1 **"One Fish, Two Fish, Red Fish, Blue Fish":**

2 **How ethical beliefs influence consumer perceptions of "blue"**

3 **aquaculture products?**

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7   **Abstract**

8   Respecting ethical beliefs of consumers is an important precondition for food

9   manufacturers in their attempt to improve their positioning in the European food market.

10   Based on a cross-cultural survey of 2,511 European participants, this research demonstrates

11   how ethical beliefs affect consumer perceptions of "blue" (i.e. environmentally friendly)

12   aquaculture products. The study further emphasises that the positive effect of ethical beliefs

13   on purchase intention operates via an indirect route mediated by consumers' trust in a product

14   category. Consumer involvement has limited moderation effect on the above relationships.

15   To expand its "blue" business, a key policy recommendation to aquaculture product

16   manufacturers and policy makers is to urge stable and reliable standards of control in

17   environmentally responsible aquaculture production so that consumers can rely on the

18   information source and increase their trust in aquaculture products.

1. **Introduction**

Recently, interest in ethical and environmentally friendly production practices have increased, typically as a consequence of new production technologies and management practices, as well as industry consolidation (Cho, 2015; Kaiser & Stead, 2002). This trend is apparent at all levels of the production chain. It affects consumer perceptions towards the link between what is purchased and consumed and the subsequent environmental and social consequences of production and manufacturing. Inclusion of ethical features as a persuasive selling point became common ground for consumers who report higher willingness to purchase these products (Verbeke, Vanhonacker, Sioen, Van Camp, & De Henauw, 2007; Vermeir & Verbeke, 2006). This resulted in marketers' response by positioning their products by means of various ethical and environmental claims. According to Mintel Global New Products Database (GNPD), ethical and environmental claims (such as environmentally friendly packaging, animal and human welfare claims) have increased to 22% of global food and drink launches between September 2016 and August 2017. They serve a singular purpose to provide consumers honest disclosures about how, where, when, and by whom these products have been made and sold (Mintel, 2018).

The intense rise in consumers' environmental awareness has brought forward the emergence of the "ethical" consumer, as a person who recognizes the connection between consumption and its environmental and social consequences (Neori et al., 2007). The growing consumer demand for sustainable and ethical practices offers new opportunities for businesses. This is because more sustainable, "environmentally friendly" products are found to have a strong impact on product evaluation, trust, and ultimately purchasing decisions (Atkinson & Rosenthal, 2014; Cho, 2015; Nuttavuthisit & Thøgersen, 2017). Indeed, consumers are increasingly looking to disconnect from products and services that are associated with negative environmental or social impacts, but instead be actively engaged

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44   with sustainable and ethical products (Martínez-Cañas, Ruiz-Palomino, Linuesa-Langreo, &

45   Blázquez-Resino, 2016; Verbeke, Vanhonacker, et al., 2007; Weber & Gillespie, 1998).

46   However, this advancement in ethical consumerism brings forth the question of what is the

47   degree to which ethical beliefs (underlying consumer concerns) are prioritized when

48   consumers are evaluating products and subsequently making purchase decisions.

49   Previous consumer behaviour research has focused mostly on understanding

50   information provision and related decision-making processes (de Boer, Hoogland, &

51   Boersema, 2007). These studies point out the fact that consumers express general concerns

52   with environmental and social issues, but that these concerns get weaker at the level of

53   specific products, depending on the level of individual moral reasoning (i.e. why to act

54   ethically). This underlies the necessity to look at how ethical beliefs in general influence

55   consumer intentions to act in a certain manner when making product-specific evaluations and

56   purchase decisions. As many consumers seem to be interested in ethical issues nowadays

57   (Cho, 2015; Martínez-Cañas et al., 2016; Nuttavuthisit & Thøgersen, 2017), the present study

58   addresses the above issues and looks into the degree in which ethical beliefs can impact

59   (more/less positively) on product purchase decisions.

60   The current study focuses on "blue" products, i.e. the sustainable aquaculture

61   products, as an exemplary research context. Aquaculture industry practitioners increasingly

62   recognise the importance of minimizing the negative impacts of aquaculture systems on

63   natural and social environments (Neori et al., 2007). What makes this research context

64   particularly relevant is explained by the following reasons. The first reason is related to the

65   growing importance of the fish products because of its healthy nutritional profile (i.e. high

66   quality animal protein, essential amino acids, omega-3 fatty acids, vitamins, minerals, and

67   trace elements). The second reason is increasing need for farming of the sea to reduce the

68   pressure on marginal terrestrial land and deforestation, and subsequent increase in

69   aquaculture volume accounting for nearly half of the fish destined for the human

70   consumption (FAO, 2018). Third, while European consumers express their scepticism

71   towards farmed fish products (Banovic, Krystallis, Guerrero, & Reinders, 2016), the

72   European Commission calls on consumers to embrace aquaculture products (EC, 2018).

73   However, there is a limited research reported in consumer behaviour literature about how

74   ethical beliefs affect consumer decisions about aquaculture products.

75   Consumer concerns about aquaculture's environmental effects are critical for

76   aquaculture industry's growth, as there are significant differences in how consumers perceive

77   product quality and value of farmed fish in general, as well as in terms of (positive or

78   negative) consequences of farmed fish consumption for human health in particular (Neori et

79   al., 2007). Failure to appreciate these differences and to respond appropriately could

80   aggravate consumer concerns and mistrust, as witnessed in the meat sector (Van Loo, Caputo,

81   Nayga, & Verbeke, 2014). Furthermore, aquaculture is the fastest growing food-producing

82   sector in the world with the potential to fulfil the promise of the "blue revolution" (i.e.

83   aquaculture as an important and highly productive agricultural activity) that can follow

84   existing "green" revolution and trends in both sides of the supply chain, i.e. supply and

85   demand (Neori et al., 2007). Therefore, not only can this study make a significant theoretical

86   contribution on the impact of ethical beliefs on consumer perceptions, but also have

87   substantial practical implications, particularly for the aquaculture sector and, strongly

88   supported by policy makers, the "blue growth" revolution. Finally, as ethics are a part of

89   culture, to study ethical choices without explicitly considering the cultural context is not

90   realistic (Belk, Devinney, & Eckhardt, 2005). We thus study the above issues in a cross-

91   cultural context to better understand whether and how much culture may have an impact on

92   ethical beliefs and subsequent consumer perceptions.

2. Consumer ethical beliefs and "blue" products

In this study, we define consumer ethical beliefs as the extent of consumer agreement that certain types of a firm's behaviour (i.e. food production) are ethical (or unethical), and whether consumers perceive these behaviours corresponding to consumer ethics or "*the moral principles and standards that guide behaviour of individuals or groups as they obtain, use, and dispose of goods and services*" (Muncy & Vitell, 1992, p.298). The above definition captures the core of the ethical beliefs concept employed across previous research, which comprises of two parts. First, the expectation that individuals or groups will act in a manner that is moral, principled, and not potentially damaging. Second, the perceived consequences of these actions; that is, accepting the potentially good or bad quality of subsequently obtained products (or services) (Vitell, 2003; Weber & Gillespie, 1998; Zeithaml, 1988). Thus, one might expect that consumers that are aware of a firm's unethical behaviour would perceive its products as of lower value, would not trust them, and would not be persuaded to buy these products, and vice versa (Carrigan & Attalla, 2001).

