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Original

A Theory of Planned behaviour perspective for investigating the role of trust in consumer purchasing decision related to short food supply chains / Giampietri, Elisa; Verneau, Fabio; Del Giudice, Teresa; Carfora, Valentina; Finco, Adele. - In: FOOD QUALITY AND PREFERENCE. - ISSN 0950-3293. - ELETTRONICO. - 64:(2018), pp. 160-166. [10.1016/j.foodqual.2017.09.012]

Availability:

This version is available at: 11566/260849 since: 2018-10-15T20:04:59Z

Publisher:

Published DOI:10.1016/j.foodqual.2017.09.012

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1 Theory of Planned behaviour perspective for investigating the role of trust

2 in consumer purchasing decision related to short food supply chains

3 Authors: Elisa Giampietri*, Fabio Verneau, Teresa Del Giudice, Valentina Carfora, Adele Finco,

6 c Department of Agriculture, University of Naples Federico II, Naples, Italy

7 d Department of Humanities, University of Naples Federico II, Naples, Italy

- 8 **Corresponding Author*
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10 Abstract

11 To better understand the success and the spreading in number of short food supply chains (SFSCs) in Italy, this study 12 investigates consumer motivations and behaviour with regard to such alternative agri-food networks using an extended 13 model of the Theory of Planned Behaviour (TPB). In particular, this paper studies the role of consumer trust towards 14 purchasing in SFSCs as well as the role of consumer rural background and fair-trade purchasing preference, in 15 addition to common TPB variables. To this purpose, an online survey has been conducted on a convenience sample of 16 260 consumers in Italy. A Structural Equation Modeling (SEM) has confirmed the role of trust as direct antecedent of 17 consumer intention to purchase food at SFSCs, as well as the best-supported attitudes, subjective norms and perceived 18 behavioural control in the standard TPB model. In addition to intention and perceived behavioural control, the 19 behaviour is found to be influenced also by consumer rural residence and fair trade purchasing habit. These evidences 20 are interesting in order to suggest further marketing strategies for farmers, in the direction of more ethical and trust-21 related forms of consumption.

22

Keywords: trust; structural equation modeling; short food supply chains; consumer behaviour; theory of planned
behaviour.

25

26 Introduction

Nowadays, there is an intense movement in the debate on consumer trust in food choice. Indeed, 27 28 due to many food scandals (Forbes et al., 2009) and the progressive industrialization and globalization of agri-food chains, consumer skepticism about food quality and safety has been 29 increasing during the last decades (Toler et al., 2009). Although product or process certifications 30 and labelling sometimes succeed in solving this problem, sometimes they fail instead as customers 31 often ignore or misinterpret the meaning of specific certifications (Grunert, 2005). In addition, the 32 perception of some food attributes, by their very nature, cannot be identified through a system of 33 certification, as in the case of Short Food Supply Chains (SFSCs) that boast some proper credence 34 characteristics (Migliore et al., 2015). These alternative circuits of food provision (e.g., farmers 35 markets, on farm direct selling) increasingly gained ground all over Europe and in Italy as well 36 (Kneafsey et al., 2013; Marino and Cicatiello, 2012) in recent years, representing a sustainable 37 alternative to global chains in terms of economic, social and environmental benefits (Giampietri et 38 39 al., 2016a; Mundler and Laughrea, 2016). This is in line with the current critical and ethical

⁴ a Department of Agricultural, Food and Environmental Sciences, Università Politecnica delle Marche, Ancona, Italy

⁵ b Department of Political Sciences, University of Naples Federico II, Naples, Italy

consumerism that is highly related to both environmental and health impacts of food consumption
(Banterle et al., 2012). Notoriously, SFSCs reconnect farmers and consumers (Kirwan, 2004).
Those direct interactions between the actors are found to provide consumers with a sense of trust
that affect their purchasing decisions in relation to short chains (Holloway and Kneafsey, 2000).

To better understand the success and the spreading in number of such alternative agrifood networks, based on two previous explorative surveys, this study explores the influence of the main determinants of consumer intention and behaviour, as required by the Theory of Planned Behaviour (TPB) (i.e., attitudes, subjective norms and perceived behavioural control). In addition, the paper provides useful information about the role of consumer trust and their residential area and fair trade consumption habits in order to predict and explain SFSCs-related purchasing decisions.

