*International Journal on Recent and Innovation Trends in Computing and Communication*
*ISSN: 2321-8169 Volume: 11 Issue: 3*
*Article Received: 20 January 2023 Revised: 15 February 2023 Accepted: 30 March 2023*

# RFID based systems and their perceptive: A review of the literature and future trends

***Manpreet Kaur***
Department of Computer Engineering
YDOE, Punjabi university
Patiala, 151302, India
arshchahal121@gmail.com

***Sukhwinder Singh Sran***
*Department of Computer Science & Engineering, Punjabi university*
*Patiala, 147002, India*
*sukhwinder.sran@gmail.com*

***Manoj Kumar***
Department of Computer Engineering
*YDOE, Punjabi university*
*Patiala, 151302, India*
*ermanojchaudhary@gmail.com*

**Abstract**— Internet of Things has endorsed a huge success in different smart applications of ubiquitous computing and Wireless Sensor Network's other applications. Due to IoT, the demand of many technologies like Radio Frequency Identification, Bluetooth etc. has raised in many fields and RFID gained a great interest of researchers. In this paper, we provide a general review of 264 academic articles that were published on RFID based systems to investigate the researchers' interest in RFID's different areas during 2006-2019. We categorize the research published in these journals into four main groups: RFID technology, RFID based localization, RFID applications, and others, like RFID tags collision, RFID security & privacy. The major focus of the research to provide helpful bits of knowledge to the researchers who want to work on RFID based systems in future. It is trusted that the survey will be a decent resource for any individual working in this research domain, and will encourage to explore this field in depth. At last, investigations, comparative analysis, suggestions and future trends for RFID based systems are also discussed in detail.

Keywords- Radio Frequency Identification (RFID), classifications, RFID tags, collision.

## I. INTRODUCTION

Radio Frequency Identification (RFID) has emerged as a hot topic in the field of Internet of Things (IoT). It has arisen as fundamental technology of inter-organizational systems to improve the quality and speed of supply chain's processes. There are many well-known organizations like Wal-Mart, Metro, Tesco, the US Defense Department etc., which are effectively using this technology from a long period of time. It also became an important part of many applications such as health care, asset tracking, location-based network access, manufacturing, games, government, industry, security, shopping, conference guides, tour guides etc.

Moreover, RFID is also used for the motive of both indoor and outdoor localization. As most of human beings spend their large amount of time (approx. 80%) [165] indoors to do different activities, so their accurate location information for different purposes became a fundamental demand. There is no standard exists for RFID based indoor localization, so according to our requirements and for a particular application for which we are going to use localization, we have to choose ourselves that which localization technique is to be chosen. In case of outdoor localization, an RFID tag is attached with an object and RFID readers are deployed at fixed positions. Whenever an RFID reader will scan that object having an RFID tag, it processes the recorded data and for further processing, send the results to a server on which the localization algorithm is running. [177].

The purpose of this paper is to provide a detailed review of RFID systems' literature that was published during 2006 to 2019. Further, it helps the creation and gathering of knowledge in this domain by summarizing RFID research categories and their perceptive. Basically, the objectives of this paper are as follows.

1. To develop a classification framework based on existing RFID research.
2. Utilize this classification framework to outline what is the current status of RFID research.
3. Analyses and review the RFID literature by considering both the existing quantitative developments and the qualitative matters that have been raised in a way that is beneficial for both practitioners and researchers.
4. To guide future RFID researchers for choosing a specific topic to explore.

## II. RESEARCH METHODOLOGY

It is expected that the findings of this paper will draw special attention to the importance of RFID technology and their perceptive. It also gives insights into current RFID based indoor and outdoor localization, its applications, collision, security & privacy related research for both practitioners and academics. Furthermore, it incorporates a methodical reference for the current RFID literature. As research in this field is moderately later, the extent of this examination is restricted to the time span of 2006-2019. This 14 years' time frame is regarded to be illustrative of the RFID literature.

To achieve the investigation points, the research is based on the examination of different journals, all of which are straightforwardly connected with RFID technology and its

*International Journal on Recent and Innovation Trends in Computing and Communication*
*ISSN: 2321-8169 Volume: 11 Issue: 3*
*Article Received: 20 January 2023 Revised: 15 February 2023 Accepted: 30 March 2023*

other classifications. As we accept that journals are the resources which are most usually used to collect data and deliver new discoveries, Master proposals, doctoral thesis, conference papers, text-books, news report, and unpublished papers are avoided. Research articles are dispersed over a range of journals due to the recent and a decent variety of this field of research, and thus a literature search was conducted using the following electronic databases:

1. IEEE/IEE Electronic Library
2. Science direct
3. ACM (Association for Computing Machinery) Digital Library
4. Scopus (Elsevier)

The literature search depended on the descriptors "RFID" as well as "Radio Frequency Identification", "RFID applications", "RFID localization", "RFID security, privacy, collision". The full content of each article was inspected to remove articles that are not related to RFID. In this survey, we distinguished 264 published papers for the period 2006-2019 that were published in 19 journals. However, the search was not complete, it works as a comprehensive basis for acquiring the knowledge of RFID research. Each article that was recovered through the search procedure was deliberately looked into before making a decision with respect to its consideration in the review.

