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The influence of organizational sub-cultures on food safety management

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Abstract
This study considers the influence of food sub-cultures within the food manufacturing environment and the adoption of food safety management practices. The influence of diversity within the overarching food safety culture of a food manufacturing operation is discussed through the use of case studies. Following a review of literature, four sub-cultures were proposed: executive, operations, engineering and technical/quality each with their own unique identity and modus operandi. Understanding the interaction of these within the visible and invisible elements of food safety culture is critical to prevent a food safety incident and associated recall.

Key words: transformational, transactional, culture, leadership, interfaces.

1. Introduction

Whilst there is a body of academic work in the research areas of organizational management, organizational culture, types of leadership, and food safety management systems (FSMS), there is limited literature in the area of the degree of heterogeneity in food safety culture (FSC) in food manufacturing businesses. Culture is the “normative order, operating through informational and social influence that guides and constrains the behavior of people in collectives” (O'Reilly and Chatman 1996:160). The term “culture” can be used to describe emergent history and traditions, and applies meaning to the underlying values and beliefs held by members of formal and informal social groupings (Buchann and Huczynski, 2004 cited by Griffith et al. 2010). There is a wide body of literature on business and FSC (including Wright et al. 2012; Lee et al. 2012; Arendt et al. 2011; Griffith et al. 2010; Handy 1999; Hofstede 1997; O'Reilly and Chatman 1996; Falkenberg and Herremans 1995; Schein 1985) that considers the
interplay of hierarchy, responsibility and level of organizational power, assumptions, behavioral and social norms, values, rules as well as the formal/informal or visible/invisible aspects of the subject.

The modus operandi of an individual food manufacturing organization will be unique with a distinct set of beliefs and values (Powell et al. 2011) that underpin the FSC. Griffith et al. (2010) suggest that critiquing and breaking FSC down into its component parts improves compliance with the FSMS and reduces the incidences of food safety problems. Further they argue it is important to consider that within a given FSC there could coexist subsets of values and attributes that are relatively stable and which may individually, or mutually, be resistant to change.

Griffith (2014) describe organizational culture as an umbrella term under which multiple cultures may exist. This will be especially so where there is a tension between profitability and food safety and between the cost of implementing FSMS and the benefit that is determined as a result. Conflict in the prescribed aims and objectives of specific job roles (e.g. quality staff vs. production staff) or between senior management and other levels of management means that these multiple cultures not only exist, but may actually flourish. Factors such as power distance, uncertainty avoidance as proposed by Hofstede (1997) will also play a part. Griffith’s FSC model (2014) is based on Schein’s three concentric levels of culture: Level 1 - food safety climate: outermost layer of FSC detected during audits and inspections and is observable. This level of culture is modified depending on internal and external constraints e.g. lack of resources, people, presence of the auditor/inspector. Level 2 - underpinning culture: the middle layer includes the organization’s espoused values (often unspoken) and guides the employees’ behavior and attitudes to authority and legislation. As has been outlined, this underpinning culture can be made up of multiple subcultures. Depending on the depth of audit/inspection, this level of culture can be determined. Level 3 – core culture: the innermost layer that contains
all the assumptions by staff of what the organization is all about which can be multiple and varied. The core culture includes core values that are invisible and often assumed. Depending on the depth and scope of the verification activity this level may remain hidden. This suggests that there are levels of culture that can be observed or assessed and that each level is distinct i.e. that FSC is heterogeneous. This is important to recognize when designing verification activities to determine compliance and effectiveness of FSMS and the influence of the organization’s FSC. Given this theoretical background, and using case studies, this paper aims to consider the transactional and transformational elements of FSMS as well as the degree of heterogeneity of FSC in the manufacturing environment and its influence on performance. Two propositions will be considered:

Proposition 1: Different subcultures exist within a food company; and

Proposition 2: The modus operandi of the subcultures can be rationalized and elements can be either congruent, or alternatively conflicting, at their interfaces.