50

69 Background

70 In developing our conceptual framework, we draw on a previous work and the Theory of Planned 71 Behaviour by Ajzen (1991). TPB is rooted in social-psychology and represents one of the most widely cited alternative approaches to understand and predict human behaviour. According to Ajzen 72 (2015), this theory does not rely on the utility evaluation of a product or a service, but it focuses on 73 74 the specific behaviour of interest, providing a comprehensive framework to explain and understand its determinants. Many studies (Cook et al., 2002; Verbeke and Vackier, 2005; Louis et al., 2007; 75 Smith et al., 2008) have already demonstrated the predictive power of TPB in relation to food 76 purchase and consumption decisions. However, to the best of our knowledge, only little use of TPB 77 78 has been applied to investigate consumers' preferences for buying food at SFSCs (Giampietri et al., 2015; Giampietri et al., 2016b). TPB central premise is that a precise behaviour is a function of the 79 80 intention (INT) to perform it and the perceived behavioral control (PBC). The stronger these two 81 determinants, the more likely the behavioural performance would be. Furthermore, the intention is determined by the combination of three factors as attitudes (ATT), subjective norms (SN), and PBC 82 with respect to the behaviour in question, and these are influenced by behavioural, normative and 83 84 control beliefs, respectively. The more favorable ATT and SN and the greater PBC, the more likely a consumer intention to engage in the concerning behaviour. Furthermore, some other factors can be 85 considered as additional determinants of the intention within the TPB original framework, as past 86 87 behaviour and self-identity (Carfora et al., 2016), risk perception (Lobb et al., 2007) or trust (Mazzocchi et al., 2008). 88

In relation with the open debate on consumer increased distrust, during the last years we assisted to the decreasing of consumer proximity to farming (Thorsøe and Kjeldsen, 2016) and the consequent increasing attention in gaining new knowledge about food that we eat, e.g., where and how it is 92 produced and by whom, known as "quality turn" (DuPuis, 2000; Goodman, 2004). Accordingly, 93 nowadays food safety and quality represent a black box for consumers, especially for those who live 94 in urban areas that, by their very nature, are quite far from the production process and have lost their 95 control over food. It is worth noting that the erosion of consumer confidence grows when the risk of 96 moral hazard along the food chain prevails, in the first place affecting customer loyalty towards the 97 seller and/or the brand, and creating food safety concerns (Hobbs and Goddard, 2015).

Interestingly, trust represents a solution for those situations that are characterized by increasing
complexity and lack of knowledge, as in the case of consumer trust in food and buyer-seller
relationships (Frewer et al., 1996; Lassoued and Hobbs, 2015).

101 Nowadays, the necessity to rebuild and strengthen consumer trust between consumption and 102 farming represents one of the main challenges in the marketing field. Accordingly, Ding et al. 103 (2015) state that trust, especially towards farmers (instead of retailers), represents a complex and 104 hard-to-measure concept that plays an important role in decision-making, especially when the 105 information is scarce or hard to assess as the food purchasing process. Therefore, customer trust can 106 have a key role to solve this problem, as it can tackle the loss of both knowledge and control over 107 the supply chain and drive food choices, especially in the case of SFSCs.

Fostering the reconnection between producers and consumers by means of reducing the number of 108 actors and distances along the supply chain (Marsden et al., 2000; Parker, 2005), SFSCs are found 109 to significantly contribute to many social, environmental and economic sustainable goals related to 110 the agri-food sector (Ilbery and Maye, 2005; Forssell and Lankoski, 2014). Many authors (Trobe, 111 2001; Schneider, 2008; Tregear, 2011; Hartmann et al., 2015) found that the direct interactions 112 between farmers and consumers as well as their repeated encounters can provide consumers with a 113 sense of trust built especially on shared know-how and mutual understanding (Meyer et al., 2012). 114 Indeed, these typical SFSCs' face-to-face initiatives (Renting et al., 2003) let producers and 115 consumers interact, share and exchange information related to both food products and production 116 process and their personal values (O'Kane and Wijaya, 2015), reducing the information asymmetry 117 and establishing new solid loyalty. In this framework, trust becomes a substitute for full knowledge 118 (Grebitus et al., 2015) and its role in influencing consumer food choice and purchasing decision 119 seems to be increasingly important nowadays. 120

In order to examine consumer motivations for purchasing food at SFSCs (instead of conventional markets), the present study examines the impact of trust on purchasing intention, comparing an extended TPB model with a classic TPB framework. In addition, the paper also considers the role of consumers residential area and fair trade purchasing habit in influencing the investigated behaviour.

