A Survey on Compliance Standards and their IT-Support in the Nutrition Industry

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Abstract: Compliance standards are necessary to ensure that enterprises adhere to important laws and regulations concerning their business. To overcome the diversity of laws and regulations, software companies have promised to support the enterprises by appropriate software solutions. Consequently, new compliance management systems have been brought to the market and existing business applications have been extended by compliance functionalities. The following approach analyses whether significant compliance standards for the nutrition industry have been sufficiently implemented.

1 Introduction

For the last few years, the nutrition industry has been affected by several scandals including misleading product declarations and spoiled food [Sh10]. Resulting from this bad publicity, products were withdrawn from the market and supply chains became monitored. However, the damage was already done. Customers had already lost their confidence in the affected product and its supplier. To improve food safety during the manufacturing process, the European Union and other transnationally operating foundations established specific compliance regulations. Compliance regulations can be divided into laws and official standards, best practice frameworks and company specific commitments [LSG07]. Standards, like the regulations of the European Community (EC) and the International Organization for Standardization (ISO), help companies to adhere to and apply important laws. The EC directives, for example, formulate requirements, which support companies in identifying critical instances in the manufacturing process. Together with related standards and best practice frameworks (e.g. COSO, COBIT), they define elaborate guidelines to evaluate and conquer potential risks of non-compliance [Ti08]. This paper systematically explores whether the provider of information systems offer appropriate compliance management solutions for the nutrition industry. Six of the most significant compliance standards have been chosen, which will be described in section 2. These standards provide information on typical requirements for the nutrition industry concerning food safety, quality and risk management as well as related documentation obligations. The results will be used to evaluate available business application systems for the compliance management in section 3. Section 4 gives a brief summary of the findings.

2 Existing Compliance Standards in the Nutrition Industry

In general, compliance is "the act of obeying an order, rule, or request" [Cad08]. For enterprises, compliance means to ensure that business activities conform to relevant standards, regulations, and other requirements. This includes the adherence to standards, which have been formed by the characteristics of a particular industry sector. Table 1 presents an overview on compliance standards supervised by the International Organization for Standardization (ISO), the International Featured Standards (IFS), the Safe Quality Food Institute (SQF) and the European Community (EC). The first three compliance standards, given in Table 1, focus on the requirements of a food safety and quality management to establish a transparent and uniform manufacturing practice. The other standards comprise quality rules and required product specifications concerning nutrition and health claims.

IFS and SQF are both benchmarked by the Global Food Safety Initiative, a non-profit organization promoting the continuous improvement of food safety management systems [If13; Sq13]. The two standards are based on other guidelines, suitable to analyze critical points in the manufacturing process. Related principles and guidelines are the Good Manufacturing Practice (GMP), the Hazard Analysis and Critical Control Points (HACCP) and the Quality Management Standard ISO 9001:2008. Obviously, current information systems have to cope with a wide range of content-related requirements on the one hand and system requirements on the other. In section 3 it will be investigated, if the presented standards of Table 1 are addressed by the top 100 European software companies.

No.	Standard	Published by	Update	Short Description of the Content
1	ISO 22000: 2005	International Organization for Standardization	2005	Requirements related to a food safety management system.
2	IFS Food Standard, Ed. 6	International Featured Standards	2012	Uniform evaluation system for food retail chains and trademarks.
3	SQF Code, Ed. 7.1	Safe Quality Food Institute	2013	Food safety and quality management system for good manufacturing and agricultural practices.
4	Regulation (EC) No. 1151/2012	European Community	2012	Definition of quality rules and product specification standards for food and agricultural products.
5	Regulation (EC) No. 178/2002	European Community	2002	Conventions on basic principles of food law, an appropriate risk mgmt. and documentation of the manufacturing process.
6	Regulation (EC) No. 1924/2006	European Community	2006	Provisions on the truthful declaration of product information concerning nutrition and health claims.