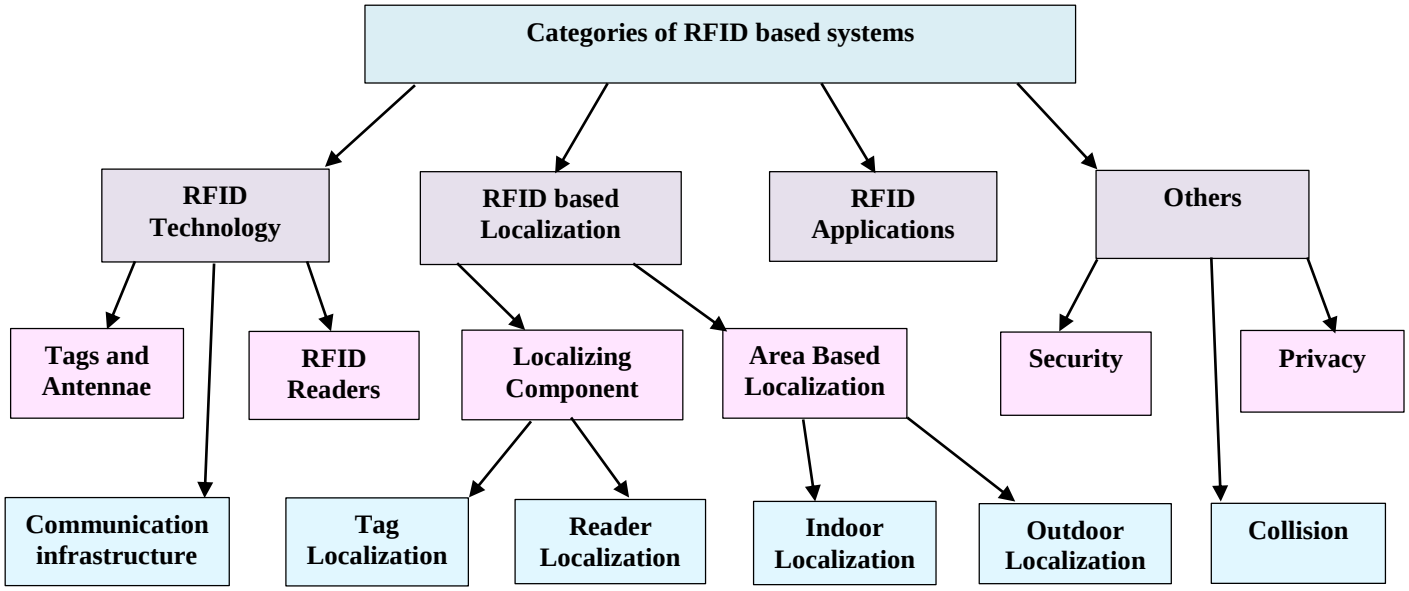


Figure 1. Categories of RFID based systems

## III. CLASSIFICATION METHOD

The paper includes a content-oriented classification of the RFID literature. We categorize the review of literature into four categories, namely, (A) RFID technology, (B) RFID Based Localization, (C) RFID Applications, (D) Others which includes (RFID tags Collision, RFID Security & Privacy). Each of these categories are divided into several sub-categories as shown in Fig 1. The explanation about all these categories is as follow: -

### *A. RFID Technology*

A classic RFID system generally made up of tags and readers, computing hardware, middleware and application software. Our center of attention is on those articles which are directly concerned to the RFID systems, like RFID tags and antennae, RFID readers, and communication infrastructure [90, 118]. We classify the RFID technology category into the sub-categories which are given below: -

#### *1) RFID tags and antennae*

An RFID tag contains an integrated circuit with microprocessor chip which works as memory. RFID tags are of two types: active RFID tags which have batteries and passive RFID tags which do not have batteries. Each tag has a unique identity (ID), that can be share with a reader that is using same tag protocol and working on the same frequency. The research area related to tags includes tags' design and their testing, manufacturing processes, process development and materials, performance analysis, and power resources for passive tags [95]. An antenna provides a channel between the tag and the reader for the communication of data. An RFID antenna has a reading range around it, in which the antenna can identify the tag.

An antenna's design and its placement have an important role to determine its coverage zone, its accuracy of communication with the tag, and its range to identify the tags [97, 107]. Antennae related research area includes the articles which focus on RFID chips and antennae.

#### *2) RFID readers*

An RFID reader is a device that can read the data from a compatible RFID tag and also has the privilege to write data to that tag. The main use of this communication between a tag and a reader, is to take the location information of any object with that the tag is attached [117]. An RFID reader will send this information to a server through the computer network. So, RFID technology is generally used for the tracking purpose of objects and human beings too. For the successful communication, the tags and the readers must work on the same

frequency and the protocols. The RFID readers are available in four different forms: handheld, vehicle-mounted, post-mounted, and hybrid [119]. The first three can read either passive or active tags, and the hybrid readers can switch between passive and active modes.

*3) Communication infrastructure*

It is the collection of wired and wireless network communications. The communication infrastructure executes a series of data transfer operations which deliver the data that are stored in a tag to the reader [123, 127]. The research area under this category includes the articles based on the relevant communication criteria, protocols, network connectivity issues, and Safe guards.

*B. RFID based localization*

RFID has become popular and typical application, spanning from asset tracking, service industries, logistics, and manufacturing, to supply chains. This large number of applications drives the price of RFID system down, and hence, create a reliable device for automatic identification [157]. RFID can be used for both indoor and outdoor localization. In present time, for outdoor localization, GPS technology is often used to locate people, equipment and other tangible objects. However, this technology might not be suitable for indoor localization since GPS requires a direct line-of-sight communication to the satellites [173]. There are various sub-categories of RFID based localization:

*1) On the basis of which part is localizing the missing entity*

- Tag Localization
- Reader Localization

*2) On the basis of area*

- Indoor localization
- Outdoor localization

*C. RFID applications*

RFID is a growing technology that has generally a number of applications in supply chain management, logistics, and manufacturing but it has numerous applications in other areas too. Its use is increasing day-by-day, so a number of companies which have successfully used this technology in real-world applications. Woodhead (2018) stated that this is one among the fast-growing technologies which have scope of applications in business intelligence [97]. We classify this category into sub-categories on the basis of its applications in different areas, as given below: -

- Business intelligence
- Healthcare system
- Knowledge prediction and management
- Animal identification, detection and monitoring
- Weather/temperature monitoring
- Grapevine management
- Farming/agriculture management
- Supply chain management
- Construction management
- Meat supply management
- Warehouse management
- others

*D. Others (RFID tags Collision, RFID Security & Privacy)*

Some other topics that are gaining interest for research are RFID tags collision, RFID security & privacy. The RFID based system is made up of one or more readers and a large number of tags. RFID reader is generally responsible for the proper management of communication among various tags which has their unique and unmodified identity. RFID reader can identify only one tag at a time. When a large number of tags send signal to reader for the identification purpose at the same time then collision can occur and identification of tags will become unsuccessful. There are generally three types of RFID collisions: - Tag to Tag collision, Tag to Reader collision and Reader to Reader collision [253, 259, 261].