125

126 Data and Methodology

The methodology used is based on an empirical analysis carried out in Italy during the first semester 127 of 2016. An extended TPB model was assessed to investigate the determinants of consumer 128 purchasing habits related to SFSCs as market locations. To this purpose, we implemented an online 129 survey among a convenience sample of 260 Italian respondents that affirmed to commonly purchase 130 food at short circuits as farmers' markets (46%) or on farm directly (43%), whereas the remaining 131 132 11% prefer other forms of SFSCs as solidarity purchasing groups. The survey was administered as an online questionnaire that was pre-tested among a small sample (25 participants) in December 133 2015, and only minor changes were made based on this. The questionnaire included three sections: 134 the first section asked respondents to state their purchasing habits related to SFSCs in terms of 135 buying frequency. The second section was designed for the assessment of five TPB variables; 136 specifically, each variable was measured with three items rated on a 7-point response format. 137 Finally, the third section incorporated some socio-demographic questions describing the sample. 138

Section number two, was aimed at assessing trust (TRUST) towards purchasing food at SFSCs and
the original components of TPB as respondents' attitudes (ATT), subjective norms (SN), perceived
behavioural control (PBC), and intention (INT).

Three adjective pairs were used to measure attitudes as follows: "Purchasing food at SFSCs is *not gratifying – gratifying; unpleasant – pleasant; not satisfying – satisfying* to me"; composite
 reliability was 0.91.

Subjective norms were assessed through the following 7-point *strongly disagree – strongly agree* three items: "Most people who are important to me would approve on my purchasing food at SFSCs instead of conventional markets"; "Most people who are important to me want that I purchase food at SFSCs instead of conventional markets"; "Most people who are important to me think that I should purchase food at SFSCs instead of conventional markets". The composite reliability was 0.91.

To measure PBC the following 7-point *totally false – totally true* three items were used: "Purchasing food at SFSCs is easy to me"; "If I wanted to I could easily purchase food at SFSCs"; "Purchasing food at SFSCs depends entirely on me"; composite reliability was 0.73.

The intention to purchase food at SFSCs instead of conventional markets was measured using these 7-point *strongly disagree – strongly agree* three items: "I intend to purchase food at SFSCs for the next month"; "I plan to purchase food at SFSCs next month"; "I am willing to buy food at SFSCs next month"; composite reliability was 0.91.

Finally, based on Hartmann et al. (2015), with adjustments, the additional variables of trust was measured by the following 7-point *totally false – totally true* three items: "I perceive purchasing at SFSCs to be reliable"; "Purchasing at SFSCs appears trustable to me"; "I trust in purchasing food at
SFSCs"; composite reliability was 0.92.

Finally, we performed descriptive analysis using SPSS version 17, whereas Mplus 7 statistical 162 software was used to conduct structural equation modeling (SEM). To measure the goodness of fit 163 for the proposed models, the following indices were considered: γ^2 (chi-square), Comparative Fit 164 Index (CFI), the Tucker-Lewis Index (TLI)¹, and the Root Mean Square Error of Approximation 165 (RMSEA). The purpose has been to test a nested comparisons of a traditional TPB model and an 166 extended TPB model, as previously described. The extended TPB model has been developed in 167 order to verify the additional predictive power of trust on predicting consumer purchase at SFSCs. 168 Therefore, we have integrated TRUST to the original three TPB main antecedents of INT and we 169 have hypothesized that such variable had an influence on consumer intention that, in turn, 170 represents ad antecedent of consumer behaviour. In addition, our extended TPB model benefits by 171 the inclusion of two other additional factors in terms of behavioural explanatory variable, namely 172 173 consumer residential area (RESID) and fair-trade purchasing habit (FAIRTRADE). The statistical procedure for testing hierarchical models was used. Given that to accept an extended TPB model it 174 175 is necessary to compare it with a traditional TPB model, such comparison has been tested by considering the first model as a nested model of the second. Hence, in the traditional model the 176 regression weights of the paths between additional factors and intention and behaviour have been 177 178 fixed to 0. To accept the extended TPB model, the hypothesized significant differences in the Chisquare value have been analysed: if the Chi-square difference ($\Delta \chi^2$) is significant, the extended 179 model (the larger model with more parameters and less degrees of freedom) can be accepted as a 180 better model than the traditional model (the smaller one). 181

182

183 **Results**

Before analyzing the proposed extended TPB model, we report some sample descriptive statistics in Table 1. In order to elicit the frequency of their purchasing at SFSCs (BEH), respondents had to answer the following question: "*How often do you usually buy in local Short Food Supply Chains* (*SFSCs*)?" (see Table 2).

