

Rationalisation of a bespoke food safety culture measurement tool

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Introduction

Annually, 10% of the global population reportedly acquire foodborne disease, indicating food safety continues to be a public health challenge. A positive food safety culture (FSC) is considered to complement the foundation of robust food safety management systems (Griffith, 2014); measurement and improvement of FSC is legislative and a Global Food Safety Initiative (GFSI, 2019) requirement for food and drink manufacturing and processing (FDMP) businesses. Commercial measurement mechanisms may be prohibitively costly, whilst bespoke FSC measurement mechanisms developed with appropriate expertise may specifically address business needs and be more financially viable. However, challenges exist when utilising FSC models to structure bespoke FSC measurement mechanisms for industry. Balancing academic and industry priorities needs to be considered when developing measurement mechanisms in order to increase response rate and obtain pertinent data.

Aim

To rationalise an existing bespoke quantitative FSC questionnaire to enhance practical feasibility within a low-risk FDMP business.

Methods

In order to prioritise and condense a FSC questionnaire structured according to key FSC categories (Taylors and Rostron, 2018), the following was completed:

- Intercorrelations between attitude statements associated with FSC components were determined using Kendall's Tau-b co-efficient
- Significant ($p < 0.01$) correlations resulted in statement removal
- Within each FSC questionnaire category, correlations were assessed to determine which statements could be removed
- Within each FSC questionnaire category Likert scale responses were coded from 1-5, mean average was used to determine overall attitudes toward FSC categories
- Further analysis with Mann Whitney-U test was completed on questionnaire data, pre- (2020) and post-rationalisation (2021), to ensure statement removal did not significantly ($p < 0.01$) impact overall coded FSC scores

Significance of study

Statistical rationalisation of FSC measurement mechanisms allows for academic and industry needs to be satisfied, whilst not impacting FSC measurement and improvement data.

Industry benefits include;

- improved business perception toward FSC measurement
- increased participation and management commitment

Ultimately contributing to improvement identification within businesses thus improving food safety standards.

References

- Global Food Safety Initiative (2019) *GFSI: Food Safety Culture*. Available at: <https://mygfsi.com/wp-content/uploads/2019/09/GFSI-Food-Safety-Culture-Full.pdf> (Accessed: 11th February 2021).
- Griffith, C. (2014) *Developing and maintaining a positive food safety culture*. Highfield, Doncaster.
- Taylor, J. and Rostron, I. (2018) The development of a safety and quality culture assessment tool from a longitudinal, mixed-method research journey. *Worldwide Hospitality & Tourism Themes*, 10(3), p313-329.

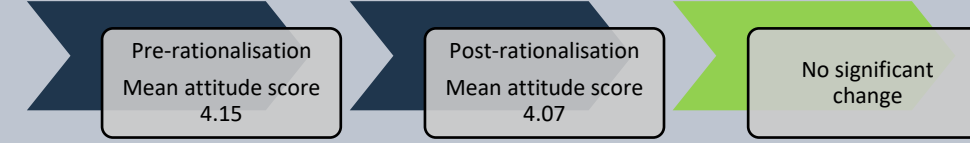
Results

Cumulatively, rationalisation allowed 23% of statements to be removed from FSC questionnaire which was developed to determine attitudes toward key FSC categories. This enabled practical application of the FSC questionnaire within a FDMP business. Attitude statement removal is indicated in red with Kendall Tau-B correlation co-efficient values presented ($p < 0.01^{**}$). Initially, the questionnaire took 22 minutes on average to complete (2020), implementation of revised rationalised questionnaire showed reduction in completion time by six minutes (2021). Operative response rate increased year on year (2020 to 2021) by 11%.

General Food Safety

The category initially contained 17 attitude statements, three were identified to rationalise leaving 14 remaining statements.

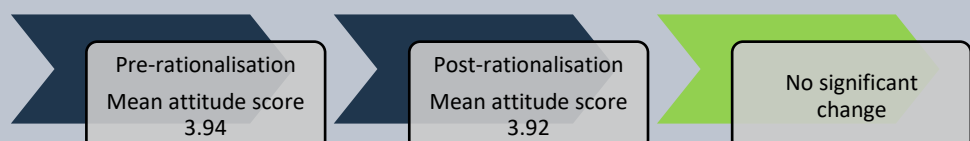
Correlated Attitude Statements		T _b
Food safety is a high priority.	Food safety practices are to a high standard.	.713**
Food safety management is thorough.	Food safety practices are to a high standard.	.634**
I am satisfied with how food safety is managed.	Food safety practices are to a high standard.	.683**
Food safety management is thorough.	I am satisfied with how food safety is managed.	.654**



People

The category initially contained 29 attitude statements, seven were identified to rationalise leaving 22 remaining statements.