The tag-to tag collision occurs when two or more tags try to communicate to a reader simultaneously and as a result no communication occur with any of the tags. Readers to Tag collision happens when more than one reader attempts to communicate with a single tag at the same time. In the Reader-to-Reader collision, transmission signal generated by one reader can be interfered by the communication of other readers in its RFID zone and therefore, the readers are unable to read tags.

Security and privacy methods are the fundamental requirement for the communications with sensing devices. Security issues surround around the vulnerabilities and confidential data protection from unauthorized access and modifications. If there is no security, then various security attacks like illicit tracking of RFID tags may affect the RFID system. Some other security issues include confidentiality, authentication, authorization, anonymity, nonrepudiation and integrity etc. So, for the normal functioning of the RFID communication system security mechanisms are very crucial [183]. On the other hand, privacy of RFID mainly works around the misuse of data by authorized users. Privacy can be controlled by limiting the range of tags, which in turn prevents personal information leakage [227, 247].

## IV. CLASSIFICATION RESULTS

In this paper, 264 articles from the different journals are classified based on the year of publication, research area and journal names. This review analysis will provide direction to choose a topic for the future research on the RFID technology and its applications by providing the historic growth of RFID in various fields (RFID localization, RFID collision, security & privacy, applications) over the years.

*A. Distribution of articles by year of publication*

The distribution of articles by year from, 2006-2019 is shown in Figure 2. The x-axis represents the number of published articles and y-axis provide years. The number of articles published in a particular year is shown in the above figure.

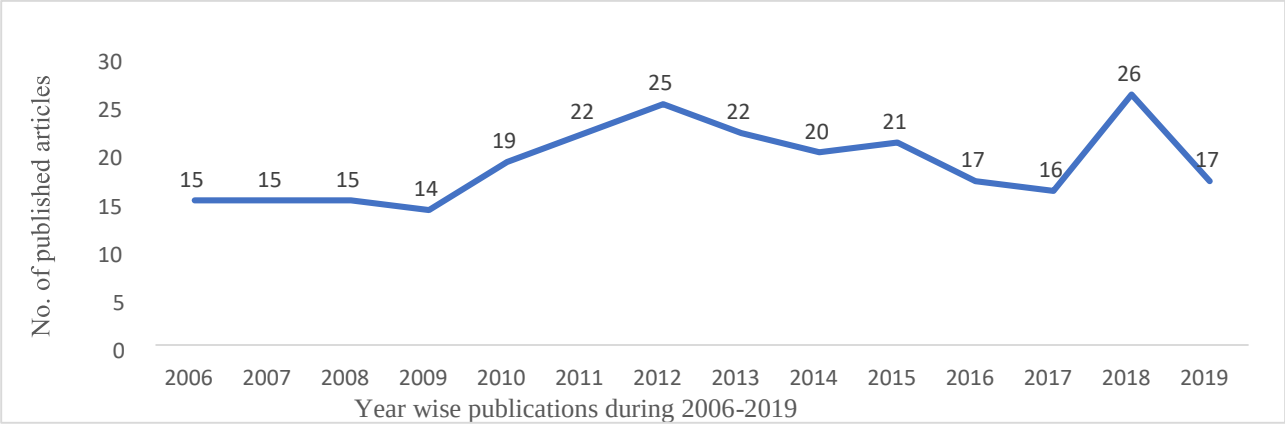


Figure 2. Distribution of articles by years

*B. Distribution of articles by journal*

From various disciplines such as engineering, IT, networking, business and management etc., a total of 19 journals included in our results list that published articles related to RFID topic in the period 2006-2019. Table 1 included the name of journals that published 13 or more articles related to RFID in this period and the number of articles published in journal. Computers and Electronics in Agriculture (64) and Automation in Construction (58) published most of these articles as shown in the Table 1.

TABLE 1. JOURNALS PUBLISHING 13 OR MORE ARTICLES ON RFID

| Name of Journal | No. of articles |
|---|---|
| 1. Information Systems Management (Taylor and Francis Online) | 17 |
| 2. Computers and Electronics in Agriculture {Elsevier} | 64 |
| 3. AEU-International Journal of Electronics and Communications {Elsevier} | 15 |
| 4. Microelectronics Reliability {Elsevier (ScienceDirect)} | 13 |
| 5. Automation in Construction {Elsevier} | 58 |
| 6. International Journal of Logistics Management (Emerald insight) | 18 |
| 7. Communications of the ACM | 17 |
| 8. Wireless Networks (Springer) | 23 |
| 9. International Journal of Advanced Manufacturing Technology (Springer) | 23 |

*C. Distribution of articles by topic*

The distribution of the articles is shown in Figure 3. Most of the articles are related to RFID applications (88 out of 264 or 33.33% of the total), with the least being published on RFID tag