Previous studies suggest that consumers tend to be sceptical towards farmed fish and "blue" aquaculture products (Altintzoglou, Vanhonacker, Verbeke, & Luten, 2011; Claret et al., 2014; Pieniak, Verbeke, Scholderer, Brunsø, & Olsen, 2007; Reinders, Banovic, Guerrero, & Krystallis, 2016; Schlag & Ystgaard, 2013). For instance consumers often have an image transfer from intensive livestock production (Verbeke, Sioen, Brunsø, De Henauw, & Van Camp, 2007). Since most consumers do not possess the technical expertise or other resources to discriminate on the independent attributes of quality of farmed fish (e.g. taste) from that of wild caught fish, consumers rely on different sources of information or cue attributes (e.g., country of origin) (Caputo, Scarpa, & Nayga Jr, 2016). Cue attributes embed some of the information on the levels of other quality attributes that cannot be detected directly, such as taste or healthiness of the fish. Usually, these independent quality attributes

118 cannot be evaluated directly at the purchase point. In that respect, a further distinction can be

119 made into "experience" attributes and "credence" attributes. For experience attributes such as

120 taste, quality is observed by actual consumption of the product. For credence attributes such

121 as health or environmental benefits, quality cannot be observed even upon consumption and

122 consumers simply need to believe that the product contains communicated attributes

123 (Banovic, Grunert, Barreira, & Fontes, 2009). The quality attribute of taste for example, is

124 further considered independent, as the value attached to taste should be free from the value

125 attached to other attributes, such as health (Caputo et al., 2016). These independent quality

126 attributes are further filtered through consumers' own (general) ethical beliefs to evaluate

127 (specific) product quality and, thus, trust (or distrust) that the product possesses essential

128 values for them to buy it (or not) (Atkinson & Rosenthal, 2014; Pieniak et al., 2007).

129   Ethical beliefs that consumers hold about aquaculture products are closely linked to a

130 product's credence attributes. Since these attributes cannot be verified either in a product

131 search (pre-purchase) or in a product experience (post-purchase) phase, they could thus

132 influence perceived product quality, i.e. the higher ethical beliefs about aquaculture products,

133 the higher the perceived product quality (Banovic et al., 2009; Papista & Krystallis, 2013).

134 Furthermore, although consumers may derive value from the look, feel or taste of more

135 ethically produced product alternatives, such as "blue" aquaculture products (Kaiser & Stead,

136 2002), this line of thought has not been explored despite the evidence from green brand

137 equity research on a significant positive effect of ethical beliefs on perceived product value

138 (Chen, 2010; Kang & Hur, 2012).

139   Finally, as consumers cannot readily verify credence attributes, they may have to

140 choose to trust or not to trust that a product possesses certain qualities and values (Sánchez-

141 Fernández, Iniesta-Bonillo, & Holbrook, 2009; Zeithaml, 1988). This implies that stronger

142 ethical beliefs regarding aquaculture products also lead to higher product trust. In turn, the

143 higher the trust, the more likely consumers are to accept and purchase the product. This is

144 because trust has an important impact on attitudes and behaviour (Atkinson & Rosenthal,

145 2014) by increasing the persuading effect on consumers to rely on the product's ability to

146 perform its functions (Nuttavuthisit & Thøgersen, 2017). If, for example, a consumer does

147 not trust the claim "environmentally friendly", this consumer will be less likely to purchase

148 the product (i.e. behavioural aspect) or develop favourable perceptions towards it (i.e.

149 attitudinal aspect).

150   In sum, although previous research points to the fact that ethical beliefs might be

151 related to perceived product quality and value, as well as trust, there is an evident absence of

152 studies that explicitly investigate these relationships. Therefore, we test the following

153 hypotheses:

154   **H1a.** Ethical beliefs have a significant positive effect on perceived product quality.

155   **H1b.** Ethical beliefs have a significant positive effect on perceived product value.

156   **H1c.** Ethical beliefs have a significant positive effect on product trust.

157

158   As mentioned above, extant research on perceived (food product) quality suggests that

159 more than one type of quality attributes may be relevant (Banovic et al., 2009; Grunert,

160 2002), namely "experience" and "credence" quality attributes. In the case of aquaculture

161 products, both "credence" and "experience" quality attributes are very important (Claret et

162 al., 2014), and these perceived qualities can directly impact purchase intention (Banovic et

163 al., 2009; Grunert, 2002). Perceived value, on the other hand, represents a higher level

164 abstraction of consumer's overall assessment of the product's utility (Zeithaml, 1988), i.e., it

165 includes beliefs about qualities associated with the product (i.e., attitudinal aspect). Previous

166 research on the topic of perceived food quality has not included perceived value as general

167 assessment of the product's usefulness (Banovic et al., 2009; Grunert, 2002), despite the

168   evidence of perceived quality being associated with a product's ability to elicit higher order

169   consumers' assessment or value (Sánchez-Fernández & Iniesta-Bonillo, 2009). Accordingly,

170   we test the resulting hypotheses:

171   **H$_{2a}$.** Perceived product quality has a positive impact on subsequent purchase

172   intention.

173   **H$_{2b}$.** Perceived product quality has a positive impact on perceived consumer value.

174   **H$_{3a}$.** Perceived consumer value has a positive impact on subsequent purchase

175   intention.

176

177   Trust can be defined as "*a psychological state comprising the intention to accept*

178   *vulnerability based on positive expectations of the intentions or behaviours of another*"

179   (Rousseau, Sitkin, Burt, & Camerer, 1998, p.395). In the case of aquaculture, trust implies a

180   consumer's willingness to accept a "loss"(e.g. bad taste), but with the prospect that he or she

181   perceives the "gains" of consumption as exceeding any sacrifice, thus relying on the overall

182   product value when buying (Kjærnes, Harvey, & Warde, 2007). Thus, it is interesting to

183   explore if trust may be affected by ethical beliefs of how the product would deliver (H$_{1c}$

184   above) on the expectation of (higher) perceived value. This is in particular the case for

185   aquaculture, as consumers require complete and total transparency from "blue" aquaculture

186   companies that the products they buy are indeed produced in an environmentally sustainable

187   and ethical way and possess certain ethical value characteristics as a result (Altintzoglou et

188   al., 2011). Moreover, distrust in a product makes the evaluation of its ethical value (or overall

189   product value) difficult for consumers, hampering purchase intention. Perceived value thus

190   might represent here an intervening element between beliefs, trust and purchase intent (i.e.,

191   behavioural aspect) (Sweeney & Soutar, 2001). As consumers' willingness to buy a product

192   depends on how confident they are about product quality attributes such as safety and

193   healthiness, and ethical value, the relationship between perceived value and trust, as well as

194   trust and purchase intention merits further investigation. Consequently, we test the following

195   hypotheses:

196   **H3b.** Perceived consumer value has a positive impact on trust in the product.

197   **H4a.** Trust has a positive impact on subsequent purchase intention.

198

199   Relevant previous studies looked into the mediation role of ethical beliefs or trust

200   between attitudinal and behavioural aspects (Atkinson & Rosenthal, 2014; Kjærnes et al.,

201   2007), without controlling for consumer involvement in the product category. The role of

202   involvement in the (valence of) product quality and value perceptions is already established

203   in consumer behaviour literature, referring to differences between consumers who are more

204   interested in a certain product category and those who are not (Solomon, 2009). It has been

205   shown that higher consumer involvement has a significant (positive) impact on buying

206   behaviour (i.e. purchase intention) towards sustainable products (such as from "blue"

207   aquaculture) (Pieniak et al., 2007; Vermeir & Verbeke, 2006). Indeed, high-involvement

208   consumers may additionally demand intangible product attributes, to identify product quality

209   that is not instantly verifiable, while low-involvement consumers may intentionally avoid

210   attending to intangible attributes (Banovic, Fontes, Barreira, & Grunert, 2012). In fact, low-

211   involvement consumers do not like to be reminded about concerns connected with the

212   product when choosing conventional or organic products (Nuttavuthisit & Thøgersen, 2017).