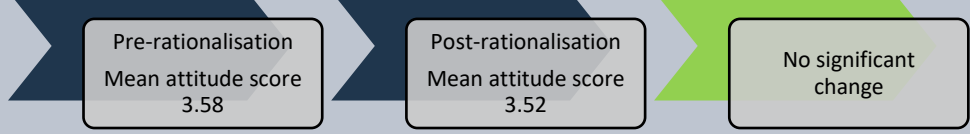
Correlated Attitude Statements		T _b
I feel comfortable stopping a production line if there were a risk to food safety.	Operatives feel confident highlighting food safety risks to me/I feel comfortable raising food safety issues to my manager.	.584**
I take pride in my work in Taylors.	I am trusted to uphold high food safety standards.	.608**
My team feel appreciated for their efforts.	I feel recognised for my part in successful food safety audits.	.696**
There are strong working relationships between manufacturing departments.	There are strong working relationships between manufacturing and support departments.	.659**
There are strong working relationships between manufacturing departments.	There are strong working relationships between non-operational and operational departments.	.654**
I am happy with the frequency of communication about food safety.	The level of detail used within food safety communication is appropriate to my role.	.659**
The level of food safety training I receive is appropriate for my role.	I am satisfied with the depth of information included in the food safety course(s) I have attended.	.641**
I believe operatives/I understand all information given to them/me during food safety training.	I am satisfied with the depth of information included in the food safety course(s) I have attended.	.612**



Purpose

The category initially contained 22 attitude statements, four were identified to rationalise leaving 18 remaining statements.

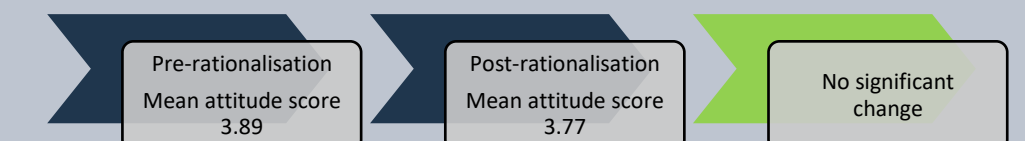
Correlated Attitude Statements		T _b
I am inspired by the group's vision.	My role directly contributes to achieving the group's vision.	.704**
Food safety is considered within company values.	When managing food safety, the company values are adhered to.	.719**
I have clear understanding of the short-term goals that I am expected to achieve.	My team have a clear understanding of the short-term goals that they are expected to achieve.	.754**
There are clear key performance indicators for food safety in place.	Data is available to monitor food safety standards.	.561**
Data is available to monitor food safety standards.	Improvements are identified from data gathered.	.692**
Gaining an insight into food safety performance would motivate me.	Increased communication of food safety compliance metrics is needed.	-.634**



Food Safety Culture Awareness

The category initially contained six attitude statements, one was identified to rationalise leaving five remaining statements.

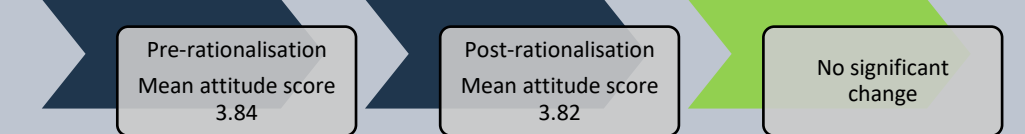
Correlated Attitude Statements		T _b
Taylor's audit scores reflect the food safety practices that are implemented into the business.	I understand why the company undertakes the BRC Food Safety audit.	.502**



Process

The category initially contained 32 attitude statements, nine were identified to rationalise leaving 23 remaining statements.

Correlated Attitude Statements		T _b
Traceability is maintained for all products with high efficiency.	We always maintain traceability of all products.	.800**
Food safety of our raw materials is adequately managed throughout our supply chain.	Contractors adhere to our food safety policies when working on site.	.658**
The decision-making process associated with food safety management is clear and straightforward.	All departments work effectively together.	.643**
Managers of all production departments handle food safety issues in the same way.	I am confident that all employees adhere to the same food safety standards.	.631**
There is consistency across management when approaching food safety communication.	Food safety information that I communicate to members of staff is always understood.	.658**
Food safety expectations are clear and consistent.	Food safety information that I communicate to members of staff is always understood.	.615**
Food safety expectations are clear and consistent.	Decisions relating to food safety are made efficiently.	.608**
Operatives are/I am aware of the food safety management systems we have in place.	Operatives are/I am aware of where to find information about our food safety management systems.	.872**
Food safety management systems are easy to understand.	Food safety management systems are sufficiently detailed.	.739**
Food safety management systems are easy to understand.	Food safety management targets in are achievable.	.746**
Food safety management systems are sufficiently detailed.	Food safety management targets are achievable.	.780**
All food safety equipment is fit for purpose.	All food safety equipment is maintained adequately.	.726**
All food safety equipment is fit for purpose.	Engineering maintenance of food safety critical equipment is readily available.	.617**
All food safety equipment is maintained adequately.	Engineering maintenance of food safety critical equipment is readily available.	.707**



Proactivity

The category initially contained 18 attitude statements, four were identified to rationalise leaving 14 remaining statements.

Correlated Attitude Statements		T _b
I am aware of external food safety influences.	The company has a good awareness of future food safety risks.	.619**
Achieving high food safety audit scores (e.g. BRC) motivates me.	The company has a good awareness of future food safety risks.	.593**
There are frequent learning opportunities available around food safety available to me.	All learning opportunities are effectively presented.	.692**
The budget to address food safety issues is insufficient.	Investment in other areas is prioritised over investment in food safety compliance.	.684**

