horizon 2020 Programme, 2015) was to improve the
92 conservation status of 20 European autochthonous swine breeds through innovative strategies that
93 included untapped new market options for these breeds (Čandek-Potokar and Nieto Linan, 2019). Five of
94 them and their related value chains with contrasting properties in terms of level of development and
95 organization and representing different EU regions were considered for a study of their marketing
96 strategies (Karolyi et al., 2019, Lukač et al., 2019; Mercat et al., 2019; Pugliese et al., 2019; Tibau et al.,
97 2019). The reason for including the untapped breed is that it was mandatory in the UE call for proposals
98 (Research and Innovation Action, Grant agreement N°: 634476).

99 2.1. Experimental design

100 We followed a mixed method research methodology and applied a joint qualitative and quantitative
101 approach (Weible et al., 2016), carrying out focus group (FG) sessions using the WC method and the AHP
102 because of their specific strengths. Five focus group (FG) sessions, one for each of the case studies, were
103 performed between May and July 2018 in Louey (Hautes-Pyrénées -France), Florence (Tuscany -Italy),
104 Palma de Mallorca (Spain), Ljubljana (Slovenia), and Zagreb (Turopolje region -Croatia).

105 Each FG included at least 12 stakeholders from each local system, with a balanced representation
106 of the five stages in the value chain (Fig.1). The suggested shares of stakeholder profiles in the FG were
107 three farmers, two processors, a civil servant/policy maker working in public administration (either
108 regional or local), a representative related to the governance of the quality seal (PDO/PGI), if applicable, a
109 traditional store retailer, a supermarket retailer, a food service representative (restaurants), and two people
110 working in consumer associations (n= 60 in total). The final number of participants in each profile was
111 adapted slightly in each case study, depending on the characteristics of the corresponding supply chain.
112 The WC was applied to gain insights into two sets of attributes in each case study: (a) the SWOT matrix
113 and (b) the most suitable marketing strategies based on the 4Ps of marketing (Product, Price, Place and
114 Promotion) for the breed production system. The WC is a structured conversational process intended to
115 facilitate open and intimate discussions, and share ideas within a larger group to obtain collective
116 consensus decisions.

117 All the participants were balanced (in terms of number and also the type of stakeholder in the chain)
118 and separated into four thematic tables (groups for the discussion) with one moderator per table. Each
119 table was designed to gather information about one of the four components of the SWOT analysis. For 10-
120 12 minutes, the participants at each table expressed their thoughts about the Strengths, Weaknesses,
121 Opportunities and Threats regarding the pertinent swine production systems and their meat products.
122 Further, the groups agreed among themselves on a list of the most relevant items, along with the
123 moderator. Afterwards, they moved to another table, ensuring that no two participants coincided at two

124 consecutive tables. This rotation was repeated until all the stakeholders had participated at all the four
125 tables.

126 The most relevant items raised in terms of SWOT at each discussion table were then voted in a
127 plenary session. Each participant chose three prominent items depending on their choice, and further
128 ranked them to assign three, two or one point based on the rank. In a second step, participants addressed
129 the marketing strategies (4Ps). The same procedure was then followed to obtain the preference values for
130 the 4Ps, conducting four rounds of discussion (one P per table: Product, Price, Place, and Promotion) and
131 voting in a plenary session to determine the three most important items for each marketing strategy. At the
132 end of the WC sessions, the information collected was used to design an AHP survey, which was emailed
133 to the WC participants with a briefing on how to fill out the questionnaire, to be returned within the next
134 48 hours after reception.

135

136 **2.2. The relative importance of four marketing strategies: The Analytical Hierarchy Process** 137 **(AHP)**

138 The AHP was carried out to measure the relative importance of the main elements of the marketing
139 mix strategies involved in the product, price, place, and promotion policies extracted from the WC
140 discussion sessions. The AHP methodology has been used previously to evaluate marketing mix elements
141 (Abedi and Abedini, 2017) but to the best of our knowledge very few studies on this have been directed at
142 the food sector (Borrisser-Pairó et al., 2016). Prioritizing marketing mix elements can help members of the
143 supply chain make strategic decisions to attract customers and meet their needs. The AHP is a multi-
144 criteria decision-supporting method in discrete environments, which aims to breakdown a complex
145 decision problem into a hierarchy of smaller constituent sub-problems (Saaty, 1977). Determining the
146 most preferred policy from a set of policies to help the untapped breeds to thrive is a decision problem for
147 which the top level of the hierarchy represents the marketing mix strategy. It is broken down into a

148 predefined number of characteristics (policy decisions) on the second level and their policy types on the
149 third level (Fig. 2).

150 The AHP estimates elicit weights (w) for each policy and policy level to explain individual
151 behaviour in choosing the preferred marketing mix strategy. The relative importance or weight (w) for
152 each policy (P_n) and policy type ($L_{n,p}$), (where n ($1 \dots N$) is the number of policies and p ($=1 \dots P$) is the
153 number of policy levels) is obtained from pairwise comparisons. To implement the AHP, participants in
154 the WC discussion were asked to make two types of pairwise comparisons: a) pairwise comparisons of the
155 policy level; and b) pairwise comparisons between the policies (product, price, place, and promotion). The
156 respondent first had to indicate the relative importance of the two elements compared. A nine-point scale
157 was then used to measure the strength of this relative importance using verbal judgments (Saaty, 1977).

158 An example of the pairwise comparison can be seen in Table 1. Using the result elicited from this,
159 the AHP estimated the weights (w) for each policy and policy level to explain individual behaviour in
160 choosing the preferred marketing mix strategy.

161

162 3. Results and Discussion

163

164 3.1 Main results and discussion of the SWOT analysis of local swine systems

165 The most relevant Strengths, Weaknesses, Opportunities and Threats for Majorcan Black pig
166 (MBP), Cinta Senese (CS), Noir de Bigorre (NB), Krškopolje Pig (KRS), and Turopolje pig (TP) are
167 detailed below in Table 2. It provides a summary of the stakeholders' opinions gathered from the SWOT
168 analysis of each local swine breed system in which differences and common aspects can be appreciated.

169 The strengths of these swine breeds are based on their being differentiated native breeds adapted to
170 the land and different agro-climatic conditions, reared within traditional extensive systems, and fed using
171 natural resources (e.g., pasture grass, cereals, legume seeds, figs, almond, acorns, and several
172 Mediterranean shrubs). Another strength is that the meat and its products have the PGI or PDO seal.

173 Furthermore, cultural heritage and terroir products were highlighted by the stakeholders of the NB and
174 KRS local systems.