188

Categories	Items	N. Obs.

¹ To consider the model having an acceptable fit we refer to cut-off values of .90 or more for CFI and TLI (Bentler, 1990; Tucker and Lewis, 1973) whereas the threshold value for RMSEA is of .05 or less (Browne and Cudeck, 1992). In addition, values less than .08 of Standardized Root Mean Squared Residual (SRMR) are considered acceptable (Hu and Bentler, 1999). In relation to χ^2 , it is worth considering values having a probability of more than .05; however, we consider some other indices too, since this index tends to be deeply affected by sample size (Barbaranelli, 2007).

Gender	female	143
	male	117
	18-30	133
	31-40	65
Age (years)	41-50	32
	51-65	26
	more than 65	4
Nationality	italian	256
	other	4
	primary school	1
Education level	lower secondary school	13
	upper secondary school	79
	university degree	167
Residential area	urban	186
	rural	74
	1	28
	2	48
N. of household members	3	56
	4	97
	5 or more	31
	less than 25.000ϵ	100
Λ ware as wear in some (F)	25.000-50.000€	120
Average year income (€)	50.000-75.000€	27
	more than 75.000 ϵ	13
	student	102
Occurrentier	employee	136
Occupation	retired worker	6
	unemployee	16
T	по	101
To go personally grocery shopping	ves	159
Descina and a	no	72
Buying organic	ves	188
	no	131
Buying fair trade	ves	129
	on farm direct sale	112
	farmers' market	119
Most frequently used forms of	pick-your-own	7
SFSCs	box schemes	7
	Solidarity Purchasing Groups	10
	online sale	5
	omme sure	5

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 Table 2 - Consumers' annual SFSCs purchasing frequency (BEH)

Question (BEH)	Items	N. Obs.
	(1) once a year	51
How often do you usually buy in local Short Food Supply Chains (SFSCs)?	(2) more than once a year	56
	(3) once a month	24
	(4) more than once a month	51
	(5) once a week	51
	(6) more than once a week	27

192

193 As afore mentioned, all the variables of the extended model have been measured by means of three 194 items each. Table 3 shows variables related descriptive statistics and the Cronbach's α^2 reliability 195 coefficient, whose high values indicate an high internal consistency of the items.

196

² According to Ajzen, we indicated 0.7 to be an acceptable reliability coefficient.

Variables (scales)	No. items	Cronbach's α
Attitudes (ATT)	3	0.91
Subjective Norms (SN)	3	0.91
Perceived Behavioural Control (PBC)	3	0.73
Trust (TRUST)	3	0.92
Intention (INT)	3	0.91

Table 3 - TPB variables' scales and descriptive statistics

198

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Table 4 reports the correlations among the investigated variables and also their mean and standard 199 deviation. According to correlations, INT shows the strongest positive correlation with PBC and 200 trust, while intention and PBC are the strongest correlates of BEH. In addition, all mean values are 201 202 clearly above the scale mean (on a 1-7 point scale), showing that the interviewees boast highly positive attitude (5.28), subjective norms (4.67), trust (5.37), and intention (4.78) towards 203 purchasing in such investigated alternative markets. However, the mean value for PBC is lower 204 (4.48), compared to other variables, showing a lower respondents' self-confidence to engage in 205 206 SFSCs-related purchase, despite their high and positive attitude and trust (Al-Swidi et al., 2014).





 Table 4 - Correlations and descriptive findings between variables

	1.	2	3	4	5	6	7	8
1. INT	4.78 (1.50)							
2. ATT	0.323**	5.28 (1.56)						
3. SN	0.410**	0.168**	4.67 (1.55)					
4. PBC	0.482^{**}	0.142^{*}	0.272**	4.48 (1.35)				
5. TRUST	0.476^{**}	0.342**	0.401^{**}	0.385**	5.37 (1.11)			
6. BEH	0.578^{**}	0.294**	0.229**	0.379**	0.255**	3.29 (1.69)		
7. RESID	-0.003	0.262^{**}	-0.028	0.028	0.073	0.088	0.28 (0.45)	
8. FAIRTRADE	0.242^{**}	0.102	0.210^{**}	0.091	0.261**	0.248^{**}	0.005	0.50 (0.50)

209 *Note: Mean (Standard Deviation) for each variable on the diagonal*

210

To test the construct validity, the measurement factor analysis model included seven latent factors indicating ATT, PBC, SN, INT, TRUST, RESID and FAIRTRADE. Goodness-of-fit statistics for this measurement model are acceptable ($\chi^2 = 170.94$, df = 110, p < 0.001; RMSEA = 0.05; CFI = 0.98; TLI = 0.97; SRMR = 0.04). As showed in Table 5, the standardized parameter estimates are all significant and present higher values (from 0.62 to 0.94).