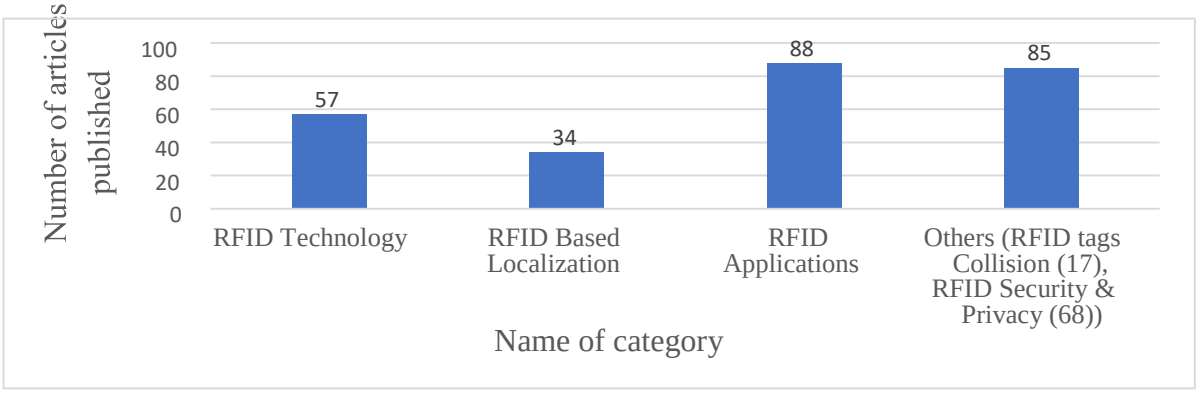


Figure 3. Distribution of articles by topic

collision (17 out of 264 or 6.44% of the total) as shown in figure 4. The number of articles related to each RFID application are listed in Table 2.

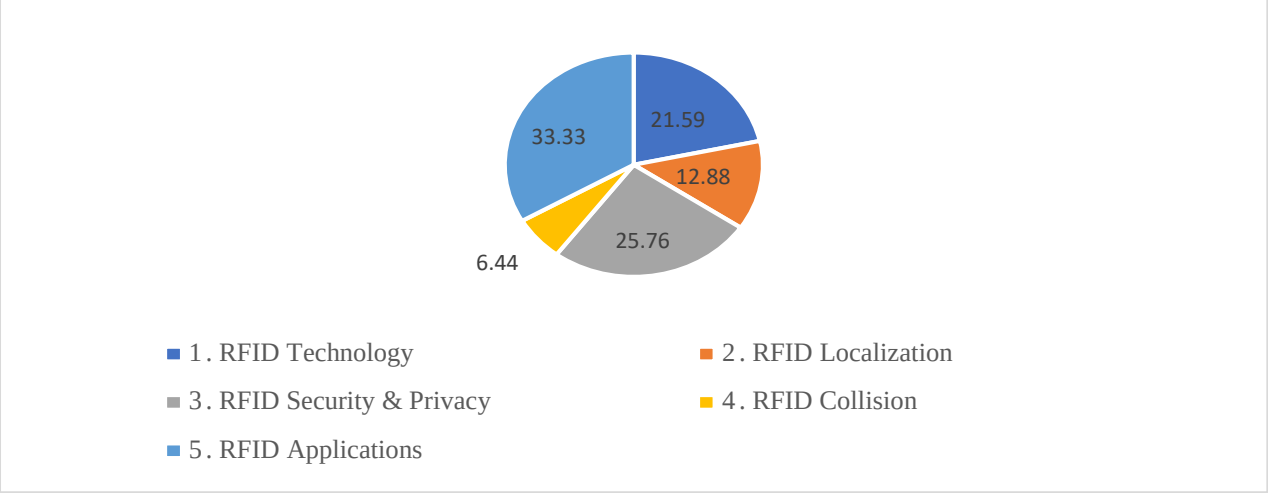


Figure 4. Percentage of articles by all subjects

TABLE 2. NUMBER OF ARTICLES OF EACH APPLICATION

| Application Name | Number of articles | Percentage by Subject | Percentage by all Subjects |
|---|---|---|---|
| 1. Business Intelligence [1-15] | 15 | 17.04 | 5.68 |
| 2. Healthcare Systems [16-22] | 6 | 6.89 | 2.27 |
| 3. Knowledge Prediction & Management [23] | 1 | 1.12 | 0.38 |
| 4. Animal Identification, Detection & Monitoring [24-36] | 13 | 14.77 | 4.92 |
| 5. Weather/Temperature Monitoring [37-42] | 6 | 6.89 | 2.27 |
| 6. Grapevine Management [43-46] | 4 | 4.45 | 1.52 |
| 7. Farming/Agricultural Management [47-54] | 8 | 9.1 | 3.03 |
| 8. Supply Chain Management [55-64] | 10 | 11.36 | 3.79 |
| 9. Construction Management [65-78] | 14 | 15.91 | 5.3 |
| 10. Meat Supply Management [79] | 1 | 1.12 | 0.38 |
| 11. Warehouse Management [80] | 1 | 1.12 | 0.38 |
| 12. Others [81-89] | 9 | 10.23 | 3.41 |
| | **88** | **100** | **33.33** |

TABLE 3. CLASSIFICATION OF ARTICLES RELATED TO COLLISION, SECURITY & PRIVACY

| Classification name | Number of articles | Percentage by subject | Percentage by all subjects |
|---|---|---|---|
| 1. Security [181-225] | 45 | 52.94 | 17.05 |
| 2. Privacy [226-248] | 23 | 27.06 | 8.71 |
| 3. Collision [249-263] | 17 | 20 | 6.44 |
| | **85** | **100** | **32.2** |

There are many applications of RFID that covers 12 different areas and have 88 articles (33.33%). From all these areas, business intelligence's applications have the highest number of publications. In business intelligence, RFID has been used in automation feature to increase the volume of data collection and speed for analysis. Other uses of RFID in businesses are antitheft control, inventory control and management, self-checkout systems etc. In most of the articles, a general view of

the RFID's use to improve the traditional business style, the businesses dealing with animals utilize the RFID for animal traceability, remote monitoring control etc. Some articles discuss the future of RFID technology's utilization, its benefits, challenges, and effects.

Like other wireless technologies, RFID also has a threat to collision, security and privacy, and it is also the main concern related to its applications. Table 3 includes the number of articles published on collision, security and privacy issues. More than half in this category, 45 articles (52.94%) are related with security issues, 23 articles (27.06%) deal with privacy issues and 17 articles cover collision related problems.

Table 4 includes classification of articles related to RFID. Among these, 21 articles (36.84%) deals with RFID tags, 9 articles (15.79%) cover RFID readers and highest number of articles 27 (47.37%) are related to communications infrastructure.