175 One of the main strengths identified in the SWOT analysis was the high quality of the products and
176 their link to the «heritage patrimony». This is a very important aspect of these local production systems
177 underlined by Pensado-Leglise and Sanz Cañada (2018). However, their research also shows that these
178 characteristics are insufficient to generate the incomes needed by farmers, which will put the sustainability
179 of these chains at risk in the near future. In relation to this, Čandek-Potokar et al. (2018) recommended
180 that the majority of local swine breed producers still need to be supported by subsidies to ensure their
181 conservation. However, these authors also reinforce the idea that the best strategy is to breed systems
182 aiming to reach self-sustainability. This may be possible through an effective marketing strategy of the
183 meat products obtained from local swine breeds (Čandek-Potokar et al., 2018).

184 The weaknesses included the high costs of farming derived from a low prolificacy (reproduction
185 rate), the consequent high price of the products, and the small size of the farms. Ageing farmers, product
186 heterogeneity in terms of quality, and a lack of professionalism, collaboration, and marketing strategies is
187 challenging for these breeds to adapt to the current market demands. These weaknesses should be
188 overcome to face current consumer demand. Moreover, these local swine breed production systems should
189 be in line with the Local Agro-Food System (SYAL), because this would imply a better mutual
190 cooperation network among stakeholders along the entire chain and new perspectives for public policies
191 and for territorial and regional development projects (Muchnik et al., 2020).

192 The opportunities were based on strengthening consumer loyalty within the local market, including
193 the tourist market, and the promotion of traditional products with a PGI or a PDO label, highlighting their
194 international expansion. Growing market demand for different cuts of fresh meat in the retail market and
195 for high-quality fresh meat and ready-to-eat formats in the HORECA sector (HOTels, REstaurants and
196 CAtering) has made the strategy of launching innovative products an attractive business opportunity, with
197 positive consumer perceptions of local products and production systems.

198 The main threats all centre on competition with other local swine breeds, mainly in the MBP and
199 NB chain, and with other low-priced commercial meat products made from quality cuts. Also mentioned
200 were the misconceptions surrounding the word black among the NB and Iberian products. Furthermore,
201 consumers' negative perceptions regarding the high fat content of meat products and product frauds
202 increase mistrust among consumers, and their health and animal welfare concerns may determine the
203 swine breeds' survival. Another concern was regarding the aging farmers who adopt inefficient
204 management practices.

205 To sum up, one of the main strengths identified from the SWOT analysis was the high quality of the
206 products and their link to cultural patrimony. This is a very important aspect of these local production
207 systems, underlined by Pensado-Leglise and Sanz Cañada (2018). However, these authors also explain
208 that the identified strengths are insufficient to justify the continued payments to farmers, risking the
209 sustainability of these chains in the near future. They also point out that there may not be sufficient market
210 support for these local systems, biodiversity, and cultural patrimony. Along these lines, Čandek-Potokar et
211 al. (2018) recommend that most local swine breed production still need to be supported by subsidies to
212 ensure their conservation. However, these authors also reinforce the idea that the best approach is making
213 these breed systems self-sustainable, which may be possible with an efficient marketing strategy for their
214 products. Another approach is the work of Sanz-Cañada and Muchnik (2016), who emphasized that these
215 Localized Agro-food Systems (SYAL), built on identity-based food products, could be crucial for a more
216 sustainable rural development. But, of utmost importance is the cooperation between farms, firms, and
217 institutions.

218

219

220 **3.2 Main marketing strategies of the local systems based on the 4P analysis: implications for the**
221 **potential to introduce the products into the market and for conserving the swine breeds.**
222

223 No scientific or systematized studies have previously been undertaken or published on marketing
224 strategies for the self-sustainability of the five autochthonous swine breeds. There may only be a few
225 publications containing descriptive characteristics.

226
227 *3.2.1 Majorcan Black Pig*

228 The most relevant product policy identified by stakeholders was the diversification of meat products
229 to increase the position of the MBP brand in the market (37.43%) by including innovations focused on the
230 nutritional properties of the products, process innovation, and format size, thereby meeting consumer
231 demands (Vitale et al., 2020), and strengthening the PGI brand (26,75%) (Fig.3). Also relevant was
232 improving the sensory quality of the products (35.82%), including extending their shelf life and
233 highlighting their nutritional value. These strategies are similar to the ones mentioned by Guerrero (2001).

234 Regarding the place strategy, increasing the presence of MBP processed food, including *sobrassada*
235 (seasoned, dried, and fermented sausage with a PGI certification), *porcella* (suckling piglet) and fresh
236 meat cuts, in local restaurants, was identified as one of the most important strategies (42.98%), together
237 with enhancing the availability of *sobrassada* in local shops (33.58%). Besides, stakeholders stated that the
238 PGI Regulatory Council and public administrations must be encouraged to support commercial actions
239 that ensure the presence of MBP processed food in large retailers, thereby strengthening the MBP image
240 (21.44%). These findings support the conclusions from Giraud (2002), who suggested that marketing
241 plans of typical foods should mainly focus on local consumers.

242 The most relevant action (42.29%) for the promotion strategy was to increase the presence of MBP
243 products at sectoral and gastronomic fairs via public relations, followed by promotion on TV, online and
244 in the press (31.19%), and the promotion of MBP products in primary schools with public administration

245 support (26.52%). Furthermore, the proposed branding strategy using the TREASURE projects as support
246 was considered as a "marketing tool that could promote the MBP as a differentiated and autochthonous
247 swine production system".

248 The stakeholders' price strategy (40.32%) was to maintain a high price based on a premium
249 category. Some stakeholders also advocated for a different distribution of prices along the production
250 chain, which would favour higher revenues for farmers, indirectly promoting the development of the
251 primary sector. This aligns with some policy initiatives such as those launched by the French and Spanish
252 governments to develop value chain legislation aimed at ensuring a minimum price for farmers.