**Case Study 1: Evolving food safety regulation in Taiwan**

Taiwan has an emerging food safety regulatory environment with new legislation introduced in 2014 as a result of historic incidents associated with plasticizer contamination and mislabeling of oils and rice (Ko, 2015). In order for such legislation to be effective there has to be a commitment to implementing a FSMS and FSC within organizations and with ownership of the formal requirements at all levels. Ko’s work considered the responses from 307 participants that worked in the food industry. 74% of participants identified that they were not satisfied with government management of food safety, but Ko observed that gender, work experience, type of firm, nature of supervision and source of knowledge had no net influence on those perceptions. However in terms of compliance with formal company requirements females were more likely to follow food safety practices, as were employees aged 51-60 or those with>16 years of work experience but the latter may just have been a factor of the amount
of training received. This demonstrates there can be multiple factors that can either influence perceptions of formal requirements and/or lead to the creation of sub-cultures within an overarching FSC in an organization. Wu (2012:268) in a study on food safety control systems (FSCS) in Taiwanese international tourist hotels concluded that: “while most firms are willing to advance their food safety strategies if there are potential profits to be gained from the market, the intense price competition current in the market constrains firms from doing more than the regulatory framework requires.” Thus FSC does not operate in isolation and whilst the underpinning culture interfaces with the organization’s espoused values and guides the employees’ behavior and attitudes to authority and legislation, an inner, and perhaps dissociated, core culture that in this case is driven by financial constraints can mediate and influence. Thus heterogeneity of values exists which in turn can drive differentiated behavior. Wu (2012) asserts that whilst regulatory controls drive the policy organizations must meet, it is the firm’s capacity and senior management that have the major impact on food safety strategy implementation.

2. Food safety strategy

In order to assure that a FSMS is planned, developed, implemented, managed and verified effectively, aspects of FSC need to be drawn together in terms of: transactional elements such as: food safety agility (competence, environment, appropriateness of formal FSMS) and risk perception and mitigation (knowledge, training, awareness), or as Mintzberg would describe the operating system, and transformational elements including leadership and commitment (food safety as a business priority, organizational commitment and ownership of safety as an issue, employee involvement) communication (internal and external) and the external environment (see Mintzberg 1978). Transformational food safety management engages all those who work for an organization, irrespective of job title, to consider their continued role in keeping the food that is produced safe. Transformational food safety management is about
inspiring and empowering staff to feel food safety is important. Transactional FSMS focus on the policies, procedures and protocols, often called pre-requisites, that drive formal management of food safety and minimize risk with the associated penalties and sanctions in the event of process or product non-compliance. The people employed can be managed to be task focused in order to deliver ongoing compliance i.e. driven by job descriptions, work instructions, and specifications, but this approach lacks an understanding of how human behavior and mindset shapes the degree, and consistency, of compliance with such standards as described in case study 1.

External stakeholders can also prescribe the elements that the FSMS must encompass e.g. regulators, brand owners including retailers for whom food products are manufactured. The requirements for the structure of a FSMS are therefore driven by firstly regulatory compliance and secondly by compliance with private market standards and/or organizational standards where these contain additional requirements over and above legislation. These private (third-party) management standards include the British Retail Consortium (BRC) Global Standard for Food Safety (BRC, 2015) or BS EN ISO 22000:2005. This transactional approach ensures organizational systems, products and services comply with legislative requirements, and this in turn drives resource allocation based on cost and benefit analysis, and appropriateness of the implemented FSMS is driven through prescribed compliance audits and other verification activities. Therefore, there can be a heterogeneity of drivers from internal and external stakeholders that in themselves can act as sub-cultures within an overarching FSC.