TABLE 4. CLASSIFICATION OF ARTICLES BASED ON RFID TECHNOLOGICAL PARTS

| RFID Technology's Part Name | Number of articles | Percentage by Subject | Percentage by all Subjects |
|---|---|---|---|
| 1. Tags & antennae [90-110] | 21 | 36.84 | 7.95 |
| 2. Readers [111-119] | 9 | 15.79 | 3.41 |
| 3. Communications infrastructure [120-146] | 27 | 47.37 | 10.23 |
| | **57** | **100** | **21.59** |

Table 5 presents the number of papers published on RFID based localization. It shows that tag localization has more publications, 11 articles (32.35%) than other localization techniques. Reader localization has 6 articles (17.65%), indoor localization has 7 articles (20.59%) and there are 10 articles (29.41%) articles are based on outdoor localization. Researchers are gaining interest to improve the quality of outdoor localization so that various outdoor localization techniques can be used by the public with confidence. The articles related to outdoor localization were generally included the methods to enhance the security and privacy of the users.

TABLE 5. CLASSIFICATION OF ARTICLES RELATED TO VARIOUS LOCALIZATION TECHNIQUES

| RFID Localization types | Number of articles | Percentage by subject | Percentage by all subjects |
|---|---|---|---|
| 1. Tag Localization [147-157] | 11 | 32.35 | 4.17 |
| 2. Reader Localization [158-163] | 6 | 17.65 | 2.27 |
| 3. Indoor Localization [164-170] | 7 | 20.59 | 2.65 |
| 4. Outdoor Localization [171-180] | 10 | 29.41 | 3.79 |
| | **34** | **100** | **12.88** |

## V. DISCUSSION AND CONCLUSION

Building and maintenance of relevant publications' reference collection is a critical part of any research. To represent the status of RFID technology, this paper is the first known academic literature review to the best of our knowledge during this time. It generates a database of RFID technology and its applications' academic literature from 2006-2019 by statistical and classification analysis. It also presents functional insights into the analysis of RFID literature identification, and provides a guide for future research work in this area. It is predicted that as the researchers' interest is growing on RFID, it will lead to a depletion in the proportion of descriptive or conceptual analyses on the side of analytically based studies. In recent years, RFID and its applications have gained much interest among the researchers and practitioners. This article provides several important inferences.

- Undoubtedly, RFID has become an emerging research area from last few years since 2009. According to the number of publications shown in Fig.1, it can be predicted that there will be a substantial development of RFID in the future.
- However, RFID has many applications in its long history, but till 2009 it was not a trusted and well used technology. With time as it improved by many security and privacy methods, its applications started growing in many industries.
- In this review paper, we discovered that RFID tags and readers related articles make up 52.6% of published literature on RFID. As a whole system's cost and performance depend upon the performance and cost of tags used in it. On the other hand, 47.4% articles are related to RFID networks which are made up with RFID based communication infrastructure.
- Among the RFID security, privacy and collision related articles, there are a smaller number of articles (17articles, 20%) related to collision. However, security and privacy have highest publications (68 articles, 80%) during the period 2006-2019 and that is why, RFID's applications increased during this time period than before. Another implication from this

analysis can be made that in future, RFID collision can gain more interest of researchers to make it more useful technology.

- This review shows that the RFID based localization has least number of publications (34 articles, 12.88%). From all types of localizations, reader-based localization has just 6 publications over the period 2006-2019 and most of the publications discuss technical issues of this technology in spite of the business issues.
- Our review highlights the truth that the most of the research articles has been published in the more technical journals of IEEE, ACM, Elsevier etc. However, in future as the focus of researchers will shifts from technical issues to the business issues, we can expect to have more research articles published in business and management related journals.

## VI. FUTURE RESEARCH DIRECTIONS

This literature review shows that most of the research is done on the RFID applications (33.33%) and the various components of RFID technology like tags & antennae, readers and communication infrastructure (21.59%). Till 2013, there were a smaller number of articles on business and organizational areas, but with time as the RFID technology grows, we see researchers' interest on these less developed areas such as collision, security & privacy etc.

There is no standard which provide specific set of protocols for an RFID system's designing, evaluation and implementation processes. So, we believe that to develop this technology at large scale, further research is needed. Although, RFID has numerous applications in different fields, but it has many challenges too which need to be overcome.

For future to extend this work, the papers of conference proceedings, doctoral dissertations, magazines can be included as this review article only includes the journal articles. Further, for the more recent analysis, publications of 2022-2024 can also be included.

## REFERENCES

[1] W. Laurier and G. Poels, "Track and trace future, and past product and money flows with a resource-event-agent model," *Inf. Syst. Manag.*, vol. 29, no. 2, pp. 123–136, 2012.

[2] C. M. Olszak, "Toward better understanding and use of business intelligence in organizations," *Inf. Syst. Manag.*, vol. 33, no. 2, pp. 105–123, 2016.

[3] F. Biocca, C. Owen, A. Tang, and C. Bohil, "Attention issues in spatial information systems: Directing mobile users' visual attention using augmented reality," *J. Manag. Inf. Syst.*, vol. 23, no. 4, pp. 163–184, 2007.

[4] J.-P. Qian, X.-T. Yang, X.-M. Wu, L. Zhao, B.-L. Fan, and B. Xing, "A traceability system incorporating 2D barcode and RFID technology for wheat flour mills," *Comput. Electron. Agric.*, vol. 89, pp. 76–85, 2012.

[5] C. Shanahan, B. Kernan, G. Ayalew, K. McDonnell, F. Butler, and S. Ward, "A framework for beef traceability from farm to slaughter using global standards: an Irish perspective," *Comput. Electron. Agric.*, vol. 66, no. 1, pp. 62–69, 2009.

[6] J. Santa, M. A. Zamora-Izquierdo, A. J. Jara, and A. F. Gomez-Skarmeta, "Telematic platform for integral management of agricultural/perishable goods in terrestrial logistics," *Comput. Electron. Agric.*, vol. 80, pp. 31–40, 2012.