253

254 3.2.2 *Cinta Senese*

255 In this system, product heterogeneity is considered a hurdle for building a loyal customer base.
256 Thus, the most relevant product strategies were to improve the standardization of the food processing
257 among producers (38.15%) (Fig.4) and to promote the healthier nutritional properties of the processed
258 food (35.75%). Modifying some of these characteristics, including reducing the salt and additive content,
259 would help to better match customer needs. Increasing sales of raw meat should also eventually be
260 promoted (26.10%); indeed, this type of product can be sold directly by the farmer, representing an
261 immediate source of income and an interesting tool for rural development (Chambers et al., 2007; Sanjuán
262 et al., 2012). Moreover, producers believe that the sensory traits associated with CS are more appreciated
263 in fresh meat than in processed food. There was a certain disagreement among stakeholders regarding the
264 prioritization of place strategies, with two strategies of almost equal importance emerging. The two most
265 relevant strategies for the sale and distribution of CS processed food were high-quality restaurants
266 (37.15%) followed by stores selling top-quality products (36.33%). The latter category also includes GDO
267 (large-scale distribution) gourmet lines, even though most of the producers were against GDO sales
268 policies. Despite the increasing difficulties faced by local stores such as butchers' shops to compete with
269 GDO, they remain an important selling channel, making this placing strategy still worthwhile (26.53%).

270 Moreover, short supply chains and local retailers are preferred over GDO for high added-value products
271 such as PDO and/or PGI-labelled products, since they can provide consumers with direct information
272 about meat origin, processing methods, and animal rearing systems (Ilbery et al., 2004; Marsden et al.,
273 2000).

274 Within this context, the promotion policy using social networks was considered the most important
275 one for the CS system (38.18%), followed by collaboration with renowned chefs (34.88%) and cooking
276 schools (26.94%), which might help raise the profile of CS products outside Tuscany. Limited consumer
277 knowledge of the breed and GDO competition for price polices were considered to be strong hurdles for
278 price strategies in the CS chain. However, stakeholders firmly agreed that a further price increase could be
279 an attractive strategy (49.70%) to differentiate CS production systems and acknowledge their value, but
280 that it should go hand in hand with an enhanced marketing strategy, possibly encouraging tasting
281 experiences at purchasing points.

282

283 *3.2.3 Noir de Bigorre*

284 The product strategy is a priority for the Noir de Bigorre chain-Gascon breed and is related to the
285 development of products and their image. To strengthen product traceability for consumers, it was
286 considered that an "identity card" for hams and loins would enable a certain product to be associated with
287 a particular farmer and the pig feeding method or practices (45.12%) (Fig. 5). The implementation of
288 open-air drying/ripening rooms (33.28%) and the (increased) possibility of marketing ham slices cut with
289 a knife (rather than a slicer) are possible innovations in the chain (21.60%).

290 The place strategy is ensured by the coverage of local stores in the PDO area, serving as
291 ambassadors for the products (41.25%) and improving local product visibility. Working with a high-end
292 specialized network (31.10%), possibly outside the geographical area of production, would be another
293 opportunity to promote the distribution and sale of NB processed food.

294 Regarding the promotion strategy, this is mainly linked to its heritage dimension. This result is in
295 line with the work of Sanz-Cañada and Muchnik (2016), who showed that identity-based food is related to
296 territory. To support these products, it is important to focus on their showcasing and cooking lessons
297 highlighting their sensory characteristics (44.68%). Different promotional strategies have been identified
298 based on the relationship between the food and its story. Training in the product history for all the
299 stakeholders in the sale of the product is a key element (37.49%). A two-pronged product promotion
300 strategy was considered, one for the public, based around the PDO and the acknowledgement of values of
301 the NB chain, and the other for professionals (17.84%).

302 Last, the price strategy is based on a modification of the carcass payment grid to include meat
303 quality indicators (48.61%) in an attempt to improve the quality of the meat and fat and to manage its
304 variability.

305

306 *3.2.4 Krškopolje Pig*

307

308 The stakeholders described dry-cured products, fresh meat, and innovative culinary products to be
309 the three most important product strategies. Following the AHP analysis, the highest relative importance
310 (Fig. 6) was assigned to dry-cured products (49.46 %).

311 Regarding the place strategy, the AHP analysis revealed that stakeholders considered the most
312 important channel for the products from the breed (42.99%) to be direct sales, with business gifts
313 mentioned. This type of distribution is further supported by the significant importance given to state
314 protocol (use as gifts and in gala dinners) (23.29%) as the third most important distribution channel. Good
315 high-cuisine restaurants were recognized as the second most important distribution channel (33.82%).

316 Focusing on the promotion strategy, having a prestigious seal was recognized by stakeholders as the
317 most important (49.05%), and given twice as much weight as the next two key promotion strategies
318 identified, namely guided tours with tasting (25.92%) and promotion via educational institutions

319 (25.03%). The importance of use of these products as state protocol gifts and the promotion of the breed
320 and its products in education centres and schools were highlighted. Last, the key price policy strategies
321 established with the AHP methodology were premium price, differentiated price, and price adjusted to the
322 sales channel. The premium price strategy was given the greatest weight (42.69%). In summary, the
323 recognized assets were mainly non-intensive traditional rearing, good quality and flavour, and cultural
324 heritage, while the main shortcomings were a disorganized value chain and no processed food
325 standardization. The Localized Agro-Food Systems concept (SYAL) could be an interesting tool to
326 improve cooperation in this chain (Muchnik et al., 2008).

327

328 *3.2.5 Turopolje Pig*

329 The product strategy for TP processed food should rely on high product quality and be used for
330 product positioning. This is in line with previous research (Cerjak et al., 2014) showing that Croatian
331 consumers perceive a better quality of traditional products as one of the major motives for their purchase.

332 One of the most important elements of product policy is the standardization of processed food
333 (40.58%) (Fig. 7). Next to it is the use of quality labels, with priority given to the PDO quality sign
334 (38.27%) and the organic label, customer perception associated with higher product positioning, purchase
335 frequency, and willingness to pay, as shown by Bryła (2017). Due to market saturation in terms of
336 exclusive products, TP processed food should be sold in smaller packages and using innovative strategies
337 such as sales in gift baskets. Images of the Turopolje region and/or TP should be used on the packages
338 (21.15%) to highlight the product origin.

339 Regarding the place strategy, TP products could only be purchased directly from producers and
340 were occasionally served in local restaurants, which was recognised as a major problem. Therefore, while
341 representing an important percentage (29.09%), direct sales were evaluated as less important than sales in
342 specialized shops (40.69%) and restaurants (30.22%). These findings are in line with a previous study

343 (Jensen et al., 2019) which showed that Danish local food consumers support short food chains. Only a
344 few respondents agreed with an online sales strategy.

