RFID and Sensor Network Automation in the Food Industry. Ensuring Quality and Safety through Supply Chain Visibility

Description:
Radio Frequency Identification (RFID) is a key technology in the food industry that facilitates real-time visibility of items as they move through the supply chain and on to the end-consumer. Among all the currently available automatic identification technologies, RFID has clear dominance in terms of its ability to support real-time two-way communication, data storage and update, authentication, ambient condition sense and report, batch read without direct line-of-sight, operation in harsh environments and sensor-based applications.

RFID and Sensor Network Automation in the Food Industry provides sufficient detail on the use of RFID and sensor networks from ‘farm to fork’ (F2F) to allow the reader to appreciate the myriad possible applications of RFID and associated sensor network systems throughout the entire food supply chain. This includes precision agriculture, the provision of seamless visibility in track and trace applications, reduction of wastage, identification of counterfeits and contamination sources, remaining shelf-life applications for perishables, and quality and safety measures, among others.

Providing state-of-the-art information from peer-reviewed research publications as well as general industry trends, this book will be of interest to all stakeholders in the agri-food supply chain, and academics and advanced students with an interest in these fields.

Contents:
Preface, xiii
Acknowledgments, xvii
Part I: Introduction
1 Book overview, 3
1.1 General trends, 4
1.1.1 Population growth, 4
1.1.2 Food quality and safety, 6
1.2 Challenges faced by the food industry, 7
1.2.1 Political, economic, and social influences, 8
1.2.2 Global warming, 9
1.3 Traceability in the food industry, 10
1.4 Structure of this book, 13
References, 15
2 RFID, sensor networks, 17
Summary, 17
2.1 History of RFID and relevant technologies, 17
2.1.1 AIDC technologies, 19
2.1.2 Applications, 22
5.2.3 Modeling traceability in the food chain, 124
5.2.4 Intelligent transition model of physical traceability, 125
5.2.5 Data analysis: An example of Bayesian network, 126
5.3 Global food supply chain e–collaboration, 129
5.3.1 EDI in the food industry, 130
5.3.2 RFID s impact on EDI in the food industry, 132
5.4 Cold–chain logistics with RFID, 133
5.5 Third–party certification (TPC), 135
5.6 Case studies, 141
5.6.1 Nut farming with RFID, 141
5.6.2 RFID for the best tasting beer, 143
5.6.3 RFID in the seafood supply chain, 145
References, 145
6 RFID in food retailing, 149
Summary, 149
6.1 Internationalized food marketing and retailing, 149
6.1.1 The international food retailing trend, 150
6.1.2 Structure of growth, 151
6.1.3 International food retailing in the 2000s, 152
6.1.4 The role of information technologies in global food retailing, 153
6.2 Dynamic food retailing management with RFID, 153
6.2.1 Dynamic item–level pricing framework, 154
6.2.2 Retailing with dynamic item–level pricing, 154
6.2.3 Dynamic pricing, 157
6.2.4 Knowledge–based system performance evaluation, 163
6.3 Multiple–channel retailing of food products, 170
6.3.1 Multiple–channel framework, 170
6.3.2 Consumer preference and consumer–targeted marketing, 173
6.3.3 Recommender systems, 174
6.3.4 Strategic implications, 176
6.4 Food retail inventory management, 182
6.4.1 Shelf life, 182
6.4.2 Perishable food item inventory management, 187
6.4.3 Number of facings, 189
6.5 Loyalty program and customer-relationship management with RFID, 193
   6.5.1 Consumer preference mining framework with RFID, 193
   6.5.2 Customer service optimization with consumer preference measurement, 198
   6.5.3 Functional Analysis with Item-Level Identification, 199
   6.5.4 Managerial insights, 203
References, 205
7 Sustainability and green food supply chain, 211
   Summary, 211
   7.1 CF and LCA, 213
   7.2 Challenges associated with CF for food items, 215
   7.3 Local food and the food miles concept, 217
   7.4 CO2e labels, 219
   7.5 Practicality of carbon footprint measurement and credit assignments, 220
   7.6 RFID use in carbon label information generation, 221
   7.7 Reducing emissions through supply-chain efficiency, 222
References, 223
8 Perishable food and cold-chain management, 227
   Summary, 227
   8.1 Cold-chain management, 227
   8.2 Traceability in cold chains, 229
   8.3 Contamination, ePedigree, supply-chain visibility, 231
   8.4 Food safety and traceability, 234
   8.5 RFID for traceability in cold chains, 235
   8.6 Case studies, 239
   8.6.1 Milk logistics to discover RFID, 239
   8.6.2 RFID Solution, 240
   8.6.3 Process and Communication Transparency, 241
References, 241
Part III: Food quality, safety, policy, and future
**Fax Order Form**