213   This might have ethical implications. When evaluating the ethicality of a product quality and

214   value, it would be rational to think that this process would be stronger for high-involved

215   consumers, because high-involved consumers might have stronger beliefs that poor quality is

216   unethical and that good quality is an ethical imperative, subsequently trusting more those

217   products that confirm this reasoning (Vitell, 2003; Weber & Gillespie, 1998). Furthermore,

218   consumers who trust and agree that product is "good" or ethical would more likely to buy this

219   products, while poor quality would be punished by simply not buying the product

220   (Nuttavuthisit & Thøgersen, 2017). In the context of the present study, it is meaningful to

221   expect that the level of consumer involvement in the product category (i.e. farmed fish) may

222   play the role of moderator; that is, involvement strengthening the effect of ethical beliefs on

223   product quality perceptions, value, and trust. It is worth pointing out that consumer

224   involvement should be studied in connection to a specific product category (farmed fish in

225   our case), as the involvement may vary within the same category, and is sensitive to cross-

226   category differences (e.g. wild fish versus farmed fish category) (Beatty, Homer, & Kahle,

227   1988; Zaichkowsky, 1985). In fact, the high involvement in a specific product category (e.g.

228   farmed fish) should not be mistaken with preference for this category over the other (e.g. wild

229   fish), as this could undermine the validity of the involvement construct. Consequently, we

230   test the following hypothesis:

231   **H5a.** The higher the involvement in the product category, the stronger the positive

232   effect of ethical beliefs on perceived product quality.

233   **H5b.** The higher the involvement in the product category, the stronger the positive

234   effect of ethical beliefs on perceived consumer value.

235   **H5c.** The higher the involvement in the product category, the stronger the positive

236   effect of ethical beliefs on trust.

237

238   Ethical beliefs are expected to differ between cultures, regarding what is right and

239   what is wrong (Belk et al., 2005). Even though most of the previous research on the

240   importance of ethical beliefs for consumers' tendency to act "green" (such as buying organic

241   food) indirectly or directly assumes that this effect might be underlined by motivational

242   factors, such as cultural aspects (Cho, 2015; Nuttavuthisit & Thøgersen, 2017; Papista &

243 Krystallis, 2013), cross-cultural studies that explore the impact of ethical beliefs on buying

244 behaviour (i.e. purchase intention) towards sustainable products, such as "blue" products are

245 virtually non-existent. We agree that ethical beliefs might vary across cultures, and propose

246 to test the above hypotheses in a cross-cultural context. The framework and hypotheses

247 developed for this research are illustrated in Figure 1. The model includes both attitudinal and

248 behavioural aspects, as explained above, while hypotheses are tested within the European

249 cross-cultural context.

250   **--Insert Figure 1 about here--**

251 **3. Empirical study**

252 An empirical study was conducted across the largest EU markets for farmed fish (i.e.

253 Spain, France, and Italy) and important growing EU markets (i.e. Germany and the UK)

254 (Eurostat, 2016).

255 ***3.1 Data collection and sample characteristics***

256 An on-line survey with the use of a structured questionnaire was conducted in the

257 above-specified EU countries. The self-administered questionnaire was identical for all

258 countries, created in English, translated into the different national languages and back-

259 translated into English. The target audience for this study were respondents in the five

260 countries who consume any type of fish product at least once a month and are main/joint

261 decision maker for grocery shopping in the household. The final sample consisted of

262 approximately 500 consumers in each country (N=2,511). Quotas on gender and age applied

263 as follows: 49/51 percent of the sample was male/female participants; while age ranged

264 between 18 and 64 years, with mean age 41.2 y. (see Table 1). No statistically significant

265 differences appeared in terms of age, gender and educational level distribution among the 5

266 country samples. While most other studies have about 70% female respondents (see e.g.

267   Verbeke et al., 2005) and ours is nearly 50%, the overwhelming majority (73%) of our

268   sample are primary grocery shoppers. The remaining are joint decision makers, also

269   responsible for the household food shopping. The highest self-reported consumption

270   frequency of farmed and wild fish, among other types ($p < 0.001$), was registered in Spain

271   and Italy, in accordance with relevant consumption data (Eurostat, 2016).

272   **--Insert Table 1 about here--**

273   *3.2 Context information and measurement items*

274   Information that is obtained when consumers are put in a hypothetical situational

275   context provides consistently better predictions of behaviour than traditional "plain"

276   measures of consumer attitudes presenting no framing context (Leek, Maddock, & Foxall,

277   2000). Previous studies have found that the context steers consumer attention and influences

278   the type of information consumers detect and seek, what product attributes and values are

279   perceived as more important, suggesting that consumers' intention to purchase is contingent

280   on the degree to which they associate the product attributes with their projected situational

281   context.

282   The empirical study of the proposed framework was conducted in the context of

283   environmentally friendly ("blue") aquaculture production. Accordingly, consumers received a

284   realistic description (and a pictorial illustration) of a hypothetical new farmed fish species

285   that the European aquaculture industry would consider launching into the market across a

286   number of EU countries (see Figure 2). As seen from Figure 2, new fish would result from an

287   innovative aquaculture production system that would provide to the final product a series of

288   positive characteristics (i.e. improved sensory properties), while endorsing all principles of

289   "blue" (ethical) fish production.

290   **--Insert Figure 2 about here--**

                                                                                                14

291   Based on the contextual information provided (i.e. the description of the new farmed

292   fish species' characteristics), subjects had to indicate whether this fish product would be in

293   accordance to their ethical beliefs, what would be their perceptions about the specific fish

294   product's quality and value, whether they would trust buying this product, as well as their

295   purchase intention. Additionally, subjects had to indicate their level of involvement in the

296   study category (i.e. farmed fish).

297   For the operationalization of the various components of our conceptual model (i.e.

298   ethical beliefs (EB), perceived product quality and perceived consumer value (PPQ, PCV),

299   trust (TR), purchase intention (PI), and consumer involvement (CI)), a number of well-

300   established scales were used, drawing on related past literature (see Table 2). EB was

301   measured with three items adapted from Sánchez-Fernández et al. (2009). Four PPQ items

302   were adapted from Sweeney and Soutar (2001). As Sweeney and Soutar's (2001) study is

303   related to durable goods (e.g. clothing), other items measuring quality, besides "consistent

304   quality" used in our study, were further transformed to new items: "would be a tasty dish",

305   "would be a nutritious food choice", and "would be a healthy food choice". This is done as

306   previous research on nondurable goods has shown that the experience (i.e. taste) and

307   credence attributes (i.e. healthiness and nutrition) are important part of perceived product

308   quality (Banovic et al., 2009; Claret et al., 2014). For PCV, three items were adapted from

309   Cronin, Brady, and Hult (2000); and Dodds, Monroe, and Grewal (1991), while TR and PI

310   were adapted from Chaudhuri and Holbrook (2001). Finally, three items examining

311   individual CI in the category were adapted from Beatty et al. (1988). All items were

312   measured on 7-point Likert-type scales with end-points 1= "strongly agree" and 7= "strongly

313   disagree". All Cronbach alpha scores were very satisfactory, see Table 2.