Food safety strategy can be: planned through a highly organized and integrated process driven by the FSMS; adaptive where decision-makers are managing conflicting goals and bargaining between them to produce a stream of incremental, but disjointed decisions e.g. in the event of changing external environment, product or process failure; or entrepreneurial where a powerful leader is the decision-maker with his/her own vision of the organization’s
future (Mintzberg 1978). Strategy can develop either as a result of a formulated approach or can be formed through a series of incremental decisions that have been made. Developing, implementing and continually improving FSMS requires the commitment of all employees in an organization for the process to be effective and efficient (Mensah and Julien 2011). Their study suggests the challenges hindering compliance with FSMS as: transactional: financial especially the high cost of development and implementation, inappropriate infrastructural capabilities for validating and verifying FSMS, and lack of risk perception (awareness of the requirements) and transformational: people related issues including lack of technical knowledge and skill of employees as well as resistance to change. Mensah and Julien (2011) conclude that the biggest challenge to effective implementation of an FSMS is people related whether it is awareness, knowledge or education that creates a competency gap. Their study also determined that senior management commitment was the headline success factor in terms of leadership of food safety within an organization in that it is a primary objective of the organization to invest in the FSC by investing in their human capital i.e. the people that work for them. Lee et al. (2012) conclude that whilst transformational leadership did not directly impact employees’ attitudes and intentions within a food business, it did significantly impact on organizational culture which in turn significantly impacted on employees’ attitudes and intentions to follow safe food handling practices. Therefore whilst on the one hand transactional leadership (positional power) drives organizational compliance, if this approach is not embedded within elements of transformational leadership (personal power) the overall FSC will be weak. Griffith (2014) characterized transactional and transformational styles within a FSC at different levels of the organization i.e. senior management, middle management and supervisors and line leaders (Table 1). This theme addresses the implementation of an overarching FSC at different levels of hierarchy within an organization, but the focus is very much on an integrated single FSC implemented in a cascade effect.
Take in Table 1

Table 1 highlights the integrated role of management levels in an organization in terms of delivering an effective and dynamic FSC. This approach relies on the active development and communication to all employees of a corporate vision emphasizing that food safety is the job of everyone not simply the focus of a few.

Case Study 2: XL Foods Inc. Beef Recall 2012

The beef and beef products recall, the largest in Canadian history, started in September 2012 at a beef processing plant owned and operated by XL Foods Inc. over concerns of contamination with *E. coli* O157:H7. By October 15th 1800 products had been recalled (CFIA, 2013). The enquiry concluded that there was a weak food safety culture at the Brooks plant, which was shared by both plant management and CFIA staff. The circumstances that the enquiry suggested led to the contamination (CFIA, 2013) include the following:

- When routine monitoring showed problems there was no evidence to suggest they were analysed by XL Foods Inc. staff or by CFIA inspectors.
- Although 40.9% of samples from all pre-grind raw materials produced on December 21, 2011 were presumptive positive for *E. coli* O157:H7, actions taken by XL Foods Inc. were inconsistent with the company's guidance decision document. The latter document instructed the actions to be taken when positives exceed 20% in a single production day. Products from an entire shift were released with no further action. There was no documentation to indicate that CFIA inspectors were notified of this. The enquiry noted that it was the series of inadequate responses by two key players in the food safety continuum that played the most critical part leading to the September 2012 event at XL Foods Inc.
- A memo issued on a number of occasions by the CFIA supervisor and posted in several locations instructed inspectors that, "unless it's beef destined for Japan, line must not
slow or stop unless an emergency; ignore ingesta and other visible contamination and it will be caught later on down the line...” Although the station was added strictly to deal with a trade issue, the memo may, nonetheless, have conveyed the message to inspectors and plant staff that food safety was of secondary importance.

- XL Foods Inc.’s recordkeeping of monitoring activities, sampling techniques and its validation of procedures and equipment maintenance were found to be deficient. The HACCP system was not being regularly reviewed. These shortcomings were not formally identified by CFIA inspectors before the incident.

The enquiry concluded that:

“We found a relaxed attitude towards applying mandatory procedures – clearly outlined in some documents, less so in others. Again, a shortcoming shared by both plant and CFIA staff.” (CFIA, 2013)

This example again demonstrates the role of sub-cultures in terms of an overarching FSC with internal and external sub-cultures acting in juxtaposition to the formal and informal values and beliefs that can operate. A discordance at this interface can lead to a food safety breakdown and whilst there may be a transactional approach to FSMS within both sub-cultures there is a requirement for a transformational element of FSC in terms of the ongoing need to review, evolve and be adaptive especially when decision-makers are managing conflicting goals and bargaining between themselves. There are some elements of food safety management that are not negotiable and if there are as described by Mensah and Julien inappropriate infrastructural capacities as well as a lack of risk perception this may well lead to the type of food safety incident as seen at XL Foods Inc.