345 Focusing on the promotion policy, most of the stakeholders stated that the main message they
346 would convey to consumers is that TP processed foods are healthy, environmentally friendly, and of high
347 quality, representing the tradition and indigenous nature of the breed and the raw materials involved
348 (47.23%). However, a few respondents stated that they would segment consumers and use messages
349 adapted to each type of target. Storytelling, which involved sharing stories about the history and traditions
350 of the Turopolje region (30.57%), was considered an important promotion strategy. Respondents agreed
351 on the usefulness of direct marketing, including promotion at fairs and local events, word of mouth, and
352 others (22.19%). Promotion through social networks (Facebook, Instagram, Twitter, etc.) was likewise
353 considered a prospective promotional strategy. Last, all stakeholders agreed that TP products should cost a
354 premium price due to their expensive production and product exclusivity. However, some stakeholders
355 held a different opinion on the pricing strategy within the supply chain, believing that adding value to a
356 product (e.g., exclusive packaging) should also influence the selling price (25.21%). Some respondents
357 emphasized the need for common price negotiation if processed foods were to be standardized.

358

359 **3.3 Strategies of the local systems**

360 The extensive or semi-extensive local grazing systems characterizing the five swine breeds
361 addressed in this study (Fig. 8) are essential towards the conservation and enhancement of high natural
362 value farming systems, as described by Varga et al. (2016). Autochthonous breeds play a role in
363 supporting agroecosystem resilience (Hajjar et al., 2008), maintaining socio-cultural traditions, local
364 identities, traditional knowledge (Nautiyal, 2018), and cultural landscapes (Tisdell et al., 2003), all of
365 which are public goods and attributes identified in our study.

366 Recent research has demonstrated that the best chance of conserving the genetic diversity of
367 autochthonous swine breeds comes from a mix of looking for niche markets for the processed food and
368 increasing awareness among consumers who appreciate the high quality of traditional meat products
369 (Kallas et al., 2019). To this effect, the stakeholders in the present study identified the following actions as
370 the best product strategies: enhancing and highlighting the sensory quality of the meat products, boosting
371 the Geographical Indications and Traditional specialties of the breed, where appropriate (PGI and PDO),
372 improving the standardization of the food processing among producers to ensure homogeneous products,
373 and increasing product diversity and traceability. This is in line with the emergent interest in local foods,
374 where consumers perceive to have higher quality standards and to be tools for preserving tradition and
375 local know-how (Gilg and Battershill, 1998; Weatherell et al., 2003; Vecchio, 2011). In addition, the PDO
376 and PGI logos are commonly considered the main purchasing motivation for a shopper with an excellent
377 knowledge of the EU certification label, according to Vecchio and Annunziata (2011). However, a better
378 understanding of the relationships between people, products, and territory will be crucial to the survival of
379 these local systems. Our study hints at organizational differences among these systems. Hence, in some of
380 the studied chains (Cinta Senese and Krškopolje Pig), better cooperation among the stakeholders and
381 major collective action is needed. This cooperation would improve the governance and increase
382 negotiation ability with the other stakeholders related to the marketing strategy, as described by
383 Pensado-Leglise and Sanz Cañada (2018).

384 Regarding the price strategy, maintaining a high price based on a premium category while letting
385 consumers taste the product *in situ* (show-cooking, direct marketing) and establishing price differentiation
386 depending on feeding (extensive vs concentrate) were identified as key elements in our study, which is
387 also in agreement with Stampa et al. (2020).

388 With regards to the place strategy, the stakeholders identified the need to increase the presence of
389 traditional products in the HORECA sector and to improve and intensify their presence in specialized
390 local food shops selling top-quality products and gourmet foods. This strategy, which was identified in

391 most of the chains studied, is in line with Jensen et al. (2019). Similarly, Conner and Oppenheim (2008)
392 showed that natural food stores were the most promising distribution channel.

393 Several common strategies identified to promote the processed food from local systems were
394 based on public relations, including food and gastronomic events, tourist events, workshops, guided tours,
395 direct sales to companies for business gifts, web pages, and collaboration with catering schools, popular
396 chefs, and athletes. They highlighted that any promotional message should include information about the
397 history of the product and its healthy properties. However, the concept of “growing in”, referring to the
398 information about the product origin, as discussed in the study from the USA by Conner et al. (2009),
399 must be enhanced. This aspect was not given enough consideration by the stakeholders of these European
400 local systems. Securing public administration support is recommended to develop these aspects.

401

402 **4. Concluding remarks**

403 The participative bottom-up mixed methods approach used in this study involving the key
404 stakeholders in each untapped breed value chain is novel and enabled us to co-construct the identified
405 strategies. This methodology increases the likelihood of successfully implementing these strategies since
406 they are not seen as impositions from external agents.

407 The main parameters of this study of untapped swine breeds were based on non-intensive
408 traditional rearing, good sensory quality, and cultural heritage. The extensive production systems that
409 characterize these native breeds are fully aligned with sustainability since they are an essential element in
410 the conservation and enhancement of high nature value local farming systems.

411 The stakeholders identified having PGI and PDO seals as being of utmost importance to enhance
412 the sensory quality of the products, improve the standardization and traceability of the food processing to

413 ensure homogeneous products, and to enhance their high price based on the premium category and direct
414 sales. Iberian meat products could be a strong competition mainly to the MBP and NB breeds and hence
415 effective product identification and traceability is highly important. The stakeholders of these
416 autochthonous breeds must place greater emphasis on highlighting grazing as a feeding strategy (extensive
417 or semi-extensive), the meat products derived from the swine, and their origin.