216 217

Table 5 - Study measurements

Standardized factor loading
0.89
0.83
0.93

ATT

Purchasing food at SFSCs is not gratifying – gratifying.	0.88
Purchasing food at SFSCs is unpleasant – pleasant to me.	0.93
Purchasing food at SFSCs is not satisfying – satisfying to me.	0.84
SN	
Most people who are important to me would approve on my purchasing food at SFSCs instead of conventional markets.	0.77
Most people who are important to me want that I purchase food at SFSCs instead of conventional markets.	0.94
Most people who are important to me think that I should purchase food at SFSCs instead of conventional markets.	0.84
PBC	
Purchasing food at SFSCs is easy to me.	0.62
If I wanted to I could easily purchase food at SFSCs.	0.71
Purchasing food at SFSCs depends entirely on me.	0.72
TRUST	
I perceive purchasing at SFSCs to be reliable.	0.83
Purchasing at SFSCs appears trustable to me.	0.91
I trust in purchasing food at SFSCs.	0.93
RESID	
Which is your residential area? (urban/rural)	Fixed to 0
FAIR-TRADE	
Do you usually buy fair-trade products? (yes/no)	Fixed to 0
BEH	
How often do you usually buy at local Short Food Supply Chains (SFSCs)?	Fixed to 0

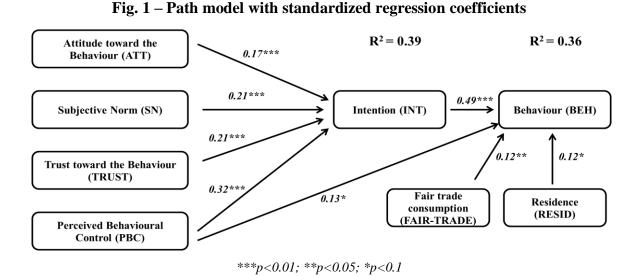
218

The traditional TPB model (i.e., the one that does not consider trust as antecedent of the intention and RESID and FAIRTRADE as predictors of behaviour) shows the following good fit to the data: $\chi^2 = 35.46$, df = 8, p < 0.001; RMSEA = 0.12; CFI = 0.98; TLI = 0.82; SRMR = 0.05. Findings indicate significant effects (p < 0.001) of ATT ($\beta = 0.23$), SN ($\beta = 0.27$) and PBC ($\beta = 0.38$) on consumer intention to buy at SFSCs; in addition, both the intention ($\beta = .51$; *p* < .001) and PBC ($\beta =$.13; *p* < 0.05), show a considerable predictive power on the behaviour. Overall, 36.5% and 34.7% of INT and BEH variance is explained by this model, respectively.

However, all the Goodness-of-fit statistics highlight that the extended TPB model fits the data better than the traditional one. Accordingly, $\chi^2 = 14.19$, df = 5, p < 0.01; RMSEA = 0.08;. CFI = 0.96; TLI = 0.90; SRMR = 0.03. Overall, 39.5% and 36.4% of INT and BEH variance is explained by our expanded TPB model, respectively. Standardized results show that ATT, SN, PBC and TRUST are all significant positive antecedents of intention; in particular, PBC represents the main predictor of INT (β = 0.32; *p* < 0.001), followed by TRUST (β = 0.21; *p* < 0.001), SN (β = 0.21; *p* < 0.001) and ATT ($\beta = 0.17$; p < .001), as shown in Figure 1. Furthermore, the behaviour is significantly determined by the intention ($\beta = 0.49$; p < 0.001), followed by PBC ($\beta = 0.13$; p < 0.01), fair-trade consumption habit ($\beta = 0.12$; p < 0.05) and the residential area ($\beta = 0.12$; p < 0.10). Results show that the Chi-square difference value between the traditional TPB model and the extended TPB model is significant ($\Delta \chi^2 = 21.27$; df= 3; p < 0.001), thus the extended model is found to be significantly better than the traditional one.