314   **--Insert Table 2 about here--**

15

3.3 Data preparation

316   As the main objective of this study is to test the relationship between ethical beliefs,

317   perceived quality and value, trust, purchase intention and involvement in a cross-cultural

318   setting (i.e. five EU study countries), it is important that the country samples are equivalent in

319   terms of their structural characteristics that may affect results (Hair, 2009; Steenkamp &

320   Baumgartner, 1998). Therefore, three layers of diagnostic tests have been performed to make

321   sure that the samples are suitable for further analyses. First, several socio-demographic (i.e.,

322   gender, age, and education) and behavioural variables (i.e. fish consumption behaviour) were

323   checked for any response pattern bias across the five country samples. Second, the samples

324   were inspected for outliers or any systematic differences in responses that can distort

325   findings. Finally, the measurement model equivalence (i.e. invariance) and conceptual model

326   convergence across the studied countries were assessed, where factorial invariance (i.e. that

327   the items measured operate similarly across samples) was considered necessary to be able to

328   test the proposed model across countries.

329   Mahalanobis distance (D^2) was used to identify multivariate outliers in the sample,

330   where all the cases with D^2 values significant at 0.001 were removed (Mullen, Milne, &

331   Doney, 1995). Prior to testing of the conceptual model and measurement model equivalence,

332   all the variables have been tested for normality, linearity, validity, and multicollinearity

333   (Cohen, Cohen, West, & Aiken, 1983). Furthermore, all the indicators of the first-order

334   constructs have been mean-centred to reduce multicollinearity among predictor variables and

335   result in more meaningful and interpretable solutions.

336   ***3.4 Data analysis***

337   To test the proposed conceptual framework in Figure 1, a multi-group structural

338   equation modelling (SEM) procedure in AMOS 24.0 was followed, drawing on the step-by-

339   step analysis described by Byrne (2013), and Steenkamp and Baumgartner (1998). Thus, to

340   be able to reliable test postulated hypotheses (see Figure 1), as well as mediation and

341   moderation effects, we test validity of underlying measures through a measurement model,

342   assess the measurement invariance of the model's constructs, and confirm the absence of

343   common method bias.

344   *Measurement model analysis:* First, to check the validity of the measures, the number

345   of underlying factors and the applicability of the conceptual model (see Figure 1), baseline

346   measurement models were estimated by using confirmatory factor analysis (CFA) separately

347   for each country dataset, as well as for the pooled dataset. This is a logical step prior to

348   measurement invariance analysis, as the number of factors should be equivalent across

349   consumer groups (i.e. dimensional invariance) (Steenkamp & Baumgartner, 1998). The

350   estimated measurement models for each country group have been further checked for

351   convergent and discriminant validity and reliability (Bagozzi & Yi, 1988; Hair, 2009). It is

352   recommended that the factor loadings (FL) of the measured variables and construct reliability

353   (CR) should be at least 0.7, while the average variance extracted (AVE) should be greater

354   than 0.50.

355   *Measurement invariance analysis*: Second, to be able to make meaningful

356   comparisons between the country groups, relationships between the models' constructs in

357   Figure 1 and measurement invariance should be confirmed (Steenkamp & Baumgartner,

358   1998). Thus, CFA analysis was performed simultaneously for each country using a multiple-

359   group CFA analysis to cross-validate the factorial structure, followed by assessment of

360   configural, metric, and scalar invariance based on any changes in the overall model fit

361   (Byrne, 2013).

362   *Common method bias check:* Third, common method bias was assessed as data has

363   been obtained through a single instrument - an online survey, which can produce a systematic

364   response bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). This procedure included a

365   common latent factor (CLF) to seize the common variance among all observed variables in

366   the hypothesized model. Further, the standardised regression weights from the model

367   including CLF are compared to the standardized regression weights of an unconstrained

368   model (without the CLF). The absence of large differences (e.g. greater than 0.200) indicate

369   absence of common method bias (Gaskin & Lim, 2017).

370   *Structural model analysis:* Fourth, after validating the measurement model, a multi-

371   group SEM was performed. The hypothesized conceptual model in Figure 1 was tested by

372   using freely estimated path coefficients (i.e. H_{1a} through H_{4a}) across the country groups.

373   Subsequently, all path coefficients were constrained to be equal across the groups (i.e.,

374   countries) and examined whether the relationships (i.e. H_{1a} through H_{4a}) in the model differ.

375   The goodness-of-fit (GOF) indices of the structural model were checked again, as well as any

376   change in the overall model fit and the one-tailed probability of the chi-squared distribution.

377   CFA and SEM model fit were assessed by using several GOF indices, that is: the chi-square

378   by degrees of freedom ratio (χ^2/df), the root mean square error of approximation (RMSEA),

379   the goodness-of-fit index (GFI), and the comparative fit index (CFI). To have a satisfactory

380   fit of the tested model, it is recommended that these measures have values of: $\chi^2/df < 5$,

381   RMSEA < 0.08, GFI > 0.90 and CFI > 0.90 (Byrne, 2013).

382   *Mediation effects:* The possible existence of a mediation effect was tested with the

383   method recommended by Biesanz, Falk, and Savalei (2010). We tested the following

384   relationships depicted in Figure 1: EB-PPQ-PI, EB-PPQ-PCV, EB-PCV-PI, EB-PCV-TR,

385   and EB-TR-PI. Accordingly, it was assumed that if a significant indirect effect exists between

386   constructs A and C (i.e. in our model: EB and PCV, and EB and TR, and EB and PI) through

387   B (PPQ, PCV, and TR respectively) with at least 95% confidence, then construct B mediates

388   the relationship A-C. We used the user-defined estimand for AMOS (built-in) developed by

389   Gaskin (2016) and a bootstrapping method with 2,000 bootstrap samples and 95% bias

390   corrected (BC) levels.

391   *Moderation effects:* The postulated moderation effects of involvement (CI) in Figure

392   1 and hypotheses H_{5a}, H_{5b}, and H_{5c} were assessed as recommended by Preacher and Hayes

393   (2008). Thus, the interaction effects of involvement (CI) with ethical beliefs (EB) and their

394   joint effects were investigated in addition to the individual main effects, where the

395   moderation effect exists if the path estimate of the interaction term is significant. This helped

396   explain not only how EB affects PPQ, PCV and TR, but also under what circumstances the

397   above effects of EB change depending on the moderation of involvement.

398

399   **4. Results**

400   The studied samples did not differ significantly in terms of their socio-demographic

401   characteristics (see Table 1), but were different in their fish consumption behaviour, as

402   expected (Eurostat, 2016). Further, statistically significant differences appeared in post-hoc

403   tests among the five investigated countries across all components of the conceptual

404   framework, justifying the choice of the specific countries (see Table 2). Specifically, mean

405   scores of scales for *EB*, *PPQ*, *PCV*, *TR*, and *PI* showed significant differences (all $p < 0.05$)

406   and satisfactory reliability scores across the five study countries. Mean scores further

407   indicated slightly higher agreement with the relevant statements among German consumers,

408   followed by Spanish and Italian consumers, which corroborates findings from previous

409   studies (Pieniak, Vanhonacker, & Verbeke, 2013). On average, 44.5 percent of the European

410   consumers participating in the survey agree that buying the specific fish product is

411   "*…coherent with my [their] ethical beliefs*", "*…would be good for the environment*" and

412   "*…would contribute to the survival of the aquaculture industry*", while another 33.4 percent

413   of participants would trust the specific fish product. SEM was used to further test the

414   conceptual model, using the step-by-step approach explained above.

