



Communication of sustainability in horticulture – What messages do consumers currently perceive and what expectation do they have regarding sustainability?

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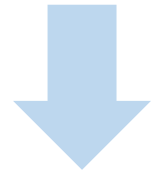
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Sustainability in horticulture

- Triple bottom line approach of sustainability includes ecological, economic and social dimension (cf. Elkington, 1998)
- Demand for sustainable products by society has increased over time (Schroedter et al., 2013; Umweltbundesamt, 2017)
- Sustainability plays an important role in purchasing decisions (Moradi, 2017)



- Should be practiced and communicated by the horticultural industry from a business perspective

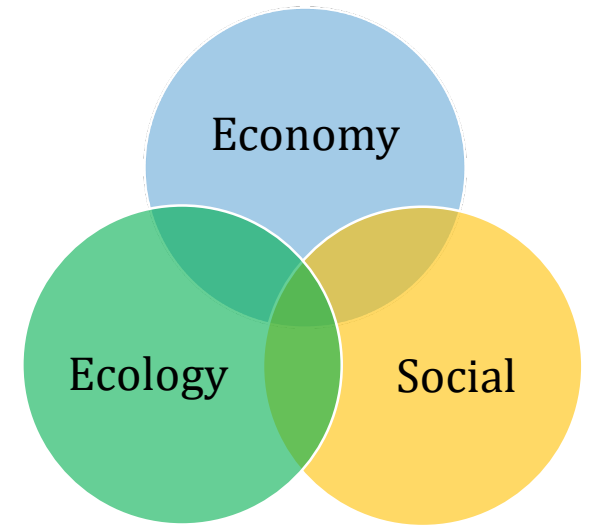


Fig. 1: Three dimensions of sustainability.
Source: Own figure

Communication of sustainability

- Clear marketing communication of sustainable production is essential, since sustainability usually cannot be determined by consumers (Grunert, 2011)
- Horticultural marketing communication is challenging, as many horticultural companies do not sell directly and are not in direct contact with consumers



- Aim of this study is to determine the effectiveness and efficiency of current sustainability communication in horticulture



Hypotheses

H₁: Consumers are not very aware of the horticultural sector's communication of sustainability.

H₂: Consumers perceive environmental aspects of sustainability in first place, followed by social aspects and economic aspects of sustainability in last place.

Hypotheses

H₃: The deficit of sustainability communication in horticulture is due to the lack of congruence between perceived topics in communication and the topics that are actually relevant for consumers.

H₄: Sustainability in the food sector is more conscious and important to consumers than in the non-food sector.

Materials and methods

- Online-survey (2021)
 - 20 questions
 - 5 questions selected for answering H₁-H₄
 - n = 114
 - Sample not representative of entire population
 - Response time ≈ 10 min
- 5 aspects per dimension (5 x 3 = 15)
 - Aspects were elaborated by comparing indicator catalogs of common agricultural sustainability assessment systems (including RISE, KSNL, DLG, AgBalance, REPRO)
 - In selecting the aspects, emphasis was placed on ensuring that horticultural relevance predominates

| Ecological dimension | Economic dimension | Social dimension |
|----------------------------------|--------------------|--------------------|
| Water use | Risk management | Equality |
| Chemical plant protectants | Profitability | Wages |
| Energy use/fossil energy sources | Equity ratio | Working conditions |
| Biodiversity | Investments | Satisfaction |
| Waste production | Market share | Safety and health |

Table 1: Sample of sustainability aspects per dimension. Source: Own figure, sample of sustainability aspects on the basis of: KSNL (Schultheiß et al., 2008), AgBalance (BASF SE).