3. Food safety culture(s)

Compliance behavior is affected by the levels of awareness, education and training and individuals’ or groups’ resistance to change (Mensah and Julien 2011). Dauber et al. (2012)
consider that oversimplification of organizational models harms efforts to explore or explain cultural dynamics within organizations suggesting that sub-cultural groupings need to be considered. van Maanen (2008) propose that subcultures occur in all organizations and their interaction with each other is complex and ever changing based on social and personal identities. This concept of “social learning” is important when considering culture as it can create heterogeneity between sub-cultures and also allow dominant sub-cultures to evolve (Khatib 1996). Iivari and Abrahamsen (2002) categorize subcultures in terms of collective identities and the barriers constructed against what is deemed as outsiders. These outsiders can be external to the business such as in the Taiwan and XL Foods Inc. examples or can be internal in terms of the confines of an organization. The food manufacturing environment can contain multiple collective identities depending on organizational structure and responsibilities including not only management levels, but also departmental constructs such as production, engineering, technical, sales, purchasing. This idea of social identity, subculture and insiders and outsiders is important in understanding how a collective and effective identity in terms of FSC is ensured. Thus, the literature would suggest there is both individual and group social identity within an organizational structure and these can be congruous or alternatively in conflict.

A sub-culture can be described as a culture that is separate from the dominant culture and exists in a department, work group, or geographical location and its identity includes the core values of the dominant culture plus additional values unique to its members (Khatib, 1996). Sub-cultures can be identified through functionalism e.g. their transactional focus, thus operations, engineering or technical functions. These foci can evolve on the basis of shared values and beliefs and as a result of relationship building as shared specific values and beliefs as work-groups within a department or a department, or organizationally as a whole i.e. to develop their own modus operandi. In some areas of operation within a food manufacturing
business the modus operandi of different functional sub-cultures will converge and be indistinguishable. This can be as a result of natural evolution of social identity or as a consequence of the organization seeking and taking steps to drive a collective FSC. However in certain situations, the modus operandi of different sub-cultures will not be congruent, or may diverge from the values and beliefs of the overarching organizational modus operandi. This will impact the effectiveness of delivering a common and effective FSC across the organization.

Hofstede (1998) identified three functional sub-cultures: professional, administrative and customer interface. The professional sub-culture was seen as being more pragmatic, job orientated and with tightest control. The customer interface group was identified as focusing on looser control, less pragmatic than the professional and more results orientated. The administrative group did not have any strong emphasis in any of the measures used in the research. Sub-cultural categorizations from three literature sources (Schein 1996; Hofstede 1998; Iivari and Abrahamsson, 2002) have been synthesized (Table 2) to suggest four sub-cultural groupings within the food manufacturing environment: executive culture, operational culture, engineering culture and technical culture. Cultural assumptions and operational norms with regard to FSC have been considered for the four groups (Table 3). Operational norms will vary by each of the four functional sub-cultures. The XL Foods incident demonstrated that there can be internal and external staff interfacing within a FSC and these two sub-cultures may have different cultural assumptions and operational norms which will influence effective implementation of a FSC.

**Take in Tables 2 and 3**

Indeed in an effort to drive efficiency and performance, functional sub-cultures will very often set different task orientated key performance indicators (KPI), which may or may not be mutually supportive and if not appropriately managed can lead to conflict that will impact on both the FSMS and FSC.
**Case Study 3: Maple Leaf Foods**

In 2008, Canada experienced an outbreak of listeriosis that resulted in 22 deaths that was traced to contaminated ready-to-eat deli meats produced by Maple Leaf Foods, Canada’s largest meat company and two hundred products were recalled. Maple Leaf Foods has a FSMS in place with associated monitoring and verification activities. At the time, as a result of these verification activities, there were positive tests for *Listeria* that was then followed by a sanitation intervention. However this pattern continued with positive results every 2-3 weeks and whilst the visible culture of the organization was assessed and actions undertaken, the invisible drivers of the FSMS continued. In parallel, Maple Leaf Food received increased orders for large packages of deli meats so to be able to meet these production demands, double shifts were implemented in the processing plants. Between midnight and before the start of morning shift, when the production lines were closed down, sanitation was carried out. The Weatherill Report (2009) reviewed that two meat slicers were implicated as being the source of contamination and due to the design of the equipment if full sanitization was required to deep clean the equipment it required the shutdown of the plant. The report concluded that there was insufficient time to clean and sanitize the machines adequately leading to the listeriosis outbreak (Manning et al. 2016).