[7] C. E. Realini and B. Marcos, "Active and intelligent packaging systems for a modern society," *Meat Sci.*, vol. 98, no. 3, pp. 404–419, 2014.

[8] J. Virkki, T. Bjorninen, T. Kellomaki, S. Merilampi, L. Shafiq, L. Ukkonen, L. Sydanheimo, and Y. C. Chan, "Reliability of washable wearable screen-printed UHF RFID tags," *Microelectron. Reliab.*, vol. 54, no. 4, pp. 840–846, 2014.

[9] J. Song, C. T. Haas, C. Caldas, E. Ergen, and B. Akinci, "Automating the task of tracking the delivery and receipt of fabricated pipe spools in industrial projects," *Autom. Constr.*, vol. 15, no. 2, pp. 166–177, 2006.

[10] D. Grau, L. Zeng, and Y. Xiao, "Automatically tracking engineered components through shipping and receiving processes with passive identification technologies," *Autom. Constr.*, vol. 28, pp. 36–44, 2012.

[11] S. Goyal, B. C. Hardgrave, J. A. Aloysius, and N. DeHoratius, "The effectiveness of RFID in backroom and sales floor inventory management," *Int. J. Logistics Manag.*, 2016.

[12] M. Periša, T. M. Kuljanić, I. Cvitić, and P. Kolarovszki, "Conceptual model for informing user with innovative smart wearable device in industry 4.0," *Wireless Networks*, vol. 27, no. 3, pp. 1615–1626, 2021.

[13] K. Penttilä, M. Keskilammi, L. Sydänheimo, and M. Kivikoski, "Radio frequency technology for automated manufacturing and logistics control. Part 2: RFID antenna utilisation in industrial applications," *The International Journal of Advanced Manufacturing Technology*, vol. 31, no. 1, pp. 116-124, 2006.

[14] S. Zhou, W. Ling, and Z. Peng, "An RFID-based remote monitoring system for enterprise internal production management," *The International Journal of Advanced Manufacturing Technology*, vol. 33, no. 7, pp. 837-844, 2007.

[15] C. Saygin, "Adaptive inventory management using RFID data," *The International Journal of Advanced Manufacturing Technology*, vol. 32, no. 9, pp. 1045-1051, 2007.

[16] M. Bick, T.-F. Kummer, and S. Ryschka, "Determining anxieties in relation to ambient intelligence—explorative findings from hospital settings," *Information Systems Management*, vol. 32, no. 1, pp. 60-71, 2015.

[17] J. López-Martínez, J. L. Blanco-Claraco, J. Pérez-Alonso, and Á. J. Callejón-Ferre, "Distributed network for measuring climatic parameters in heterogeneous environments: Application in a greenhouse," *Computers and Electronics in Agriculture*, vol. 145, pp. 105-121, 2018.

[18] R. A. Eigenberg, T. M. Brown-Brandl, and J. A. Nienaber, "Sensors for dynamic physiological measurements," *Computers and Electronics in Agriculture*, vol. 62, no. 1, pp. 41-47, 2008.

[19] R. Punj and R. Kumar, "Technological aspects of WBANs for health monitoring: a comprehensive review," *Wireless Networks*, vol. 25, no. 3, pp. 1125-1157, 2019.

[20] A. Onasanya, S. Lakkis, and M. Elshakankiri, "Implementing IoT/WSN based smart Saskatchewan healthcare system," *Wireless Networks*, vol. 25, no. 7, pp. 3999-4020, 2019.

[21] U. Kose and P. Vasant, "Better campus life for visually impaired University students: intelligent social walking system with beacon and assistive technologies," *Wireless Networks*, vol. 26, no. 7, pp. 4789-4803, 2020.

[22] Y. K. Dwivedi et al., "Research trends in knowledge management: Analyzing the past and predicting the future," *Information Systems Management*, vol. 28, no. 1, pp. 43-56, 2011.

[23] L. R. Williams et al., "Use of radio frequency identification (RFID) technology to record grazing beef cattle water point use," *Computers and Electronics in Agriculture*, vol. 156, pp. 193-202, 2019.

[24] G. T. Sales et al., "Quantifying detection performance of a passive low-frequency RFID system in an environmental preference chamber for laying hens," *Computers and Electronics in Agriculture*, vol. 114, pp. 261-268, 2015.

[25] F. Adrion et al., "Monitoring trough visits of growing-finishing pigs with UHF-RFID," *Computers and Electronics in Agriculture*, vol. 144, pp. 144-153, 2018.

[26] K. Reiners et al., "Application of RFID technology using passive HF transponders for the individual identification of weaned piglets at the feed trough," *Computers and Electronics in Agriculture*, vol. 68, no. 2, pp. 178-184, 2009.

[27] A. S. Voulodimos et al., "A complete farm management system based on animal identification using RFID technology,"

*Computers and Electronics in Agriculture*, vol. 70, no. 2, pp. 380-388, 2010.

[28] A. Samad et al., "High-credibility RFID-based animal data recording system suitable for small-holding rural dairy farmers," *Computers and Electronics in Agriculture*, vol. 73, no. 2, pp. 213-218, 2010.

[29] E. S. Nadimi et al., "ZigBee-based wireless sensor networks for monitoring animal presence and pasture time in a strip of new grass," *Computers and Electronics in Agriculture*, vol. 61, no. 2, pp. 79-87, 2008.

[30] T. M. Brown-Brandl et al., "Analysis of feeding behavior of group housed growing–finishing pigs," *Computers and Electronics in Agriculture*, vol. 96, pp. 246-252, 2013.

[31] X. Tu et al., "A real-time automated system for monitoring individual feed intake and body weight of group housed turkeys," *Computers and Electronics in Agriculture*, vol. 75, no. 2, pp. 313-320, 2011.

[32] F. Adrion et al., "Novel approach to determine the influence of pig and cattle ears on the performance of passive UHF-RFID ear tags," *Computers and Electronics in Agriculture*, vol. 140, pp. 168-179, 2017.

