

Determination of food safety culture in a low-risk food production site: identifications of key strengths and weaknesses

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Introduction

Food safety culture (FSC) can be described as “prevailing attitudes, values and practices related to food safety that are taught, directly and indirectly, to new employees” (Taylor, 2011).

A positive FSC can form the underlying foundation of a robust food safety management system (FSA, 2021). Owing to the variety of sectors within the food and drink manufacturing/processing (FDMP) industry and the intangible nature of measuring culture, there are barriers to determining improvements to a business's FSC.

Recent inclusion in Global Food Safety Initiative Food Safety standards (GFSI, 2018) has highlighted its importance. The British Retail Consortium Global Standard FS explicitly requests “a clear plan for the development and continuing improvement of FSC” (BRCGS, 2018). FSC measurement is also now included in retained EU regulation 852/2004 (hygiene of foodstuffs) (FSN, 2020).

Whilst the FSC, and associated measurement strategies, of a FDMP business are essential for growth/development, they are also critical for business sustainability.

Aims

This study aimed to determine attitudes towards food safety and associated FSC dimensions in a low-risk FDMP company to inform a targeted approach to FSC improvement and intervention development in the company.

Methodology

- Using in-depth company management/food operative interview data, a bespoke quantitative questionnaire was designed to evaluate food safety and FSC attitudes in the company.
- Questionnaire comprised of attitude statements using a five-point Likert scale combined with scale perception and open questions.
- Two comparative questionnaires were developed; one for management employees and one for operative employees due to the differing nature of job roles and perspectives.
- Questionnaires were distributed to all operational staff (n=210) electronically; descriptive and inferential statistics were used for analysis.
- Attitudinal responses were coded from 1-5 (1=negative, 5=positive) to enable overall attitude score determination; higher scores represented a more positive attitude.
- Attitudinal statements were split into six categories; General Food Safety, FSC Awareness, People, Process, Purpose and Proactivity.

Results and Discussion

Scores range from 194-538 (for operative the score indicating a more positive attitude Mean and m participants) and 200-544 (for management participants) with the higher median scores were calculated to provide a general overview of the scoring in that area that would provide a simple metric to report and compare year-on-year (see Table 1).

Cumulatively, positive attitudes towards FSC categories were determined (82.9% of company managers; 75.9% production operatives indicated concern for FS) however significant differences ($p < 0.001$) were identified between company managers and production operatives' attitudes toward key FSC parameters including FSC awareness, people, process, purpose and proactivity components.

Table 2

Key Strengths	FSC Awareness
General Food Safety “Food safety is a high priority” 97.1% management and 96.6% operatives strongly agree/agree	Positive correlation between time in food industry and “I understand why the company undertakes the BRC food safety audit” (0.231, $p=0.042$)
People “I feel comfortable stopping a line if there were a risk to food safety” 80.0% management and 62.1% operatives strongly agree/agree	Purpose “Food safety is considered within the company values” 77.1% management and 44.8% operatives strongly agree
Process Strong participant perception of control (Personal control: 40.8%*, senior management control: 48.3%*, Technical department control: 56.9%*) *scoring perception between 8 and 10 of 1-10 scale	Proactivity “I am aware of all the factors that influence food safety in my role” 74.3% management and 48.3% operatives strongly agree

There were significant negative correlations between visible food safety risks and perception of understanding of food safety communications ($r_s=-0.590$, significant at the 0.01 level 2-tailed), awareness of all food safety risks ($r_s=-0.591$, significant at the 0.01 level 2-tailed) and gaining and keenness to gain an insight into food safety performance ($r_s=-0.424$, significant at the 0.01 level 2-tailed) which indicates that employees' would benefit from increased food safety communication to increase awareness and understanding.

Overall findings have been combined with qualitative FSC data from the company in order to inform a targeted FSC improvement plan (Hewitt, 2020).

Table 1

Parameter	All Participants			Management			Operative		
	Mean	SD	Med	Mean	SD	Med	Mean	SD	Med
General Food Safety	4.2	1.06	5	4.2	0.85	5	4.1	0.99	5
FSC Awareness	3.7	1.24	4	3.8	0.97	4	3.3	1.28	4
People	3.9	1.16	4	3.9	0.88	4	4.1	1.5	4
Process	3.9	1.22	4	3.7	1.03	4	3.9	1.46	4
Purpose	3.6	1.22	4	3.7	1.02	3	3.4	1.51	4
Proactivity	3.6	1.25	4	3.7	0.83	4	3.7	1.64	4

Key: SD= standard deviation, med= median

Table 3

Key Weaknesses	FSC Awareness
General Food Safety “Food safety issues due to operative error are not frequent in my company” 51.4% management and 86.2% strongly agree/agree	“I have witnessed safety being compromised in favour of factory efficiency” 11.4% management and 15.5% operatives strongly agree/agree
People “I would benefit directly from more frequent updates around food safety issues” 31.4% management and 41.4% operatives strongly agree/agree	Purpose “My role directly contributes to achieving the group's vision” 74.3% management and 39.7% operatives strongly agree
Process Negative correlation between time in company and “I am aware of all food safety risks associated with our products” (-0.227, $p=0.048$)	Proactivity “There is sufficient investment in food safety management” 5.7% management and 12.1% operatives strongly agree

Factory-based staff perceived food safety risks to be higher than office-based staff ($t=2.06$, $df=27$, $p=0.049$). Company managers agreed that “health and safety is more important than food safety in the business” more strongly than operatives ($U=142$, $p<0.001$). Similarly, operatives agreed with “food safety issues due to operative errors are not frequent in my company” more strongly than company managers ($U=281$, $p<0.001$) (see Table 3).

Despite attitudinal differences, there was a positive attitude toward empowerment with 80.0% of company managers indicating they would be comfortable stopping a production line if there were a food safety risk, 62.1% of operatives agreed. Likewise, 88.6% company managers felt trusted, 62.1% operatives felt similarly (see Table 2).

Conclusions

Key Strengths

- Food safety perceived to be high priority in the business
- Empowerment
- Strong perception of control of food safety in the business

Key Weaknesses

- Attitudinal differences between management and operative
- Food safety communication is needed
- Perception that food safety is compromised in favour of efficiency at times
- Potential additional food safety training need for new starters identified

Whilst overall attitudes toward FSC parameters in the company were positive, implementation of the bespoke survey identified attitudinal differences between management and operative groups and a general lack of awareness of FSC. It was also highlighted that understanding and content of food safety communication requires improvement. This, combined with qualitative company FSC data, has informed targeted intervention development for FSC improvement in the business.

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