**Case Study 4: Peanut Corporation of America**

In November 2008 a significant outbreak of *Salmonella* in Tennessee, US was linked to Peanut Corporation of America facilities that produced peanut butter and nine deaths and 714 confirmed cases of illness. The recall that was initiated led to the recall of nearly 4,000 peanut containing food products (Manning et al. 2016). The investigations showed not only a total failure in terms of the implementation of a FSMS, but also poor implementation of food safety objectives at senior manager level. Members of the senior management, who have subsequently been incarcerated, made conscious decisions that negatively affected firstly many people
individually, and also food companies that used products manufactured at PCA as an ingredient (Manning et al. 2016). Further, there is no evidence of professional guidance being sought from regulators on how to deal appropriately with a “Positive” Salmonella result for a product that had been dispatched from the site. Instead, test results were ignored and contaminated products were sent to customers showing a clear lack of management level accountability. The lack of an effective FSC was apparent at PCA (Powell et al. 2011). Further, while second-party audits at PCA were able to identify problems, the third party auditors did not (Powell et al. 2013). This questions the depth of the audits undertaken and if they had the capability to investigate situations where problems are not within the visible, formal culture and occur based on informal actions as a result of situational contingencies.

Griffith et al. (2010) consider that cultural dynamics especially between sub-cultures could be due to varying subsets of beliefs and values many of which may be resistant to change. Concurring with Hofstede (1997), Griffith et al. (2010), propose that the culture elements of organizational power and hierarchy influence the perceived value of the contribution that individuals and thus sub-cultures make within the organization. This too can give risk to conflict between sub-cultures. Whilst the overall food safety climate may appear static, there may be fluidity within both the underpinning culture and the core culture elements at overall FSC level and also with each sub-culture. Indeed whilst one sub-culture can remain static, other sub-cultures in an organization can grow and develop further or conversely wither away (Handy, 1999) leading to a constant interpretation and reinterpretation of social relations (Iivari and Abrahamsson, 2002). Schein (1996) concluded that considering overt behavior alone (the visible culture) would not decipher organizational culture because situational contingencies, such as those described in the case studies, often make individuals or groups behave in a manner that is inconsistent with their deeper values and assumptions.

4. Situational contingencies and their influence on FSC
Contingency situations can create conflict between sub-cultures and they can create cultural interfaces that can be difficult to transcend especially where specific perceived pivotal values within sub-cultures are not congruent. Examples abound in the food industry where situational contingencies drive specific behavior, for example machine failure, increased order quantities, quality failure of ingredients, lack of trained staff and so forth. Negotiating these situations can be difficult especially within the confines of the transactional elements of the FSMS with both conscious and unconscious FSC influencing decision-making. One sub-culture for example, the technical sub-culture or the engineering culture can enable or conversely constrain the implementation of a preventive or corrective action by:

(a) Supporting and underpinning the dominant FSC with the same values and norms and in line with the requirements of the FSMS.

(b) Interacting with the dominant FSC but using informal methods that are outside the structure of the FSMS to achieve organizational objectives, or

(c) Opposing the dominant FSC and the FSMS using formal or informal methods to achieve alternative objectives.

Situational theories of leadership suggest that specific leadership styles need to be matched to specific external circumstances (Sims et al. 2009) and that different situations require an alternative leadership approach in terms of being directive or empowering in order for a FSMS to be implemented effectively. This means that food safety strategy should include determining particular goals for specific situations and defining the associated leadership style that is required in a given situation (Adapted from Sims et a. 2009). However, positional power can exhibit itself within the organization as a driver for uniformity of behavior and control across functions. Transactional strength that exhibits itself as intransigence or inertia especially in a crisis or conflict situation can negatively impact on FSC and ultimately affect the ability of
the organization to deliver consistently safe food in a constantly evolving regulatory and market environment.