415

416   *4.1 Measurement model analysis results*

417   Measurement model analysis showed similar factor structure for all countries in

418   support of dimensional invariance, as well as satisfactory GOF measures (Table 3). All the

419   models have met the GOF criteria. All the items loaded on their constructs significantly (all

420     $p_s < 0.001$), with the factor loadings ranging from 0.73 to 0.95, and the constructs explaining

421   more than 50 percent of the variance of each item, confirming their internal consistency. The

422   threshold of 0.60 for composite reliability (CR) was met, as well as for average variance

423   extracted (AVE), which was always greater than 0.50. These findings confirmed both the

424   convergent and the discriminant validity of the model (Bagozzi & Yi, 1988; Hair, 2009).

425   **--Insert Table 3 about here--**

426   *4.2 Common method bias check*

427   Common method bias has been addressed by using the procedure described by Gaskin

428   and Lim (2017). Results showed differences of < 0.200 between standardised regression

429   weights from the model including CLF compared to the standardized regression weights of

430   an unconstrained model (without CLF). Further, the bias test showed no significant

431   differences between the constrained and the unconstrained model ($\Delta\chi2(218) = 59.00$, $p =$

432   1.000).

433   *4.3 Invariance testing results*

434   As can be seen in Table 4, the hypothesized model was well described by the 5-

435   factors that consisted of *EB*, *PPC, PCV*, *TR*, and *PI* for all countries. The observed items

436   were invariant across the five country groups, and the models had a good fit that provided

437 reasonable evidence in support of measurement invariance (i.e. metric invariance: $\Delta\chi^2(50) =$

438 57.65, $p = 0.213$; scalar invariance: $\Delta\chi^2(75) = 68.85$, $p = 0.134$), permitting a meaningful

439 comparison between the groups (Steenkamp & Baumgartner, 1998).

440 **--Insert Table 4 about here--**

441 *4.4 Structural model analysis results*

442 The structural model was estimated based on the hypothesized conceptual model in

443 Figure 1. The structural model in which all path coefficients were set free across the groups

444 produced good overall fit (i.e. $\chi^2(410)=1010.57$, RMSEA=0.03, GFI=0.95, CFI=0.98). The

445 subsequent model when all regression paths were constrained to be equal resulted in the

446 significant decrease in model fit ($\Delta\chi^2(39) = 1896.89$, $p< 0.001$). Thus, we checked the model

447 at the path level by constraining and relaxing each path between two country groups at a

448 time. This allowed for the identification of differences between the constrained and the

449 unconstrained model for each country determined by change in the overall model fit (using

450 chi-square difference test) (Gaskin & Lim, 2018). Results of the multiple comparisons of the

451 unconstrained and the fully constrained models across two countries at a time showed

452 significant differences for all paths (see Table 5).

453 **--Insert Table 5 about here--**

454 Specifically, the direct effects of EB on PPQ, PCV and TR were all significant,

455 supporting hypotheses H_{1a}, H_{1b}, and H_{1c}. This effect was significantly stronger in Italy, Spain

456 and the UK for H_{1a}, Germany and the UK for H_{1b}, and Germany and Italy for H_{1c}. The

457 stronger impact of ethical beliefs in the case of the UK and Spain on PPQ, and Germany and

458 the UK on PCV, corroborates previous findings that show that consumers from these

459 countries often ponder on the impact of overfishing on the environment and aquaculture

21

460   products and that these inferences might impact subsequent product evaluations (Banovic et

461   al., 2016). Except for the UK, the direct effect of PPQ on PCV was also significant with

462   similar effect across countries, thus supporting hypothesis H$_{2b}$, and showing that perceived

463   value plays an important role as an overall assessment of the product usefulness and should

464   be considered more often in the quality perception research. PCV had a significant direct

465   impact on TR, which was stronger in Spain when compared to the other countries, supporting

466   H$_{3b}$. The higher impact of perceived value on trust in Spain could be explained by the fact

467   that the Spanish fishing sector has an embedded tradition where fresh fish is being supplied

468   almost on a daily basis to the shops, and thus this could increase the confidence in the

469   perceived product value (Claret et al., 2012). Only in the case of France and Italy hypotheses

470   H$_{2a}$ and H$_{3a}$ were not supported. This could be explained by the fact that TR had a stronger

471   significant direct impact on PI for these countries when compared to the others, supporting

472   hypothesis H$_{4a}$. It seems that in the case of French and Italian participants the trust construct

473   was mediating most of the effect of ethical beliefs on purchase intention confirming the prior

474   findings that these consumers consider ethical aquaculture production as a growing need for

475   product acceptance (Banovic et al., 2016). The above results show that the hypothesized

476   model worked equally well across the five study countries and had a good explanatory power

477   from moderate to substantial, as R^2 values ranged from 0.36 to 0.88.

478

479   *4.5 Mediating effects of ethical beliefs*

480   As seen from Table 5, the mediation analysis showed that PPQ mediates the effect of

481   EB on PCV only in France and Germany, while PPQ also mediates the effect of EB on PI in

482   Spain and the UK. The mediation of PCV on the effect of TR on PI was not supported in

483   France and Italy when compared to other countries, where this mediation was supported. The

484   mediated indirect effect of EB through PCV on TR, as well as of EB through TR on PI was

485   significant across all countries (see Table 5).

486   *4.6 Moderating effects of consumer involvement*

487   In the following analyses, we tested the moderating effect of CI on the relationship

488   between EB and PPQ, PCV and TR (see Table 5). The results demonstrate that CI

489   strengthens the relationship between EB and PPQ only in the UK, thus only partially

490   supporting hypothesis H_{5a}. Additionally, CI strengthens the relationship between EB and

491   PCV in Germany, Italy and Spain, while in the UK and France this moderation is not

492   significant, partially supporting hypothesis $H_{5b.}$ Finally, the interaction effect of CI and EB on

493   TR was significant only in France and Germany, while in other countries this effect was not

494   significant, partially supporting hypothesis H_{5c}.

495   **5. Discussion**

496   The study findings indicate that respecting ethical beliefs of consumers is an

497   important precondition for aquaculture manufacturers in their attempt to improve their

498   positioning in the European food market. This is especially important in the case of

499   aquaculture products where contradiction exist of their production method and what is "right"

500   or "wrong" (i.e. "eat more aquaculture products" *vs* "stop aquaculture expansion" -

501   aquaculture communication campaigns, EC, 2014) that might impair consumers' buying

502   behaviour (Kaiser & Stead, 2002). Our study shows that when consumers are concerned

503   about the ethicality of a product they rely on their ethical beliefs to evaluate what is of "poor"

504   or "good" quality. Further, they choose to trust or not to trust that the product possesses

505   essential values for them to buy it (Atkinson & Rosenthal, 2014; Pieniak et al., 2007).