418

419 5. References

- 420 **Abedi, G. and Abedini, E.** 2017. Prioritizing of marketing mix elements effects on patients' tendency to
421 the hospital using analytic hierarchy process. *International Journal of Healthcare Management*
422 10(1):34–41.
- 423 **Borrisser-Pairó, F., Kallas, Z., Panella-Riera, N., Avena, M., Ibáñez, M., Olivares, A., Gil, J. M., and**
424 **Oliver, M. A.** 2016. Towards entire male pigs in Europe: A perspective from the Spanish supply
425 chain. *Research in Veterinary Science* 107:20–29.
- 426 **Bozzi, R. and Crovetto, A.** 2013. Conservational issues in local breeds—state of the art. 8th International
427 Symposium on the Mediterranean Pig Ljubljana. p. 4, 9–14.
- 428 **Brown, C.** 2003. Consumers' preferences for locally produced food: A study In southeast Missouri on
429 JSTOR. *American Journal of Alternative Agriculture* 18(4):213–224.
- 430 **Bryła, P.** 2017. The perception of EU quality signs for origin and organic food products among Polish
431 consumers. *Quality Assurance and Safety of Crops and Foods* 9(3):345–355.
- 432 **Čandek-Potokar, M., Giusto, A., Conti, C., Cosola, C., and Fontanesi, L.** 2018. Improving
433 sustainability of local pig breeds using quality labels - case review and trademark development in
434 project TREASURE. *Archivos de Zootecnia(Suppl)*:235.
- 435 **Čandek-Potokar, M. and Nieto, R.** 2019. European Local Pig Breeds-Diversity and Performance. A
436 study of project TREASURE.
- 437 **Cerjak, M., Haas, R., Brunner, F., and Tomić, M.** 2014. What motivates consumers to buy traditional
438 food products? Evidence from Croatia and Austria using word association and laddering interviews.
439 *British Food Journal* 116(11):1726–1747.
- 440 **Chambers, S., Lobb, A., Butler, L., Harvey, K., and Bruce Trail, W.** 2007. Local, national and
441 imported foods: A qualitative study. *Appetite* 49(1):208–213.
- 442 **Conner, D. S., Montri, A. D., Montri, D. N., and Hamm, M. W.** 2009. Consumer demand for local
443 produce at extended season farmers' markets: Guiding farmer marketing strategies. *Renewable*
444 *Agriculture and Food Systems* 24(4):251–259.
- 445 **Conner, D. S. and Oppenheim, D.** 2008. Demand for Pasture-Raised Livestock Products in Michigan:
446 Results of Consumer Surveys and Experimental Auctions. *Journal of Food Distribution Research*
447 39(1).
- 448 **Font-i-Furnols, M. and Guerrero, L.** 2014. Consumer preference, behavior and perception about meat
449 and meat products: An overview. *Meat Science* 98(3):361–371.
- 450 **Gilg, A. W. and Battershill, M.** 1998. Quality farm food in Europe: a possible alternative to the
451 industrialised food market and to current agri-environmental policies: lessons from France. *Food*
452 *Policy* 23(1):25–40.
- 453 **Giraud, G.** 2002. Consumer Perception of Typical Food Products in Europe. Xth EAAE Congress
454 'Exploring Diversity in the European Agri-Food System Zaragoza.
- 455 **Guerrero, L.** 2001. Marketing PDO (Products with Denominations of Origin) and PGI (Products with

- 456 Geographical Identities). *Food, People and Society*:281–297.
- 457 **Guerrero, L., Claret, A., Verbeke, W., Vanhonacker, F., Enderli, G., Sulmont-Rossé, C., Hersleth,**
458 **M., and Guàrdia, M. D.** 2012. Cross-cultural conceptualization of the words Traditional and
459 Innovation in a food context by means of sorting task and hedonic evaluation. *Food Quality and*
460 *Preference* 25(1):69–78.
- 461 **Hajjar, R., Jarvis, D. I., and Gemmill-Herren, B.** 2008. The utility of crop genetic diversity in
462 maintaining ecosystem services. *Agriculture, Ecosystems & Environment* 123(4):261–270.
- 463 **Horizon 2020 Programme.** 2015. Treasure-Diversity of local pig breeds and production systems for high
464 quality traditional products and sustainable pork chains. *Treasure.kis.si* [Internet]. Available at
465 Website <https://treasure.kis.si/>.
- 466 **Howard, P. H.** 2006. Central Coast consumers want more food-related information, from safety to ethics.
467 *California Agriculture* 60(1):14–19.
- 468 **Ilbery, B. and Kneafsey, M.** 1999. Niche markets and regional speciality food products in Europe:
469 Towards a research agenda. *Environment and Planning A* 31(12):2207–2222.
- 470 **Ilbery, B., Maye, D., Kneafsey, M., Jenkins, T., and Walkley, C.** 2004. Forecasting food supply chain
471 developments in lagging rural regions: Evidence from the UK. *Journal of Rural Studies* 20(3):331–
472 344.
- 473 **Jensen, J. D., Christensen, T., Denver, S., Ditlevsen, K., Lassen, J., and Teuber, R.** 2019.
474 Heterogeneity in consumers' perceptions and demand for local (organic) food products. *Food*
475 *Quality and Preference* 73:255–265.
- 476 **Kallas, Z., Varela, E., Čandek-Potokar, M., Pugliese, C., Cerjak, M., Tomažin, U., Karolyi, D.,**
477 **Aquilani, C., Vitale, M., and Gil, J. M.** 2019. Can innovations in traditional pork products help
478 thriving EU untapped pig breeds? A non-hypothetical discrete choice experiment with hedonic
479 evaluation. *Meat Science* 154:75–85.
- 480 **Karolyi, D., Luković, Z., Salajpal, K., Škorput, D., Vnučec, I., Mahnet, Ž., Klišanić, V., and**
481 **Batorek-Lukač, N.** 2019. Turopolje Pig (Turopoljska svinja). In M. Čandek-Potokar and R. M.
482 Nieto Linan (eds.). *European Local Pig Breeds - Diversity and Performance. A study of project*
483 *TREASURE IntechOpen, Rijeka.*
- 484 **Lebret, B., Kallas, Z., Lenoir, H., Perruchot, M. H., Vitale, M., and Oliver, M. O.** 2018. Consumers'
485 study on traditional pork products from local breeds: expectations and hedonic evaluation. *Book of*
486 *Abstracts of the 69th Annual Meeting of the European Association for Animal Production*
487 *Dubrovnik, Croatia.* p. 492.
- 488 **Lukač, N. B., Tomažin, U., Škrlep, M., Kastelic, A., Poklukar, K., and Čandek-Potokar, M.** 2019.
489 Krškopoljski prašič (Krškopolje Pig). In M. Čandek-Potokar and R. Nieto Linan (eds.). *European*
490 *Local Pig Breeds-Diversity and Performance. A study of project TREASURE IntechOpen, Rijeka.*
- 491 **Marsden, T., Banks, J., and Bristow, G.** 2000. Food Supply Chain Approaches: Exploring their Role in
492 Rural Development. *Sociologia Ruralis* 40(4):424–438.
- 493 **Mercat, M. J., Lebret, B., Lenoir, H., and Batorek-Lukač, N.** 2019. Gascon Pig. In M. Čandek-Potokar
494 and R. Nieto (eds.). *European Local Pig Breeds - Diversity and Performance IntechOpen, Rijeka.* p.
495 14p.
- 496 **Muchnik, J., Cañada, J. S., Salcido, G. T., Muchnik, J., Cañada, J. S., Torres, G., and Systèmes, S.**
497 2020. Systèmes agroalimentaires localisés : état des recherches et perspectives To cite this version :
498 **Muchnik, J., Sanz Cañada, J., and Torres Salcido, G.** 2008. Systèmes agroalimentaires localisés : état
499 des recherches et perspectives. *Cahiers Agricultures* 17(6):513–519.
- 500 **Nautiyal, N. P.** 2018. The sociological importance of social movements: in the perspective of
501 Uttarakhand separate state movement. *International Journal of Research in Social Sciences* 8(3).
- 502 **Pensado-Leglise, M. del roble and Sanz Cañada, J.** 2018. Valorización de una Indicación Geográfica
503 Protegida. El caso de la carne de la Sierra de Guadarrama, España. *Revista Mexicana de Ciencias*
504 *Pecuarias* 9(3):451–465.
- 505 **Pugliese, C., Bozzi, R., Gallo, M., Geraci, C., Fontanesi, L., and Batorek-Lukač, N.** 2019. Cinta
506 Senese Pig. In M. Čandek-Potokar and R. Nieto (eds.). *European Local Pig Breeds - Diversity and*