The case studies used in this paper all demonstrate the pluralistic challenges at the interface of engineering, technical and operational cultures where each group has different and often competing KPI. Heterogeneity in strategic and operational KPI, especially when they are disseminated by function can create competition between organizational sub-cultures. Lone and Huffman (2014) assert that subsequent to the listeriosis incident, Maple Leaf Foods has had to approach food safety as a non-competitive issue and that food safety strategy must be deeply rooted in organisational values and management commitment across all functions. This demonstrates that food safety must be seen as an overarching cultural dynamic that all sub-cultures actively support and champion. This study has considered the interaction between four types of sub-cultures within a food manufacturing organization in order to develop a conceptual framework of FSC as a whole, with regard to formal and informal cultural interactions and its influence on the effectiveness of the FSMS (Figure 1).

**Take in Figure 1**

Whilst the sub-cultures themselves do not appear in the framework, the leadership of the executive sub-culture in terms of senior management commitment, and ensuring channels of communication are crucial to centering the transactional elements of the FSMS, as well as the transformational characteristics that need to be in place. There are both visible and invisible elements of the FSMS and some factors such as risk perception and resource availability span both transactional and transformational aspects. The attributes, values and norms of the FSC and interfacing sub-cultures can be both formal and informal and factors such as power culture, positive and negative heroes, technical knowledge and skillset will all influence the effectiveness of the FSMS. Core transactional culture factors will characterize the transactional FSMS in terms of the degree of equality, uncertainty and individuality that is formally
prescribed, and also informally enacted. Therefore it is important to understand the multi-level dynamics that influence the FSMS will be unique to each food manufacturing organization and also to the situational challenges that each business can encounter. Two propositions have been considered in this paper and it has been shown within the theory explored that:

Proposition 1: Different subcultures exist within a food company; and also

Proposition 2: The modus operandi of the subcultures can be rationalized and elements can be either congruent, or alternatively conflicting, at their interfaces.

What are the implications for academics and for industry practitioners? Effective FSC requires leadership at all levels of the organization (Table 1) that encompasses both transactional and transformational elements. Leadership and ownership sit at the heart of an organization consistently producing safe and legal food, whilst still being able to adapt to market and regulatory shocks and drivers. Essential within this leadership process, as has been shown in all four case studies, is a need for effective product and process verification and, as has been demonstrated too in the case studies, an appropriate and timely response in the event of non-compliance. This requires both personal and organizational leadership. With regard to the further development of literature in this field, more research needs to be undertaken to firstly differentiate the modus operandi of different sub-cultures within an overarching food safety subculture and secondly critique the dynamics at the interface of subcultures specifically the situation of embedded regulatory inspectors and plant staff (as shown with the XL Foods Inc. case study), and the interface between functional subcultures (see Table 2) such as the executive and the other three sub-cultures (as demonstrated with the Peanut Corporation of America case study). Whilst Table 3 draws together the cultural assumption and operational norms of different functional subcultures, in reality this interaction is probably more nuanced and may well be sector specific. For example, it could be postulated that the high throughput/low margin production environment has a different cultural and operational norm dynamic to the low
throughput/high margin situation. Indeed, in practice each organization will have a unique inter-
relationship between the formal and informal; the visible and invisible; and the transactional
and transformational elements of their FSMS and FSC. Undertaking further industry based
research in order to develop practical tools that help organizations to assess and benchmark
themselves, recognize vulnerabilities and thus implement appropriate preventive action would
certainly prove of value.

5. Discussion

Whilst the FSC and associated norms and values may be strong at the executive level in
terms of what is written and formalized, this may be at odds with the operational norms of
functional sub-cultures ultimately impacting on the implementation and efficacy of FSMS.
Therefore in order to have a strong FSC that cascades through the whole business,
organizational strategy must ensure:

1) Participatory engagement that engages all employees and makes them feel
committed to food safety goals.

2) Communication of goals in a way that for functional sub-cultures recognize their
intrinsic importance. The use of symbols and artifacts is key.

3) Information is consistent, identifying what is and what is not important, and

4) Fair, comprehensive reward systems that ensure recognition, and approval of
individual and collective contributions (O'Reilly and Chatman 1996).