506   Indeed, in our study consumers seem to attach high perceived importance to ethics

507   with regard to farmed fish, as ethical beliefs have been found to be a better predictor of the

508 perceived customer value than the perceived product quality. This is especially evident in

509 some countries, such as Germany and the UK, where ethical beliefs had a significant impact

510 on perceived customer value, that further mediated the effect of ethical beliefs on trust. This

511 perceived importance of the ethics criterion could be explained by the fact that conceptually,

512 quality and ethics have a similar purpose, as both criteria prompt what is "good" and what is

513 "right", and thus lead to a higher perceived customer value. However, while ethical beliefs

514 target higher order macro-goals of society that guide behaviour (Muncy & Vitell, 1992),

515 quality concerns more with micro-goals and the product itself (Zeithaml, 1988). Thus, this

516 macro-micro difference between ethics and quality criteria bring forth the fact that for

517 different consumers the criteria impacting perceived value might be differentially weighted

518 (Sweeney & Soutar, 2001) (as in Germany and the UK). Further, ethical beliefs or

519 generalising an ethical case (i.e. environmentally friendly, sustainable products) may produce

520 a halo effect that outweighs the effect of quality criteria on perceived customer value

521 (Siegrist, Visschers, & Hartmann, 2015). It seems that while quality and value will always be

522 important consumer issues, consumers also consider ethics to be equally crucial. Due to the

523 absence of studies that investigate the relationship between ethical beliefs and quality criteria,

524 the above finding is very relevant, and points to the fact that ethical beliefs are the key

525 concept for building the market for the "blue" aquaculture products, which could be also

526 translated to other markets with similar issues.

527 Based on our cross-culturally validated and comprehensive consumer behaviour

528 model that measured impact of ethical beliefs on consumers' perceptions, this study provides

529 several new insights into how ethical beliefs may affect the European aquaculture market.

530 First, the consumer beliefs of ethical behaviour in aquaculture production documented in this

531 study are indeed an added asset for European consumers that can advance expansion of the

532 European aquaculture market. As shown in our study, 44.5% of the participating consumers

533   agree that the buying of aquaculture products is coherent with their ethical beliefs, whereas

534   33.4% would trust aquaculture products. This is especially important for some countries like

535   Germany and the UK, where consumers seems to use the ethical inferences of what is good

536   for the environment to evaluate aquaculture products (Banovic et al., 2016). These results

537   further imply that the European aquaculture market is not only limited to the consumers who

538   can recognize and prefer aquaculture products, as apparently only 8% of EU28 consumers

539   recognize and prefer aquaculture products (EC, 2017). It seems that many potential

540   consumers could be motivated to buy aquaculture products if they believe that the production

541   method is in line with ethical standards (Martínez-Cañas et al., 2016; Verbeke, Vanhonacker,

542   et al., 2007; Vitell, 2003), as our study shows these effects are stable across all the

543   investigated countries.

544   Second, this study shows that ethical beliefs may inflate consumers' product quality

545   and value expectations as well as trust. Even more, beliefs of ethical behaviour make it more

546   likely that perceived value, product quality and trust in a product are converted into the actual

547   purchase intention and buying behaviour. In fact the relationship between the ethical beliefs,

548   perceived customer value and trust, as well as the direct effect of trust on purchase intention

549   was significant and stable across all investigated countries. Hence, ethical beliefs could

550   enlarge the development of European aquaculture market in at least two ways. First by

551   increasing consumer's expectations of positive outcomes in terms of perceived "good"

552   product quality and value, which lead to the higher consumer inclinations to purchase

553   aquaculture products, and secondly through trust, that mediates favourable ethical beliefs

554   leading to the positive purchase intention. The latter is especially evident among French and

555   Italian consumers corroborating findings from previous studies that for these consumers

556   ethical aquaculture production could be a precondition for product acceptance (Banovic et al.,

557   2016).

25

558   A third insight into how ethical beliefs may affect the European aquaculture market is

559   that, in order to quantify the impact of the consumer ethical beliefs on consumer value

560   perceptions and behaviour, it is important to control for the other important factors. This was

561   done in this study by analysing the moderating effect of consumer involvement on the ethical

562   beliefs within the framework of the proposed model. As discussed above, previous studies on

563   ethical beliefs usually examine the mediating role of trust between attitudinal and behavioural

564   aspects (Atkinson & Rosenthal, 2014; Kjærnes et al., 2007), but rarely these studies include

565   or control for the consumer involvement. Exception is the study by Pieniak et al. (2007) that

566   has shown that higher consumer involvement has a significant positive impact on buying

567   intention. However, in their study, they did not examine whether the relationship between the

568   ethical beliefs and product quality, value and trust may be actually strengthened by consumer

569   involvement, as shown in our study. The current study thus shows that the moderating effect

570   of consumer involvement was limited and activated when a product is perceived as influential

571   in meeting important goals (e.g. ethicality). This effect further increased the perceived

572   relationship between product value and trust, which is strengthened for more involved

573   consumers. This means that it would be beneficial to be able to increase involvement (e.g.

574   through communication) in order to increase specific trust and perceived value of aquaculture

575   products, predict loyalty, but also proliferate more sustainable behaviour (Schlag &

576   Ystgaard, 2013).

577   The results of this study are robust, given that this study finds similar and consistent

578   valid and accepted motivations to purchase aquaculture products, across a variety of countries

579   with different levels of consumption. The study therefore meets the requirement of cross

580   validation for a better understanding of consumer behaviour (Steenkamp and Baumgartner,

581   1998). Furthermore, the present results corroborate the findings of other consumer studies on

582   aquaculture products that emphasise the importance of enhancing the image of aquaculture

583 among consumers through use of ethical and trustworthy information (Claret, Guerrero,

584 Gartzia, Garcia-Quiroga, & Ginés, 2016; Pieniak et al., 2013; Pieniak et al., 2007), which

585 further increases the validity of the proposed model and the overall results.

586   *5.1 Limitations*

587   The present study is not without limitations and a few instances should be mentioned.

588 The trust in our study has been defined as the consumer's willingness to accept a "loss" (e.g.

589 bad taste) versus the "gains" of consuming the product, thus depending on the overall product

590 value (Kjærnes, Harvey, & Warde, 2007). This direct relationship between perceived value

591 and trust has been fully confirmed by our model (all paths highly significant in cross-cultural

592 context, Table 5). Likewise, the mediation effect of ethical beliefs through perceived value on

593 trust was also fully supported across investigated countries (see Table 5). However, the trust

594 in the aquaculture sector may influence the perceived product quality, and future studies

595 should consider testing this relationship further.

596   It is also worth pointing out that the safety is a big quality criterion for fish in general,

597 and for farmed fish in particular, since it is largely related to aquaculture production practices

598 and trust in the sector (Verbeke, Sioen, Pieniak, Van Camp, & De Henauw, 2005). However,

599 the safety criterion has not been included in our model, even though it has been measured in

600 the questionnaire. The main reason for not including the safety criterion is that it was

601 considered relatively unimportant for our group of participants and in the context of

602 environmentally friendly aquaculture production. This is in line with previous research that

603 have also found fish choice to be more contingent on quality attributes (such as taste, health,

604 and nutrition) than on safety-related aspects, as safety is often already assumed by the

605 European consumers (Claret et al., 2014; Verbeke, Sioen, et al., 2007). Nevertheless, future

606 studies on farmed fish should consider including the safety criterion as general consumer

607 driver.