507 Performance. A study of project TREASURE IntechOpen, Rijeka.

508 **Romanzin, A., Corazzin, M., Piasentier, E., and Bovolenta, S.** 2013. Effect of rearing system

509 (mountain pasture vs. indoor) of Simmental cows on milk composition and Montasio cheese

510 characteristics. *Journal of Dairy Research* 80(4):390–399.

511 **Saaty, T.** 1977. A scaling method for priorities in hierarchical structures. *Journal of Mathematical*

512 *Psychology* 15(3):234–281.

513 **Saaty, T.** 1980. *The analytic hierarchy process*. McGraw Hill, New York.

514 **Sanjuán, A. I., Resano, H., Zeballos, G., Sans, P., Panella-Riera, N., Campo, M. M., Khliji, S.,**

515 **Guerrero, A., Oliver, M. A., Sañudo, C., and Santolaria, P.** 2012. Consumers' willingness to pay

516 for beef direct sales. A regional comparison across the Pyrenees. *Appetite* 58(3):1118–1127.

517 **Sanz-Cañada, J. and Muchnik, J.** 2016. Geographies of Origin and Proximity: Approaches to Local

518 Agro-Food Systems. *Culture & History Digital Journal* 5(1):e002.

519 **Soy-Massoni, E., Monllor, N., Nuss, S., Markuszewska, I., and Tanskanen, M.** 2019. Landscape

520 eaters: supporting rural development and ecosystem services delivery by eating. *Agriculture and*

521 *Food* 6(1):381–398.

522 **Stampa, E., Schipmann-Schwarze, C., and Hamm, U.** 2020. Consumer perceptions, preferences, and

523 behavior regarding pasture-raised livestock products: A review. *Food Quality and Preference*

524 82:103872.

525 **Swisher, M. E., Ruiz-Menjivar, J., and Koenig, R.** 2018. Value chains in renewable and sustainable

526 food systems. *Renewable Agriculture and Food Systems* 33(1):1–5.

527 **Tibau, J., Torrentó, N., Aguado, R. Q., González, J., Oliver, M. A., Gil, M., and Batorek-Lukač, N.**

528 2019. Negre Mallorquí (Majorcan Black) Pig. In M. Čandek-Potokar and R. Nieto (eds.). *European*

529 *Local Pig Breeds-Diversity and Performance. A study of project TREASURE IntechOpen, Rijeka.*

530 **Tisdell, C., Eni, F., and Mattei, E.** 2003. Socioeconomic Causes of Loss of Animal Genetic Diversity:

531 Analysis and Assessment. *Ecological Economics*.

532 **Varga, A., Molnár, Z., Biró, M., Demeter, L., Gellény, K., Miókovics, E., ... & Babai, D.** 2016.

533 Changing year-round habitat use of extensively grazing cattle, sheep and pigs in East-Central Europe

534 between 1940 and 2014: Consequences for conservation and policy. *Agriculture, Ecosystems and*

535 *Environment* 234:142–153.

536 **Vecchio, R.** 2011. Italian and United States farmers' markets: Similarities, differences and potential

537 developments. *Journal of Food Products Marketing* 17(2–3):386–406.

538 **Vecchio, R. and Annunziata, A.** 2011. The role of PDO/PGI labelling in Italian consumers' food

539 choices. *Agricultural economics review*.

540 **Vitale, M., Kallas, Z., Rivera-Toapanta, E., Karolyi, D., Cerjak, M., Lebret, B., Lenoir, H., Pugliese,**

541 **C., Aquilani, C., Čandek-Potokar, M., Gil, M., and Oliver, M. À.** 2020. Consumers' expectations

542 and liking of traditional and innovative pork products from European autochthonous pig breeds.

543 *Meat Science* 168:108179.

544 **Weatherell, C., Tregear, A., and Studies, J. A.-J. of rural.** 2003. In search of the concerned consumer:

545 UK public perceptions of food, farming and buying local. *Journal of Rural Studies* 19(0743–

546 0167):233–244.

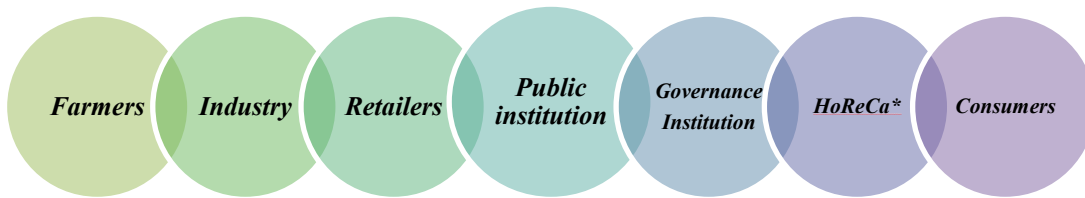
547 **Weible, D., Christoph-Schulz, I., Salamon, P., and Zander, K.** 2016. Citizens' perception of modern

548 pig production in Germany: a mixed-method research approach. *British Food Journal* 118(8):2014–

549 2032.

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552 **Figures:**



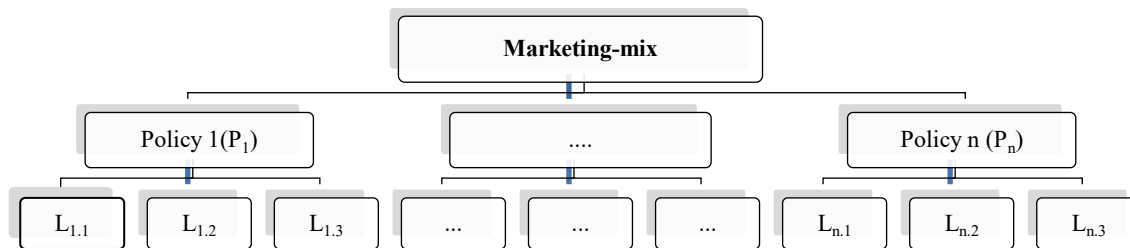
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554 *: Hotels, Restaurants, and Catering

555 **Fig. 1.** Stakeholders' type included in the Focus groups.