Whilst there is a body of academic work in the research areas of organizational
management, organizational culture, types of leadership, and food safety management, there is
limited literature in the area of the development of an overarching FSMS with an associated
FSC that encompasses the heterogeneity of sub-cultures within a food manufacturing
businesses. A number of sub-cultural groups were identified that could be categorized by a
series of factors namely: executive, operations, engineering and technical/quality culture. Each
sub-culture will have its own cultural features and the interface between cultures can cause conflict if there is a lack of congruence. Verification activities (see Powell et al. 2013) need to be designed by individuals that recognize the visible and invisible elements of both the overarching FSC and the associated sub-cultures and ensure that such activities can undergo effective surveillance so that weaknesses and potential areas of non-compliance are mitigated. Opportunities for further research in this area of interfacing, conflicting and differentiated food safety sub-cultures have also been outlined in this paper. Existing verification activities do not focus enough on the influence of organizational sub-cultures, whether it be differentiated by collective identity or by function, especially where this is within the informal, and often unaudited, culture of an organization.
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Wright, M., Leach, P., and Palmer, P. (2012), A Tool to Diagnose Culture in Food Business Operators Food Standards Agency

Wu, S.L. (2012) factors influencing the implementation of food safety control systems in Taiwanese international tourist hotels, Food Control, 28, 265-272
Table 1. Food safety leadership styles (Adapted from Griffith, 2014)

<table>
<thead>
<tr>
<th></th>
<th>Transactional behavior</th>
<th>Transformational behavior</th>
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</thead>
<tbody>
<tr>
<td>Senior managers</td>
<td>Ensuring FSMS comply with legislative requirements.</td>
<td>Leading by example demonstrating visible and consistent commitment to producing safe food.</td>
</tr>
<tr>
<td></td>
<td>Determining the third party standards to comply with.</td>
<td>Caring about all stakeholders.</td>
</tr>
<tr>
<td></td>
<td>Providing resources for FSMS (physical, financial, human).</td>
<td>Inspiring staff to feel food safety is important.</td>
</tr>
<tr>
<td></td>
<td>Overseeing delivery of food safety practices (direct and indirect).</td>
<td>Giving time for food safety.</td>
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<tr>
<td></td>
<td></td>
<td>Encouraging the leadership styles of middle managers and supervisors to be participatory.</td>
</tr>
<tr>
<td>Middle managers</td>
<td>Managing rewards and sanctions for legal compliance, and delivering to organizational goals and targets for food safety. Providing local resources for the food safety programs. Verifying food safety practices.</td>
<td>Leading by example demonstrating visible and consistent commitment to producing safe food. Relaying corporate vision to supervisors. Emphasizing food safety over productivity and role of all staff in delivering safe food (decentralizing food safety management).</td>
</tr>
<tr>
<td>Supervisors and line leaders</td>
<td>Managing rewards and sanctions for legal compliance, and delivering to organizational goals and targets for food safety. Providing local resources for the FSMS. Monitoring and reinforcing food safety practices and behaviors of workers. Opening and closing checks of equipment and production lines.</td>
<td>Leading by example demonstrating visible and consistent commitment to producing safe food. Relaying the corporate vision to staff. Communicating and participating and encouraging staff involvement in food safety initiatives. Emphasizing food safety over productivity and the role of everyone in delivering safe food (decentralizing food safety management).</td>
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Table 2. Functional subcultures

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<thead>
<tr>
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<tbody>
<tr>
<td>Executive culture</td>
<td>Executive culture</td>
<td>Managers</td>
<td>Professional - more pragmatic, job orientated and with tightest control.</td>
</tr>
<tr>
<td>Operations culture</td>
<td>Operator culture</td>
<td>Administrative – process orientated, parochial, most normative.</td>
<td></td>
</tr>
<tr>
<td>Engineering culture</td>
<td>Engineering culture</td>
<td>Engineers</td>
<td>Customer Interface - looser control, less pragmatic than professionals and more results orientated.</td>
</tr>
<tr>
<td>Technical culture</td>
<td>Technical specialists</td>
<td></td>
<td></td>
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</tbody>
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Table 3. Cultural assumptions and operational norms by function (Adapted from Schein, 1996)