Results and discussion

- 30% of the study participants consider horticulture to be rather unsustainable to not sustainable
- Possibly reveal a general deficit in the perception of sustainability of horticulture

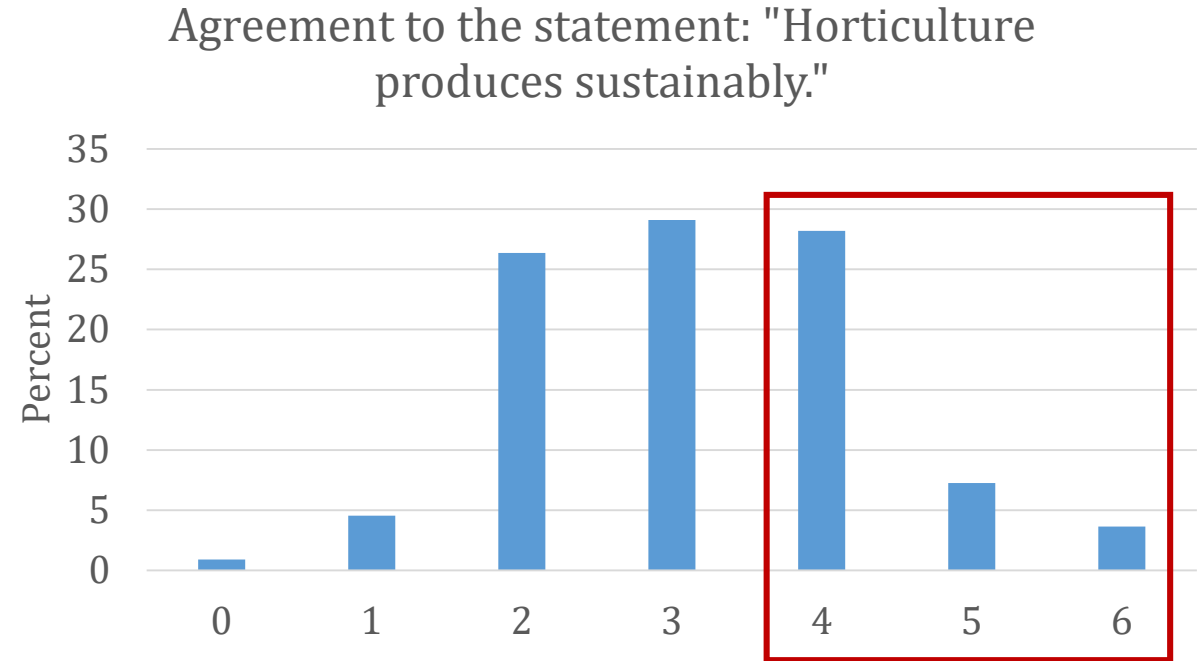


Figure 2: Consumer assessment sustainable production in horticulture (own illustration)
Legend: 0 = Strongly disagree, 1 = Disagree, 2 = Somewhat disagree, 3 = Neither agree nor disagree, 4 = Somewhat agree, 5 = Agree, 6 = Strongly agree, n = 110