[33] N. Hammer et al., "Methodology of a dynamic test bench to test ultra-high-frequency transponder ear tags in motion," *Computers and Electronics in Agriculture*, vol. 113, pp. 81-92, 2015.

[34] T. Volk et al., "RFID technology for continuous monitoring of physiological signals in small animals," *IEEE Transactions on Biomedical Engineering*, vol. 62, no. 2, pp. 618-626, 2014.

[35] R. Krigslund et al., "A novel technology for motion capture using passive UHF RFID tags," *IEEE Transactions on Biomedical Engineering*, vol. 60, no. 5, pp. 1453-1457, 2012.

[36] R. Badia-Melis et al., "Assessing the dynamic behavior of WSN motes and RFID semi-passive tags for temperature monitoring," *Computers and Electronics in Agriculture*, vol. 103, pp. 11-16, 2014.

[37] Y. G. Ampatzidis et al., "Development and evaluation of a novel system for monitoring harvest labor efficiency," *Computers and Electronics in Agriculture*, vol. 88, pp. 85-94, 2012.

[38] G. Vellidis et al., "A real-time wireless smart sensor array for scheduling irrigation," *Computers and Electronics in Agriculture*, vol. 61, no. 1, pp. 44-50, 2008.

[39] R. Jedermann et al., "Spatial temperature profiling by semi-passive RFID loggers for perishable food transportation," *Computers and Electronics in Agriculture*, vol. 65, no. 2, pp. 145-154, 2009.

[40] S. Lahokallio et al., "Effects of different test profiles of temperature cycling tests on the reliability of RFID tags," *Microelectronics Reliability*, vol. 55, no. 1, pp. 93-100, 2015.

[41] R. Cauchois et al., "RFID tags for cryogenic applications: Experimental and numerical analysis of thermo-mechanical behaviour," *Microelectronics Reliability*, vol. 53, no. 6, pp. 885-891, 2013.

[42] A. Luvisi et al., "Radiofrequency applications in grapevine: From vineyard to web," *Computers and Electronics in Agriculture*, vol. 70, no. 1, pp. 256-259, 2010.

[43] A. Luvisi et al., "Virtual vineyard for grapevine management purposes: A RFID/GPS application," *Computers and Electronics in Agriculture*, vol. 75, no. 2, pp. 368-371, 2011.

[44] X. Xiao et al., "Battery-free wireless sensor system with compressed sensing for table grapes cold chain," *Computers and Electronics in Agriculture*, vol. 163, p. 104869, 2019.

[45] A. Luvisi et al., "Application of tracking implants in grape hybrids: Adjustments to production practices and new health-compliant methodologies," *Computers and Electronics in Agriculture*, vol. 108, pp. 130-134, 2014.

[46] L. Tarjan et al., "A readability analysis for QR code application in a traceability system," *Computers and Electronics in Agriculture*, vol. 109, pp. 1-11, 2014.

[47] L. Mainetti et al., "An innovative and low-cost gapless traceability system of fresh vegetable products using RF technologies and EPCglobal standard," *Computers and Electronics in Agriculture*, vol. 98, pp. 146-157, 2014.

[48] J. Qian, X. Yang, X. Wu, B. Xing, B. Wu, and M. Li, "Farm and environment information bidirectional acquisition system with individual tree identification using smartphones for orchard precision management," *Computers and Electronics in Agriculture*, vol. 116, pp. 101-108, 2015.

[49] Y. Han, K. Wang, Z. Liu, Q. Zhang, S. Pan, X. Zhao, and S. Wang, "A crop trait information acquisition system with multitag-based identification technologies for breeding precision management," *Computers and Electronics in Agriculture*, vol. 135, pp. 71-80, 2017.

[50] A. Luvisi, A. Panattoni, and A. Materazzi, "RFID temperature sensors for monitoring soil solarization with biodegradable films," *Computers and Electronics in Agriculture*, vol. 123, pp. 135-141, 2016.

[51] M. Thakur, B. J. Martens, and C. R. Hurburgh, "Data modeling to facilitate internal traceability at a grain elevator," *Computers and Electronics in Agriculture*, vol. 75, no. 2, pp. 327-336, 2011.

[52] R. Van Haaren, N. Themelis, and N. Goldstein, "The state of garbage in America," *BioCycle*, vol. 51, no. 10, pp. 16-23, 2010.

[53] T. Chi and M. Chen, "A frequency hopping method for spatial RFID/WiFi/Bluetooth scheduling in agricultural IoT," *Wireless Networks*, vol. 25, no. 2, pp. 805-817, 2019.

[54] M. R. Salehi, R. Dastanian, E. Abiri, and S. Nejadhasan, "A 147 μW, 0.8 V and 7.5 (mV/V) LIR regulator for UHF RFID application," *AEU - International Journal of Electronics and Communications*, vol. 69, no. 1, pp. 133-140, 2015.

[55] J. Sun and C.-H. Wu, "A broadband circularly polarized antenna of square-ring patch for UHF RFID reader applications," *AEU - International Journal of Electronics and Communications*, vol. 85, pp. 84-90, 2018.

[56] S. Soodmand and T. W. C. Brown, "Inductively coupled small self-resonant coil (SSRC) reader antennas for HF RFID applications," *AEU - International Journal of Electronics and Communications*, vol. 78, pp. 32-40, 2017.

[57] Z. Tang, Y.-G. He, and Y. Wang, "Broadband UHF RFID tag antenna with quasi-isotropic radiation performance," *AEU - International Journal of Electronics and Communications*, vol. 65, no. 10, pp. 859-863, 2011.

[58] L. Wang, J. S. L. Ting, and W. H. Ip, "Design of supply-chain pedigree interactive dynamic explore (SPIDER) for food safety and implementation of hazard analysis and critical control points (HACCPs)," *Computers and Electronics in Agriculture*, vol. 90, pp. 14-23, 2013.

[59] F. Niederman, R. G. Mathieu, R. Morley, and I.-W. Kwon, "Examining RFID applications in supply chain management," *Communications of the ACM*, vol. 50, no. 7, pp. 92-101, 2007.