<table>
<thead>
<tr>
<th>Executive Culture</th>
<th>Operations Culture</th>
<th>Engineering Culture</th>
<th>Technical/Quality Culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executives focus on financial survival and growth to ensure returns to shareholders and to society.</td>
<td>The success of the enterprise depends on people’s knowledge, skill, learning ability, and commitment.</td>
<td>Engineers are proactively optimistic that they can and should master nature.</td>
<td>The assurance of food safety is about ensuring systems are developed that comply with legislative requirements transactional. Safety is binary (unsafe or safe).</td>
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<td>The economic environment is perpetually competitive and potentially hostile, so the CEO is isolated and alone, yet appears omniscient, in total control, and feels indispensable (autocratic approach).</td>
<td>The required knowledge and skill are “local” and based on the organization’s core technology.</td>
<td>Engineers are stimulated by puzzles and problems and are pragmatic perfectionists who prefer “people free” solutions.</td>
<td>The food safety management systems must comply with third party standards (transactional). Safety is binary (unsafe or safe).</td>
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<td>Executives cannot get reliable data from subordinates so they must trust their own judgment.</td>
<td>No matter how carefully engineered the production process is or how carefully rules and routines are specified, operators must have the capacity to learn and to deal with surprises, and have situational understanding and leadership.</td>
<td>The ideal world is one of elegant machines and processes working in perfect precision and harmony without human intervention.</td>
<td>The Technical/Quality team oversee the implementation of verification systems to assess food safety compliance and implement sanctions in the event of non-compliance. This activity has transactional and transformational elements.</td>
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<td>Organization and management are intrinsically hierarchical; the hierarchy is the measure of status and success and the primary means of maintaining control. The organization must be a team, but accountability has to be individual.</td>
<td>Most operations involve interdependencies between separate elements of the process; hence, operators must be able to work as a collaborative team in which communication, openness, mutual trust, and commitment are highly valued.</td>
<td>Engineers are safety oriented and overdesign for safety.</td>
<td>The operations and engineering departments should also “own” food safety and it is their responsibility to implement the policies, procedures and programs that have been developed by the organization.</td>
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<td>The willingness to experiment and take risks extends only to those things that permit the executive to stay in control.</td>
<td>Need to collaborate with other subcultures in order to deliver food safety compliance.</td>
<td>Engineers prefer linear, simple cause-and-effect, quantitative thinking to deliver solutions rather than qualitative cultural values and beliefs based solutions.</td>
<td>The Technical/Quality team should lead by example in ensuring that food safety if necessary takes precedence over productivity.</td>
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<td>As the organization is very large, it becomes depersonalized and abstract and, therefore, has to be run by rules, routines (systems), and rituals (bureaucracy approach).</td>
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<td>The inherent value of relationships and community is lost as an executive rises in the hierarchy. The attraction of the job is the challenge, the high level of responsibility, and the sense of accomplishment (not the relationships).</td>
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<td>The ideal world is one in which the organization performs like a well-oiled machine, focusing on pivotal values, needing only occasional maintenance and repair.</td>
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<td>People are a necessary evil, not an intrinsic value. The well-oiled organization does not need people, only activities that are contracted for.</td>
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<td>Situational leadership may be delegated to other subcultures. Requirement is to advise executive body on problems solved not for the executive body to become an element of organizational compliance management.</td>
<td>Operative norms: meeting operational targets, volume, efficiency, level of rejects. May be in conflict with operative norms championed by other organizational sub-cultures.</td>
<td>Operative norms: meeting safety and quality criteria, specifications. May be in conflict with operative norms championed by other organizational sub-cultures.</td>
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<tr>
<td>Operative norms: Organizational mission statement and values. Known but not necessarily routinely practiced by other functional sub-cultures.</td>
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</table>
Figure 1. The interaction between transactional and translational elements of FSC within a food manufacturing FSMS
Adapted from: Mintzberg 1978; Schein 1985; Hofstede 1997; Handy 1999; Mensah and Julien 2011; Lee et al. 2012; Griffiths 2014