Results and discussion

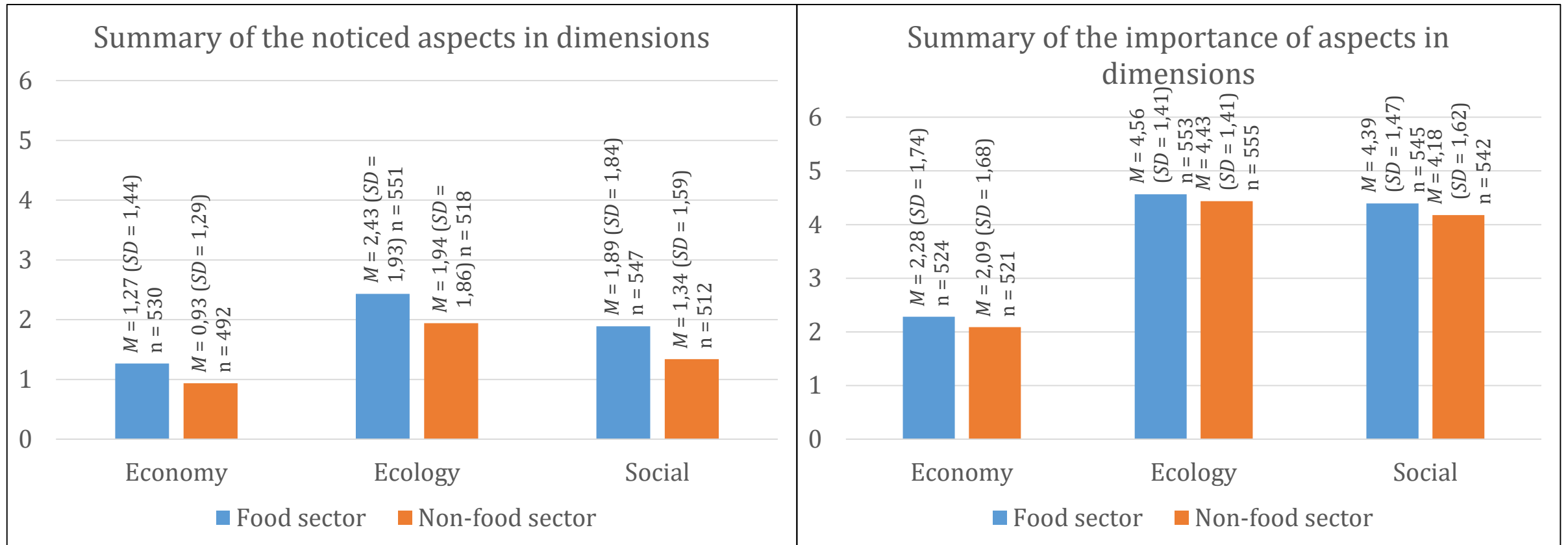


Figure 3: Summary of the noticed aspects and of the importance of the aspects in sustainability dimensions (own illustration)

Legend: 1 = Not at all remarkable/important, 2 = Hardly remarkable/important, 3 = Less remarkable/important, 4 = Medium remarkable/important, 5 = Somewhat remarkable/important, 6 = Quite remarkable/important, 7 = Very remarkable/important