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- 240 241
- 242
- 243 Conclusion and Discussion

In order to contribute to explain the reasons why short food supply chains have largely gained 244 ground in Italy in recent years, this paper aims at testing an extended framework of the Theory of 245 246 Planned Behaviour in order to explain food purchases at SFSCs (e.g. farmers' market). In particular, this study scrutinizes the role of consumer trust. To this purpose, an online questionnaire 247 administered to a convenience sample of Italian consumers assessed standard TPB variables (e.g. 248 attitudes, subjective norms, perceived behavioural control, intention) and the additional trust with 249 respect to buying food at SFSCs. Results show that TPB framework can be considered as a useful 250 framework to understand the investigated behaviour, and especially to explain the intention that 251 252 drives it.

Compared to the original TPB framework (that does not consider trust as an antecedent of intention), the extended model shows better goodness-of-fit statistics. All the investigated variables, as attitudes, subjective norms, perceived behavioural control and trust, reveal a positive effect on intention, explaining 48% of its variance. In particular, perceived behavioural control has the largest effect on intention, followed by trust. It follows that the easier for consumers to shop at SFSCs and the higher their trust,, the higher their intention; similarly, the more consumers' attitudes are

positive towards SFSCs and people who are important to them (i.e. social referents as family, 259 friends) approve that they purchase in such alternative agri-food networks, the more consumers' 260 intention to perform it will increase. Furthermore, intention has a good predictive effect on 261 consumer behaviour, in line with what assessed by Kim et al. (2003) on dairy product consumption, 262 263 whereas it is minor than what found by Verbeke and Vackier (2005) in fish consumption. Also perceived behavioural control is found to have a direct effect on behaviour. Furthermore, consumer 264 265 trust has no direct effect on consumer actual purchase, thus intention mediates its effect on 266 behaviour. In addition to intention and PBC, purchasing fair-trade products and living in a rural area positively influence consumers' purchase at SFSCs, explaining 36% of the behavioural variance. 267 Although the explained variance related to behaviour proves to be minor than for intention, this is 268 also in line with the previously cited literature related to TPB application to food consumption 269 (Ajzen, 2015). In relation to fair-trade consumption, our findings confirm the strong connection 270 between consumers involvement and active participation in different forms of SFSCs and the 271 272 sustainable dimensions of their ethical consumerism (Grunert et al., 2014).

273 Based on our evidences, consumer trust is relevant when deciding where to buy food and we can suppose that it might lead to positive behavioural effects when it exists. According to Holloway and 274 Kneafsey (2000), following these findings it is possible to assume that, by reinforcing consumer 275 trust towards SFSCs, people intention to purchase in such alternative networks will also increase, 276 encouraging their development in line with current sustainable trajectories of European Union for 277 278 the agrifood sector. As stated by many authors (Marsden et al., 2000; Trobe, 2001; Hunt, 2007; 279 Schneider, 2008; Meyer et al., 2012), trust can be established and reinforced through SFSCs' direct 280 encounters between producers and consumers, that facilitate the information exchange. Central to these alternative networks are face-to-face interactions that, indeed, let consumers being more 281 informed and consequently more trusting (e.g., about food and production process), increasing 282 transparency along the food chain and reducing asymmetric information. Since trust tends to offset 283 negative perceptions associated with food purchasing decision (Ding et al. 2015), it might drive 284 285 loyalty and new solid relationships between producers and consumers (Hartmann et al., 2015), 286 overcoming consumer confusion and fostering SFSCs purchasing frequency and development.

Interestingly, in line with the literature on SFSCs, it is plausible to assume that such alternative chains can successfully overtake modern consumer loss of confidence in food provision systems; however, we have found trust reliability being very high and this seems to be a controversial aspect, especially in case of high risks (e.g. food quality scares and scandals).

Although findings cannot be generalized, since the study has been conducted on Italian consumers and on a consumers' sample that was not representative of the entire population, they provide some novel contributions to the actual scientific debate on the role of trust in food choice and consumer behaviour, in particular focusing on short food supply chains related preference. Further research may be conducted to better scrutinize the role of trust by investigating, on a more representative sample, the link between trust and behaviour, in order to suggest a way to overcome the existing gap between intention and behaviour, as suggested by Armitage and Conner (2001).

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