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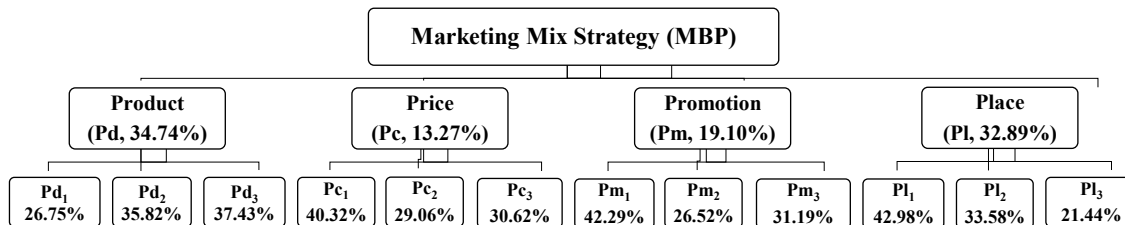


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559 **Fig. 2.** Hierarchical structure used to value best policy for the untapped swine breeds.

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563 **Fig. 3.** Hierarchical structure used to value the best policy for the MBP breed.

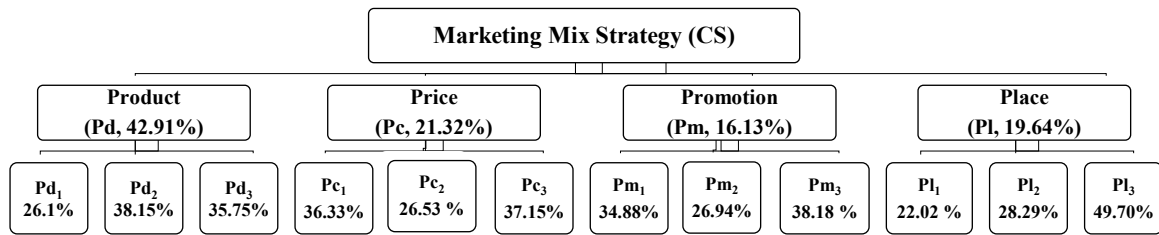
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565 **Product (Pd):** Pd1: Boost PGI brand, Pd2: Enhance the organoleptic quality of the product, Pd3: Diversify the product and adapt
 566 to the needs of the young consumer. **Place (Pl):** Pl1: Selling MBP products in local restaurants, Pl2: Distribution of sobrassada in
 567 local shops, Pl3: (MBP sector) with access to different distribution channels. **Promotion (Pm):** Pm1: Marketing strategies based
 568 on public relations (food and gastronomic events), Pm2: Promotion in primary schools with the support of the Public
 569 Administration, Pm3: TV promotion, and **Price (Pc):** Pc1: To maintain a high price strategy based on a premium category, Pc2:
 570 To increase the transparency of prices along the production chain, and Pc3: To apply a premium strategy along all the production
 571 chain.

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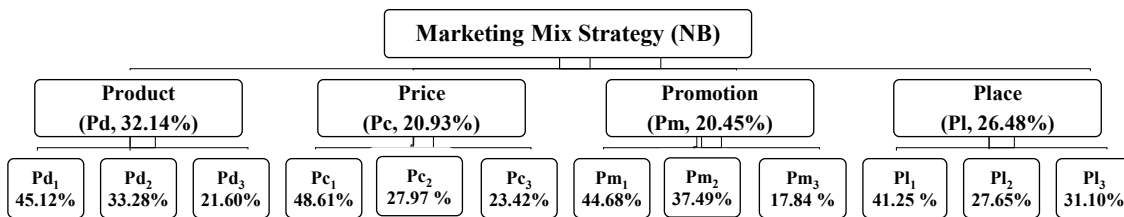


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Fig. 4. Hierarchical structure used to value the best policy for the CS breed.

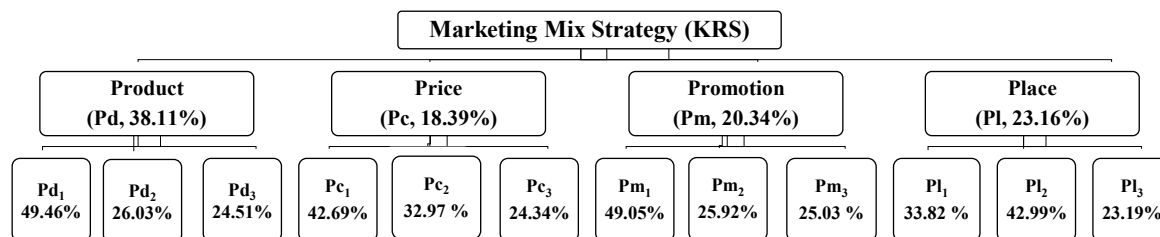
577 **Product (Pd):** Pd1: Increase the diffusion of fresh meat, Pd2: Healthier products (less salt, less additives), Pd3: Improve the
 578 standardization of manufacturing process among producers to ensure homogeneous products. **Place (Pl):** Pl1: Stores of top-
 579 quality products (also GDO with gourmet lines), Pl2: Local shops, Pl3: High quality restaurants. **Promotion (Pm):** Pm1:
 580 Collaboration with chefs, Pm2: Collaboration with cooking schools, Pm3: Promotion on social networks. **Price (Pc):** Pc1
 581 Different price between organic and conventional products, Pc2: Different prices depending on feeding strategy (i.e. finishing
 582 with acorn/chestnut or concentrate), and Pc3: Higher price, but let the consumers try the products in stores.



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Fig. 5. Hierarchical structure used to value the best policy for the Noir de Bigorre chain-Gascon breed.