608 **6. Conclusions and practical implications**

609 This study shows that stimulating consumers' ethical beliefs regarding aquaculture

610 production is a good route for further expansion of the European aquaculture market, as its

611 effects may increase the perceived quality and value of the aquaculture products, promote

612 trust and raise purchase intention (i.e., H_{1a}, H_{1b}, H_{1c}, and mediating effects of EB-PCV-TR

613 and EB-TR-PI supported across all countries). This can be accomplished, for example, by

614 establishing and communicating stable and reliable standards and controls. Here, ethical

615 labelling of aquaculture products, such as Aquaculture Stewardship Council (ASC) label,

616 could be a viable solution that could increase perceived value, facilitate trust and convince

617 consumers to buy aquaculture products. This is vital, as wild and farmed fish are often not

618 differentiated at the purchase point. Ethical labels thus could be a good carrier of the ethical

619 effect found in this study, if able to convey the information in a proper manner, as consumers

620 have a habit of not paying too much attention to the technical information (Claret et al.,

621 2016). Even though consumers may not actually use this information in their product choice,

622 its existence can act as an important precondition to consumers in giving reassurance

623 regarding the product quality and value. Hence, a key policy recommendation based on this

624 study is to urge for stable and reliable standards and controls in the "blue revolution"

625 aquaculture industry so that the consumers can rely on and increase their ethical beliefs in

626 aquaculture products.

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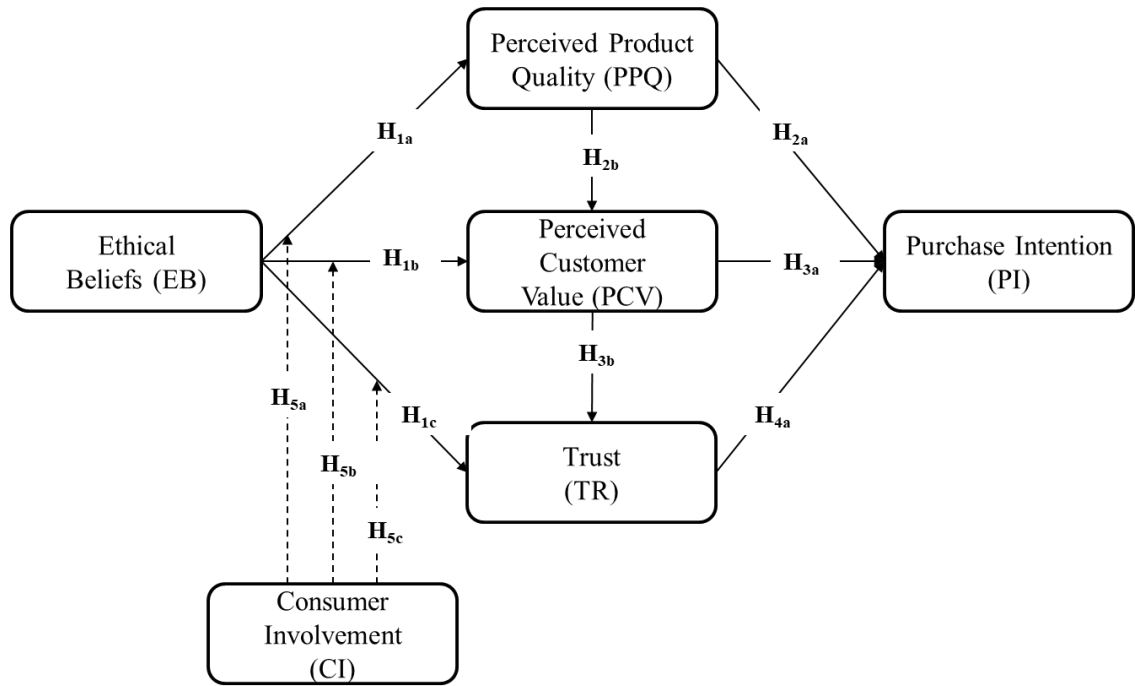
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777   **Figure 2.** Depiction of a hypothetical new-farmed fish species used in the questionnaire.

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In this picture you see a new marine finfish species from the European aquaculture industry that has entered the market recently. The **size of this fish is similar to that of Atlantic Salmon**. This fish can be found in the Mediterranean and Black Sea, and along the eastern Atlantic coast.

This fish is a **high quality meal** choice, has a **lower fat content** than the average farmed fish, **excellent taste** and **firm, yet juice flesh**. Due to these characteristics, this fish is very suitable to be **served at special occasions**. Moreover, this species is very suitable for the **development of value-added products**. As such, compared to other possible choices, this fish has the potential to **gain a popular image**. Finally, the development of this fish will **be more environmentally friendly**, compared to other species, and takes place in a **controlled production system**. This new finfish, therefore, suits the needs of consumers who demand **sustainability** and **low environmental impact**.

As a result of its high quality, this fish might be **more expensive** than the average farmed fish. In addition, since both its **production and market are still small**, it is likely that it will **not be widely available** in the 'usual' retail outlets. Although this fish is praised for its taste, this **taste might seem different than usually expected** from farmed fish, a taste that not everyone would appreciate. Moreover, due to its different quality, this fish might **demand extra skills to cook** compared to other farmed or wild species. Overall, despite sufficient experience with its production system, the exact **rearing methods for this fish are still not perfected** as yet.

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List of Tables

782   **Table 1.** Socio-demographic profile and consumption behaviour.

Characteristics	Total (N=2511)	France (N=500)	Germany (N=506)	Italy (N=500)	Spain (N=500)	UK (N=505)	Sig.*
Demographics							
Age (mean in years)	41.2	41.7	41.8	40.3	41.1	42.3	.123
Gender (% of male)	49.2	48.6	49.2	46.8	50.4	51.1	.693
Education (university or higher)	37.5	38.5	38.4	36.2	35.6	38.9	.369
Consumption behaviour							
Farmed fish (once a week or more)	20.7	17.0	10.1	23.8	29.8	23.2	*< .001*
Wild fish (once a week or more)	16.9	15.0	10.5	28.6	19.6	10.9	*< .001*
Seafood (once a week or more)	18.7	13.8	10.9	21.6	17.0	30.3	*< .001*
Whole fish (once a week or more)	23.1	14.2	16.4	27.8	35.6	21.6	*< .001*
Frozen fish (once a week or more)	29.5	22.6	26.9	30.4	37.0	30.5	*< .001*
Processed fish (once a week or more)	23.2	25.6	21.9	28.2	19.8	23.8	*< .001*

783   *Results from the chi-square test, except for age results from F-test, values in italic significant at $p < .001$.

Table 2. Operationalization of scales and reliability scores.