To place an order via fax simply print this form, fill in the information below and fax the completed form to 646-607-1907 (from USA) or +353-1-481-1716 (from Rest of World). If you have any questions please visit [http://www.researchandmarkets.com/contact/](http://www.researchandmarkets.com/contact/)

**Order Information**
Please verify that the product information is correct.

<table>
<thead>
<tr>
<th>Product Name:</th>
<th>RFID and Sensor Network Automation in the Food Industry. Ensuring Quality and Safety through Supply Chain Visibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web Address:</td>
<td><a href="http://www.researchandmarkets.com/reports/3619121/">http://www.researchandmarkets.com/reports/3619121/</a></td>
</tr>
<tr>
<td>Office Code:</td>
<td>SCDKACQT</td>
</tr>
</tbody>
</table>

**Product Format**
Please select the product format and quantity you require:

<table>
<thead>
<tr>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Copy (Hard Back):</td>
</tr>
</tbody>
</table>

* Shipping/Handling is only charged once per order.

**Contact Information**
Please enter all the information below in **BLOCK CAPITALS**

<table>
<thead>
<tr>
<th>Title:</th>
<th>Mr ☐ Mrs ☐ Dr ☐ Miss ☐ Ms ☐ Prof ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Name:</td>
<td>____________________________</td>
</tr>
<tr>
<td>Email Address: *</td>
<td>____________________________</td>
</tr>
<tr>
<td>Job Title:</td>
<td>____________________________</td>
</tr>
<tr>
<td>Organisation:</td>
<td>____________________________</td>
</tr>
<tr>
<td>Address:</td>
<td>____________________________</td>
</tr>
<tr>
<td>City:</td>
<td>____________________________</td>
</tr>
<tr>
<td>Postal / Zip Code:</td>
<td>____________________________</td>
</tr>
<tr>
<td>Country:</td>
<td>____________________________</td>
</tr>
<tr>
<td>Phone Number:</td>
<td>____________________________</td>
</tr>
<tr>
<td>Fax Number:</td>
<td>____________________________</td>
</tr>
</tbody>
</table>

* Please refrain from using free email accounts when ordering (e.g. Yahoo, Hotmail, AOL)
Payment Information

Please indicate the payment method you would like to use by selecting the appropriate box.

☐ Pay by credit card: You will receive an email with a link to a secure webpage to enter your credit card details.

☐ Pay by check: Please post the check, accompanied by this form, to:
Research and Markets,
Guinness Center,
Taylors Lane,
Dublin 8,
Ireland.

☐ Pay by wire transfer: Please transfer funds to:
Account number 833 130 83
Sort code 98-53-30
Swift code ULSBIE2D
IBAN number IE78ULSB98533083313083
Bank Address Ulster Bank,
27-35 Main Street,
Blackrock,
Co. Dublin,
Ireland.

If you have a Marketing Code please enter it below:

Marketing Code: ____________________________

Please note that by ordering from Research and Markets you are agreeing to our Terms and Conditions at http://www.researchandmarkets.com/info/terms.asp

Please fax this form to:
(646) 607-1907 or (646) 964-6609 - From USA
+353-1-481-1716 or +353-1-653-1571 - From Rest of World