584 **Product (Pd):** Pd: To obtain traceability/identification card for ham and loin, Pd2: To set up ageing room in the open-air, Pd3: To
 585 bring to market knife sliced products. **Place (Pl):** Pl1: To extend the coverage of local stores in DPO area, Pl2: To develop their
 586 export sales. Pl3: To work with specialized high-end network. **Promotion (Pm):** Pm1: To support products from processing to
 587 tasting (showcase of products, cooking lesson), Pm2: To provide training in products history for all actors participating in product's
 588 sale, Pm3: To build two promotions: one for general public, another for professionals. **Price (Pc):** Pc1: To create carcass payment
 589 table at SICA to encourage meat quality, Pc2: To raise prices of rare products (dry-cured ham, dry sausage), and Pc3: To raise
 590 pig price at SICA.
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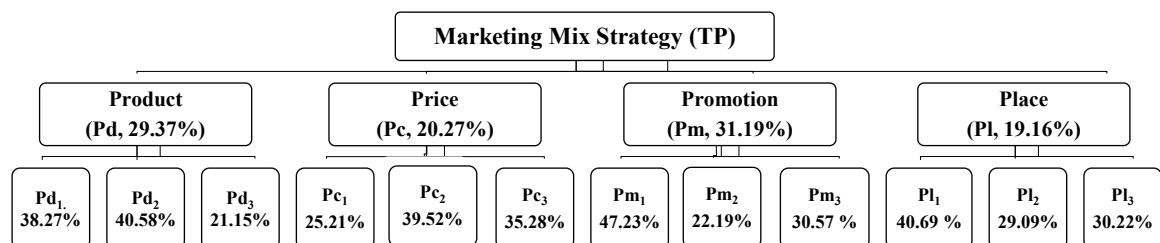
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Fig. 6. Hierarchical structure used to value the best policy for the KRS breed.

602 **Product (Pd)**: Pd₁: Dry-cured products, Pd₂: Fresh Meat, Pd₃: Innovative culinary products. **Place (Pl)**: Pl₁: Good, high end
 603 restaurants, Pl₂: Direct sales (on farms, and to companies for business gifts), Pl₃: State protocol. **Promotion (Pm)**: Pm₁:
 604 Prestigious brand, Pm₂: Guided tours, tasting, Pm₃: Through educational institutions. **Price (Pc)**: Pc₁: Premium price, Pc₂:
 605 Differentiated price and Pc₃: Price adjusted to sales channel.

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Fig. 7. Hierarchical structure used to value the best policy for the TP breed.

609 **Product (Pd)**: Pd₁: To obtain "Protected Designation of Origin" (PDO) status, Pd₂: Standardization of production (recipe), Pd₃:
 610 Exclusive packaging. **Place (Pl)**: Pl₁: In specialized shops, Pl₂: Direct sale Pl₃: In restaurants. **Promotion (Pm)**: Pm₁: Promotion
 611 of healthy, ecological, indigenous, traditional, high-quality products, Pm₂: Direct marketing (fairs, local events, oral submission
 612 ...), Pm₃: Use Turopolje heritage in promotion. **Price (Pc)**: Pc₁: Premium price for premium products, Pc₂: All Turopolje pig
 613 products should be in the same premium price segment and Pc₃: Aligned price strategy along the entire value chain

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a) Majorcan Black Pig (MBP)



b) Cinta Senese (CS)



c) Gascon pig - Noir de Bigorre chain (NB)



d) Krškopoljski prašič (KRS)



e) Turopolje pig (TP)

621 **Fig. 8.** Growing finishing pig from Mallorca island (a), Tuscany (b), Hautes-Pyrénées (c), Slovenia (d),
 622 and Turopolje region (e)

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625 **Table:**

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627 **Table 1.** Example of the AHP pairwise comparison across Policies

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Policy 1									Policy n								
9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	

629 *Compare the following policies in a pairwise way to identify the most important one as the best marketing strategies for the*

630 *added-value meat products from the untapped swine breeds.*

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Table 2. Summary of stakeholders' points of view from SWOT analysis of each local swine breed system: differences and common aspects

Breed	Nº	Strengths	Weaknesses	Opportunities	Threats
MBP	1	Differentiated native breed adapted to the territory and agro-climatic conditions	Elevated farming costs	Expansion to international market	Competition with Iberian pig products
	2	PGI of the <i>sobrassada</i>	Small size of the farms and the heterogeneity of the products' quality	Building customer loyalty within the local Majorcan market	Low price of meat products from other commercial swine
	3	High intrinsic sensory quality of meat and meat products	Lack of professionalism	Promotion of PGI meat products	Fat content
CS	1	Traditional rearing system and the know-how of farmers ensures meat and meat products with excellent sensory features	CS fresh meat is scarcely available outside Tuscany	Working on a better communication strategy for the breed and its products	Products' frauds increasing distrust of consumers and their concerns for health and animal welfare
	2	Meat has earned the PDO to give a strong identity to CS	CS system is fragmented between farms and processing industries	Collaboration with renowned chefs to enlarge the consumer knowledge	CS systems are dealing with consumers' increasing disinformation about food and agriculture systems
	3	Creating a rewarding niche market for environmentally sensitive consumers	Lack of communication and collaboration and lack of shared marketing strategies.	The PDO label	Elder farmers who keep adopting inefficient management and market strategies
NB	1	High sensorial quality (flavour) of the products	Managing variability at each stage of production.	Heritage of the chain as factor of attractiveness for tourism and institutions	Sanitary crises (epizootic epidemic, African swine fever) at national, European or international levels
	2	PDO label (breed, know-how and terroir) as protector of NB chain	Variability between farms in the sanitary risk	Use of local resources developed by the NB chain meet the social expectations of consumers	Confusion with the adjective "black" used by other swine chains
	3	Feeding natural resources, outdoor production system	No control of use breed outside the PDO area	Intrinsic quality (sensory, nutritional...)	Declining meat consumption
KRS	1	Non-intensive traditional way of rearing	The value of breed is not sufficiently distinguished	Need for branding strategy "back to nature"	The inability of breeders to achieve the expected price levels
	2	High meat quality (sensory properties)	The quality of meat products is not adequately standardised	Differentiate sales channels through tourism, HoReCa sector, gifts	Intensification of the rearing mode, lack of the quality rules
	3	Cultural heritage related to the KRS systems	Lack of standardized production process	Consumers' perceptions to local products and extensive production systems	Missing intermediate factors in the value chain
TP	1	The long-standing tradition in its breeding	Long and expensive production cycle	Increasing purchasing power of some consumer segments	Higher exposure to animal diseases and unfavourable weather conditions
	2	Swine are raised outdoor and fed with naturally available feedstuffs	Low prolificacy (small number of piglets)	Use of celebrity marketing	Competition with other local swine breeds
	3	Meat products with PGI	High mortality rate and consequently the high price of TP products	Support of local authorities in application for PGI	Low interest and unfamiliarity of wider range of consumers with products of TP