Results and discussion

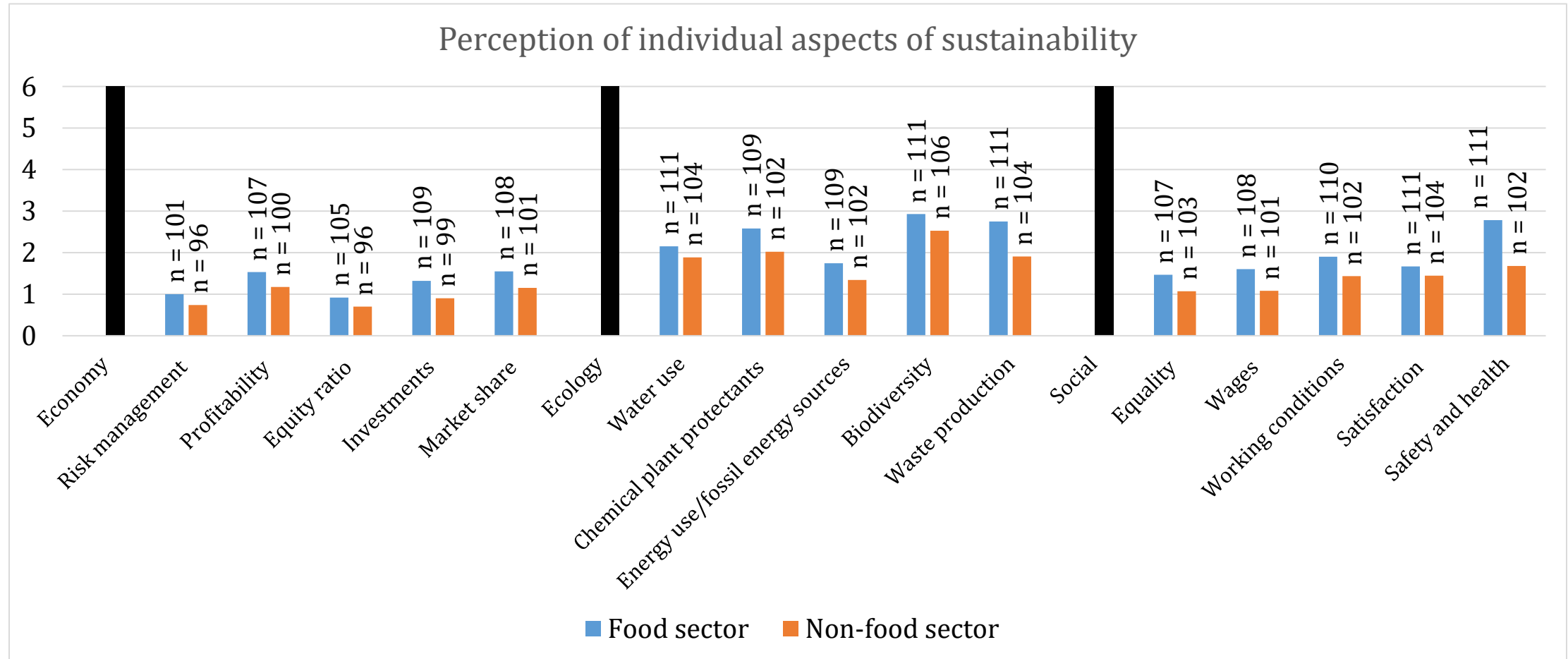


Figure 4: Perception of individual aspects of sustainability (own illustration)

Legend: 1 = Not at all remarkable/important, 2 = Hardly remarkable/important, 3 = Less remarkable/important, 4 = Medium remarkable/important, 5 = Somewhat remarkable/important, 6 = Quite remarkable/important, 7 = Very remarkable/important

Results and discussion

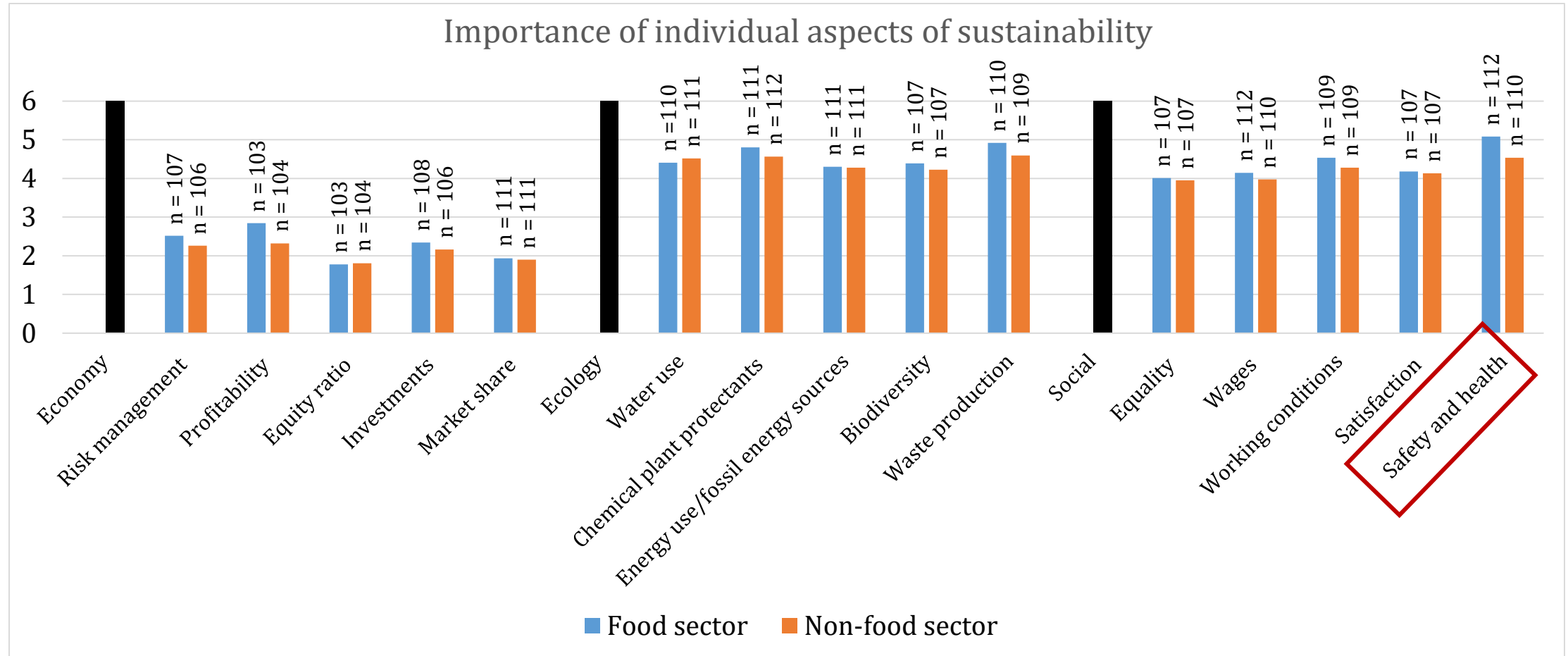


Figure 5: Importance of individual aspects of sustainability (own illustration)