Scales/Items	Overall (N=2511)			France (N=500)			Germany (N=506)			Italy (N=500)			Spain (N=500)			UK (N=505)			Sig.*
	M	SD	α	M	SD	α	M	SD	α	M	SD	α	M	SD	α	M	SD	α	
Perceived product quality (PPQ)	3.04	1.41	.94	3.23[b]	1.43	.94	2.76[a]	1.16	.90	3.01[b]	1.45	.95	3.09[b]	1.45	.96	3.10[b]	1.50	.96	<.001
This product would have consistent quality (CQ)																			
This product would be a tasty dish (TD)																			
This product would be a nutritious food choice (NFC)																			
This products would be a healthy food choice (HFC)																			
Ethical beliefs (EB)	3.21	1.41	.88	3.33[b,d]	1.46	.90	3.04[a,c]	1.27	.81	3.14[c,d]	1.49	.90	3.23[c,d]	1.36	.89	3.31[c,d]	1.43	.90	.006
Buying this product is coherent with my ethical values (EV)																			
Buying this product would make good for the environment (GFE)																			
Buying this product would contribute to the survival of the aquaculture industry (SAI)																			
Perceived value (PV)	3.37	1.23	.90	3.48[b,c]	1.23	.90	3.26[a,d]	1.24	.89	3.38[c,d]	1.25	.91	3.33[c,d]	1.14	.89	3.41[c,d]	1.26	.92	.050
I would consider this product to be good value for money (GVM)																			
I would consider this product to be a good buy (GB)																			
This product is a promising product (PNP)																			
This product replaces old products with new valuable products (NVP)																			
Trust (TR)	3.38	1.36	.90	3.54[b,c]	1.38	.92	3.27[a,d]	1.36	.89	3.42[a,b]	1.39	.90	3.28[a,d]	1.32	.91	3.37[a,b]	1.34	.90	.009
I would trust this product (TP)																			
I would consider this product to be an honest product (HP)																			
Purchase Intention (PI)	3.78	1.49	.81	3.91[c]	1.49	.81	3.55[a,d]	1.46	.83	3.78[c,d]	1.49	.81	3.69[c,d]	1.40	.76	3.94[c,d]	1.54[b,c]	.84	<.001
I intend to buy this product (BP)																			
I am willing to pay premium price to buy this product (PPB)																			
Consumer Involvement (CI)	2.52	1.35	.94	2.46[a,b]	1.35	.94	2.35[a]	1.15	.88	2.34[a]	1.38	.96	2.60[b]	1.35	.95	2.83[c]	1.43	.94	<.001
I am very concerned about what farmed fish I purchase (CPP)																			
I care a lot about what farmed fish I consume (CPC)																			
Generally, choosing the right farmed fish is important to me (CRP)																			

M - Mean; SD – Standard Deviation; α – Cronbach's alpha.

*Significance related to the F-test, where country was used as a factor variable, all significant at $p < 0.05$.

[a] Results of the Post hoc Tuckey's-b test, mean with different letters significantly different at $p < 0.05$.

Table 3. Confirmatory Factor Analysis results.

Measures	Pooled sample			FR			GER			IT			SP			UK		
	SL	CR	AVE	SL	CR	AVE	SL	CR	AVE	SL	CR	AVE	SL	CR	AVE	SL	CR	AVE
EB		0.93	0.80		0.92	0.62		0.83	0.62		0.93	0.80		0.91	0.77		0.91	0.78
EV	0.89			0.86			0.79			0.89			0.86			0.86		
GFE	0.90			0.91			0.80			0.90			0.88			0.89		
SAI	0.90			0.90			0.77			0.90			0.89			0.89		
PPQ		0.96	0.85		0.95	0.73		0.91	0.80		0.96	0.85		0.96	0.87		0.95	0.84
CQ	0.90			0.91			0.80			0.91			0.92			0.87		
TD	0.90			0.89			0.84			0.91			0.93			0.91		
NFC	0.93			0.91			0.88			0.93			0.94			0.94		
HFC	0.94			0.93			0.89			0.94			0.95			0.94		
PCV		0.92	0.74		0.92	0.75		0.90	0.70		0.92	0.74		0.90	0.70		0.93	0.77
GVM	0.81			0.82			0.81			0.81			0.81			0.89		
GB	0.92			0.91			0.88			0.92			0.91			0.95		
PNP	0.83			0.87			0.81			0.83			0.87			0.80		
NVP	0.89			0.86			0.85			0.87			0.74			0.85		
TR		0.92	0.84		0.93	0.86		0.90	0.81		0.92	0.85		0.92	0.84		0.91	0.83
TP	0.91			0.92			0.91			0.94			0.94			0.92		
HP	0.94			0.94			0.90			0.90			0.89			0.90		
PI		0.93	0.70		0.83	0.71		0.81	0.68		0.82	0.69		0.81	0.68		0.87	0.68
BP	0.88			0.73			0.79			0.78			0.75			0.84		
PPB	0.78			0.94			0.85			0.88			0.90			0.91		
Goodness of fit (GOF) indices																		
χ^2(df)	162.27 (80)			141. 48 (80)			204.13(80)			162.27 (80)			190.29 (80)			291.19 (80)		
χ^2/df	2.03			1.77			2.55			2.03			2.38			3.64		
RMSEA	0.05			0.04			0.04			0.05			0.06			0.05		
GFI	0.98			0.97			0.93			0.95			0.94			0.94		
CFI	0.99			0.99			0.97			0.99			0.98			0.97		

SL – Standardized Loadings; CR – Composite Reliability; AVE – Average Variance Extracted;

EB - Ethical Beliefs; PPQ- Perceived Product Quality; PCV - Perceived Consumer Value; TR - Trust; PI - Purchase Intention.

791 **Table 4.** Measurement invariance results.

	χ^2	df	χ^2/df	RMSEA	CFI
Configural invariance	989.349	400	2.47	0.03	0.98
Metric invariance	1047.316	450	2.33	0.03	0.99
Scalar invariance	1078.583	475	2.27	0.03	0.99

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Table 5. Structural model results[x]

Criterion	Predictors	Hypothesis	France		Germany		Italy		Spain		UK	
				R²		R²		R²		R²		R²
PPQ				0.79		0.71		0.88		0.83		0.80
	EB	H1a supported	0.89*** (a)		0.84*** (a)		0.94*** (b)		0.91*** (b)		0.90*** (b)	
PCV				0.49		0.57		0.49		0.36		0.48
	EB	H1b supported	0.34*** (a)		0.52*** (b)		0.44*** (a)(b)		0.41*** (a)(c)		0.60*** (b)	
	PPQ	H2b partially supported	0.39*** (a)		0.26** (a)		0.27** (a)		0.21** (a)(b)		0.10 (b)	
TR				0.75		0.74		0.80		0.80		0.75
	EB	H1c supported	0.17** (a)(b)		0.19** (a)		0.21** (a)		0.15** (b)		0.16** (a)(b)	
	PCV	H3b supported	0.74*** (a)		0.71*** (a)		0.74*** (a)		0.80*** (b)		0.74*** (a)	
PI				0.76		0.85		0.87		0.87		0.74
	PPQ	H2a partially supported	0.04 (a)		0.12* (a)		0.10 (a)		0.15*** (a)		0.15** (a)	
	PCV	H3a partially supported	0.09 (a)		0.39*** (b)(c)		0.14 (a)		0.27** (b)		0.49*** (c)	
	TR	H4a supported	0.79*** (a)(c)		0.64*** (b)		0.88*** (a)(c)		0.77*** (a)(c)		0.49*** (b)	
Mediating effects												
EB-PPQ-PI		partially supported	0.03		0.10		0.09		0.12**		0.13**	
EB-PPQ-PCV		partially supported	0.28**		0.21*		0.02		0.13		0.07	
EB-PCV-PI		partially supported	0.02		0.18**		0.05		0.08*		0.27**	
EB-PCV-TR		supported	0.22**		0.40**		0.29**		0.28**		0.40**	
EB-TR-PI		supported	0.11*		0.12*		0.14*		0.08*		0.07*	
Moderating effects												
PPQ	CI x EB	H5a partially supported	0.04		0.05		0.01		0.05		0.09*	
PCV	CI x EB	H5b partially supported	0.05		0.11*		0.08*		0.11*		0.02	
TR	CI x EB	H5c partially supported	0.06*		0.10*		0.04		0.03		0.01	

***Significant at $p< 0.001$. **Significant at $p<0.01$. *Significant at $p<0.05$

EB - Ethical beliefs; PPQ- Perceived product quality; PCV - Perceived value; TR - Trust; PI - Purchase Intention; CI – Consumer Involvement.

[x]Path estimates with different letters across countries differ significantly at $p < 0.001$ level