Table 1: Compliance Standards in the Nutrition Industry

3 Survey on Available Offerings for Compliance Management

We explored the commercial offerings for compliance management based on the list of the top 100 European software companies available from SOFTWARETOP100.ORG (www.softwaretop100.org) (c.f. Table 1). Out of this list, we selected only vendors with offerings that explicitly address compliance. In the first two columns, *Company* and *Product,* we provide the name of the company and the product, if possible. In the *Cat.*-column we specify the type of the offering being a (1) specialized compliance management software, (2) an ERP-system with integrated compliance management functionality, (3) integrated compliance management for multiple business applications, (4) services such as consulting or (5) other offerings. In the rightmost column *Supp.* we report on the explicit and (by the vendor) documented support that an offering provides in regard to the compliance standards introduced previously in Table 1. In Figure 1 we show the distribution of the offerings in respect to the five categories.

Company	Product	Cat.	Short Description of the Offering	Supp.
IBS AG	CompliantPro	1	Comprises software for quality and compliance management as well as services.	1
Leitsch Software	EASY ENTERPRISE	5	Document management system with integrated compliance functionality.	--
EPICOR	GRC Software Solutions	2	ERP-software that addresses governance, risk and compliance.	--
IT Compliance Systeme	(Service Offering)	4	Analysis of the IT-infrastructure regarding the adherence to laws and best practices.	--
Microsoft	Microsoft Dynamics	2	Adaptable ERP and CRM solutions.	(1)
Anaptis	(Service Offering)	4	Various consulting services with respect to the Microsoft Dynamics product.	(1)
Software AG	ARIS Risk & Compliance Manager	1	Process-driven solution for enterprise-wide governance, risk and compliance programs.	--
IBM	(Integrated Compliance Management Solutions)	3	Flexible solution covering e.g. ECM, web-compliance mgmt. and other aspects.	--
Symantec	i3 for ERP and CRM; Control Compliance Suite Risk Manager	1	Compliance aspects are partly addressed by i3; Symantec Control is focused on compliance.	1
Cisco Systems	Cisco Solutions	3	Various products with an overall emphasis on data security and data transmission security.	--
BMC Software	BMC Remedy IT Service Management Suite	3	Contains an IT-compliance management software for governance and controls mgmt.	--
SAP	mySAP ERP	3	Provides features for data analysis, reporting, finance and risk mgmt. e.g. for Sarbanes Oxley.	--
Mentor Graphics	Mentor Data Management System	5	Document management system with integrated compliance functionality.	--
IQMS	Manufacturing Execution System	2	The system provides interfaces to ERP-systems implementing compliance features.	--
TIBCO Software	TIBCO LogLogic	2	Connects to ERP-system and provides monitoring, audit processing, and compliance features.	--
accenture	Accenture Audit and Compliance Tool	2	Geared towards HR and IT-departments, mainly for personnel-related data mgmt.	--

Table 2: Commercial Offerings for Implementing Compliance in the Nutrition Industry
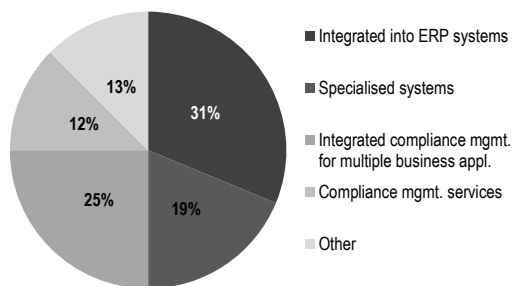
Figure 1: Frequency of Compliance Offerings
According to the Five Categories

Looking at the rightmost column of Table 1, it has to be noted that there is almost no officially documented support available for the compliance standards relevant for the nutrition industry. The only standard that is mentioned directly or indirectly (thus in brackets) is ISO 22000:2005. We had not expected this and it clearly calls for further research in order to shed light on the issue, why there is almost no information available.

Figure 1 shows that there is no clear prevalence of one category. This implies that there is no "silver bullet" to achieve compliance, rather different offerings and methods might be beneficial to achieve compliant business activities.

4 Summary and Outlook

We provided a short overview of compliance standards relevant to the nutrition industry and the support of these standards by the software industry. Surprisingly, IT-support for compliance in the nutrition industry seems to be either lacking or it is not documented. This calls for further action, either from software industry or research. The contribution of research might be to investigate the required structure, features and reward model of a knowledge base containing compliance standards and to support products as well as documented success stories and methods. Such a knowledge base should incorporate filtering techniques to tailor the provided information to the individual needs of nutrition companies e.g. based on industry, company size or preferred category of compliance offering. Moreover, it might be interesting to investigate possible reward models to keep the data current or to automatically populate the knowledge base using text extraction.

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