Legend: 1 = Not at all remarkable/important, 2 = Hardly remarkable/important, 3 = Less remarkable/important, 4 = Medium remarkable/important, 5 = Somewhat remarkable/important, 6 = Quite remarkable/important, 7 = Very remarkable/important

Conclusion

H₁ ✓ - H₄ ✓

AttentionInterest**Desire**Action (Ostheeren, 2003)

- Current sustainability communication should be improved
- Discrepancy between perception and importance needs to be remedied

Questions for further research:

- How important is sustainability to consumers of horticultural products?
- Where do consumers base their judgement of sustainability on, e.g. certificates?
- How can the gap between perception and importance be closed by communication?
- To what extent can horticultural companies reach consumers, limited by indirect marketing channels?

Thank you for your attention!

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Horticulture and Applied Research,
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Grunert, K.G. (2011). Sustainability in the Food Sector: A Consumer Behaviour Perspective. *Int. J. Food Syst. Dyn.* 2, 207–218. <https://doi.org/http://dx.doi.org/10.18461/ijfsd.v2i3.232>.

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Schroedter, F., Nimsdorf, U., Petzold, B., Kölle, A., Geßner, C., Endres, P., and Rübelke, M. (2013). Nachhaltigkeit und Nachhaltigkeitskommunikation - Wo steht die Lebensmittelwirtschaft? (Munich/Witten).

Schultheiß, U., Zapf, R., and Döhler, H. (2008). Evaluation of the sustainability of farms. *LANDTECHNIK* 63, 293–295. <https://doi.org/10.15150/LT.2008.846>.

Umweltbundesamt (2017). Grüne Produkte in Deutschland 2017. Marktbeobachtungen für die Umweltpolitik (Dessau-Roßlau).

Appendix

Literature:

Statistische Ämter des Bundes und der Länder (2022).

Durchschnittsalter der Bevölkerung.

Statistisches Bundesamt (Destatis) (2019). Einkommen, Einnahmen und Ausgaben in Deutschland im Zeitvergleich.

Statistisches Bundesamt (Destatis) (2020a). Bildungsstand: Verteilung der Bevölkerung in Deutschland nach beruflichem Bildungsabschluss (Stand 2019).

Statistisches Bundesamt (Destatis) (2020b). Bildungsstand: Verteilung der Bevölkerung in Deutschland nach höchstem Schulabschluss (Stand 2019).

Statistisches Bundesamt (Destatis) (2021). Bevölkerung - Einwohnerzahl in Deutschland nach Geschlecht von 1990 bis 2020 (in 1.000).

| | Results of the online survey | Facts and figures of the Federal Republic of Germany |
|-------------------------------------|---|---|
| Age | 19-80 years Ø 37 years (<i>SD</i> = 15,63) n = 114 | Ø 44,6 years (2020) (Statistische Ämter des Bundes und der Länder, 2022) |
| Gender | 67% female (n = 75) 32% male (n = 37) 1% diverse (n = 2) n = 114 | 50,66% female 49,34% male (2020) (Statistisches Bundesamt (Destatis), 2021) |
| Highest level of education | No completed school education (0%) Certificate of Secondary Education (0%) General Certificate of Secondary Education (6,31%) Vocational diploma/Final secondary school examinations (22,52%) Completed apprenticeship (22,52%) Examination for the master craftsman's diploma (0,9%) Bachelor's degree/1. State examination (28,83%) Master's degree/2. State examination (16,22%) PhD (2,7%) n = 111 | 4% No completed school education (Statistisches Bundesamt (Destatis), 2020b) 47,1% Completed apprenticeship 18,5% University graduates (2019) (Statistisches Bundesamt (Destatis), 2020a) |
| Monthly net household income | Up to under €500 (9,9%) €500 – under €1.000 (16,83%) €1.000 – under €1.500 (11,88%) €1.500 – under €2.000 (7,92%) €2.000 – under €3.000 (19,8%) €3.000 – under €4.000 (13,86%) €4.000 € and more (19,8%) n = 101 | Ø Net household income €3.580 (2019) (Statistisches Bundesamt (Destatis), 2019) |