Aligning food safety culture assessment tools with the Global Food Safety Initiative: A comparative analysis

Emma J. Samuel*, Ellen W. Evans and Elizabeth C. Redmond

Zero2Five Food Industry Centre and Food Drink Research Unit, Cardiff Metropolitan University, Wales, United Kingdom.

*Corresponding author: emsa@cardiffmet.ac.uk

Introduction

An estimated 44 people every minute (equal to 23 million annually) fall sick after consuming contaminated food in Europe (World Health Organization, 2017). The burden of foodborne diseases in the WHO European region is the highest globally, with an estimated 6.7 million people falling sick every year (World Health Organization, 2017). Alongside steady population growth, dynamic political, environmental and social changes are increasing pressure on businesses to continuously deliver safe food to market. For food manufacturing, with high product output, having clear food safety expectations, strong leadership and a structured approach to managing risks is therefore essential.

Rapidly changing global, economic, political, environmental and food security climates also impact global supply chains increasing pressure on businesses to continuously deliver safe food to market (World Health Organization, 2017). Food manufacturing, with high product output, having clear food safety expectations, strong leadership and a structured approach to managing risks is therefore essential.

Establishing the maturity of the prevailing food safety culture can indicate improvement opportunities which will ensure that food safety management systems remain fit for purpose and adapt to changing circumstances. Self-assessment tools, such as the Global Food Safety Initiative (GFSI)’s (2009) position paper provide a compelling framework to ensure food safety culture excellence and a food business pathway to positive food safety outcomes.

Purpose

The aim of this study was to conduct a comparative analysis of the tools available to assess organisations’ food safety culture, in parallel with the attributes included in the GFSI’s dimensional framework and sub-scales of the tools applied in food manufacturing.

Methods

Electronic searching utilized online databases facilitated collection of a comprehensive tool matrix. Subsequently, a tool matrix was developed, incorporating tools developed to assess food safety culture.

A comparison of the GFSI’s key dimensional attributes (i.e. vision and mission, people, process, adaptability and risk awareness) and sub-components was undertaken to identify comparable and limitations within each mechanism.

Ethical Approval was obtained from the Health and Care Ethics (Panel at Cardiff Metropolitan University (Ref: 9396). Electronic searches utilising online databases facilitated collection of tools (GFSI) and components was undertaken to identify commonalities and differences to the attributes incorporated within the GFSI’s dimensional framework.

Five tools assessing food safety culture and one tool assessing organisational culture were analysed in relation to their context, methods and alignment with the GFSI’s dimensional framework.

Case studies included food manufacturing facilities in Zimbabwe and Canada and educational food service facilities in Belgium. Commercial tools (n=2) represented global food and organisational perspectives (n=2) while one tool was developed to assess food safety culture in small food businesses in the United Kingdom (n=1).

Tools developed for the commercial market (n=2) had less accessible detail, nevertheless, published literature relating to benefits, patterns and theoretical development informed the analysis of this study (as indicated by Table 1).

Table 1: Application of tool by sector (n=1)

<table>
<thead>
<tr>
<th>Industry Sector</th>
<th>Commercial (Industry Wide)</th>
<th>N/A (MS)</th>
<th>N/A (Retail)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Safety</td>
<td>n=2</td>
<td>n=1 (16%)</td>
<td>n=1 (16%)</td>
</tr>
<tr>
<td>Commercial</td>
<td>n=1</td>
<td>n=2 (33%)</td>
<td>n=2 (33%)</td>
</tr>
<tr>
<td>Regulated (Retail Food Business)</td>
<td>n=1</td>
<td>n=1 (16%)</td>
<td>n=1 (16%)</td>
</tr>
</tbody>
</table>

Methods varied dependent on each study as indicated by Table 2) with three utilizing mixed methods (2 or more methods in combination). Triangulation (using data gathering, data analysis or both) ensured findings offered a comprehensive assessment of the phenomenon under study.

Table 2: Methods applied in each tool (n=1)

<table>
<thead>
<tr>
<th>Tool (n=1)</th>
<th>Survey (n=1)</th>
<th>Performance analysis (n=1)</th>
<th>Interview (n=1)</th>
<th>Observation of actual behaviour (n=1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=1</td>
<td>n=1</td>
<td>n=1</td>
<td>n=1</td>
</tr>
</tbody>
</table>

Results

Each tool offered methods that were applicable for assessing food safety culture in a food manufacturing environment; however, none addressed every aspect of the GFSI framework: in particular, the social and risk awareness dimensions were left out.

Sub-components provide the foundation to support positive culture progression: such as leadership ability and the quality and content of the organisation’s food safety training programmers: – an evaluation of which would add greater value to any assessment undertaken. Figure 1 highlights the areas less frequently explored in relation to the GFSI’s position paper.

![Figure 1: GFSI dimensional framework attributes less frequently explored or considered by assessment tools (n=1).](image)

<table>
<thead>
<tr>
<th>Table: Application of tool by sector (n=1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry Sector</td>
</tr>
<tr>
<td>----------------------------------</td>
</tr>
<tr>
<td>Food Safety</td>
</tr>
<tr>
<td>Commercial</td>
</tr>
<tr>
<td>Regulated (Retail Food Business)</td>
</tr>
</tbody>
</table>

Methods varied dependent on each study as indicated by Table 2) with three utilizing mixed methods (2 or more methods in combination). Triangulation (using data gathering, data analysis or both) ensured findings offered a comprehensive assessment of the phenomenon under study.

Table 2: Methods applied in each tool (n=1)

<table>
<thead>
<tr>
<th>Tool (n=1)</th>
<th>Survey (n=1)</th>
<th>Performance analysis (n=1)</th>
<th>Interview (n=1)</th>
<th>Observation of actual behaviour (n=1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=1</td>
<td>n=1</td>
<td>n=1</td>
<td>n=1</td>
</tr>
</tbody>
</table>

Significance of study

Each study demonstrated rigorous research standards offering food safety culture assessment methods applicable to a food manufacturing environment. Nonetheless, in following the dimensional framework as indicated by the GFSI’s position paper, none of the tools offered an evaluation of every attribute.

Consideration of the assessment purpose and/or context (i.e. what the business aims to achieve or what the priority should be) offers a new dimension to food safety culture assessment. Consideration of the assessment purpose and/or context (i.e. what the business aims to achieve or what the priority should be) offers a new dimension to food safety culture assessment.

The development of a safety and quality dimension to the GFSI’s framework attributes will ensure that food safety management systems remain fit for purpose and adapt to changing circumstances.

Ultimately, organisational hazard and risk awareness together with adaptability reflect senior management commitment to, and understanding of, the exemplar food safety behaviour required on the front line.

References


2. Taylor, J Z and Rostron, K I (2018). The development of a safety and quality dimension to the GFSI’s framework attributes. Food Control, 98, 10-17


4. Jespersen, L, Griffiths, M, MacLaurin, T, Chapman, B and Wallace, C A (2016). Zero2Five Food Industry Centre Food and Drink Research Unit, Cardiff Metropolitan University, Wales, United Kingdom. (developed following a pre-referee workshop with the GFSI).


15. Taylor, J Z and Rostron, K I (2018). The development of a safety and quality dimension to the GFSI’s framework attributes. Food Control, 98, 10-17