[60] B. L. Dos Santos and L. S. Smith, "RFID in the supply chain: panacea or Pandora's box?," *Communications of the ACM*, vol. 51, no. 10, pp. 127-131, 2008.

[61] I. Angell and J. Kietzmann, "RFID and the end of cash?," *Communications of the ACM*, vol. 49, no. 12, pp. 90-96, 2006.

[62] N. Singh, K.-h. Lai, and T. C. E. Cheng, "Intra-organizational perspectives on IT-enabled supply chains," *Communications of the ACM*, vol. 50, no. 1, pp. 59-65, 2007.

[63] V. Hinkka, M. Häkkinen, J. Holmström, and K. Främling, "Supply chain typology for configuring cost-efficient tracking in fashion logistics," *The International Journal of Logistics Management*, vol. 26, no. 2, pp. 239-255, 2015.

[64] T. Cheng, M. Venugopal, J. Teizer, and P. A. Vela, "Performance evaluation of ultra wideband technology for construction resource location tracking in harsh environments," *Automation in Construction*, vol. 20, no. 8, pp. 1173-1184, 2011.

[65] V. Hinkka and J. Tätilä, "RFID tracking implementation model for the technical trade and construction supply chains," *Automation in Construction*, vol. 35, pp. 405-414, 2013.

[66] W. Wu, H. Yang, D. A. S. Chew, S.-h. Yang, A. G. F. Gibb, and Q. Li, "Towards an autonomous real-time tracking system of near-miss accidents on construction sites," *Automation in Construction*, vol. 19, no. 2, pp. 134-141, 2010.

[67] H. Li, G. Chan, J. K. W. Wong, and M. Skitmore, "Real-time locating systems applications in construction," *Automation in Construction*, vol. 63, pp. 37-47, 2016.

[68] R. Dzeng, C.-W. Lin, and F.-Y. Hsiao, "Application of RFID tracking to the optimization of function-space assignment in buildings," *Automation in Construction*, vol. 40, pp. 68-83, 2014.

[69] R. Kanan, O. Elhassan, and R. Bensalem, "An IoT-based autonomous system for workers' safety in construction sites with real-time alarming, monitoring, and positioning strategies," *Automation in Construction*, vol. 88, pp. 73-86, 2018.

[70] C. Cho, S. Kwon, T.-H. Shin, S. Chin, and Y.-S. Kim, "A development of next generation intelligent construction liftcar toolkit for vertical material movement management," *Automation in Construction*, vol. 20, no. 1, pp. 14-27, 2011.

[71] L. Wang, "Enhancing construction quality inspection and management using RFID technology," *Automation in Construction*, vol. 17, no. 4, pp. 467-479, 2008.

[72] W. Lu, G. Q. Huang, and H. Li, "Scenarios for applying RFID technology in construction project management," *Automation in Construction*, vol. 20, no. 2, pp. 101-106, 2011.

[73] S. Chae and T. Yoshida, "Application of RFID technology to prevention of collision accident with heavy equipment," *Automation in Construction*, vol. 19, no. 3, pp. 368-374, 2010.

[74] W. Wu, H. Yang, Q. Li, D. Chew, "Towards an autonomous real-time tracking system of near-miss accidents on construction sites," *Automation in Construction*, vol. 19, no. 2, pp. 134-141, 2010.

[75] F. Xue, K. Chen, W. Lu, Y. Niu, and G. Q. Huang, "Linking radio-frequency identification to Building Information Modeling: Status quo, development trajectory and guidelines for practitioners," *Automation in Construction*, vol. 93, pp. 241-251, 2018.

[76] W. Wu, H. Yang, Q. Li, and D. Chew, "An integrated information management model for proactive prevention of struck-by-falling-object accidents on construction sites," *Automation in Construction*, vol. 34, pp. 67-74, 2013.

[77] S. Yoon, S. Chin, Y. Kim, and S. Kwon, "An application model of RFID technology on progress measurement and management of construction works," in *Proceedings of the 23rd International Symposium on Automation and Robotics in Construction (ISARC 2006)*, Tokyo, Japan, vol. 35, 2006.

[78] A. B. L. Larsen, M. S. Hviid, M. E. Jørgensen, R. Larsen, and A. L. Dahl, "Vision-based method for tracking meat cuts in slaughterhouses," *Meat Science*, vol. 96, no. 1, pp. 366-372, 2014.

[79] B. S. Vijayaraman and B. A. Osyk, "An empirical study of RFID implementation in the warehousing industry," *The International Journal of Logistics Management*, vol. 17, no. 3, pp. 299-314, 2006.

[80] P. Jacob, W. Knecht, A. Kunz, G. Nicoletti, T. Lautenschlager, M. Mondada, and D. Pachoud, "Reading distance degradation mechanisms of near-field RFID devices," *Microelectronics Reliability*, vol. 49, no. 9-11, pp. 1288-1292, 2009.

[81] R. Azimi, S. H. Lee, S. M. AbouRizk, and A. Alvanchi, "A framework for an automated and integrated project monitoring and control system for steel fabrication projects," *Automation in Construction*, vol. 20, no. 1, pp. 88-97, 2011.

[82] X. Tao, C. Mao, F. Xie, G. Liu, and P. Xu, "Greenhouse gas emission monitoring system for manufacturing prefabricated components," *Automation in Construction*, vol. 93, pp. 361-374, 2018.

[83] Y. Zhang and L. Bai, "Rapid structural condition assessment using radio frequency identification (RFID) based wireless strain sensor," *Automation in Construction*, vol. 54, pp. 1-11, 2015.

[84] D. P. Rose, M. E. Ratterman, D. K. Griffin, L. Hou, N. Kelley-Loughnane, R. R. Naik, J. A. Hagen, I. Papautsky, and J. C. Heikenfeld, "Adhesive RFID sensor patch for monitoring of sweat electrolytes," *IEEE Transactions on Biomedical Engineering*, vol. 62, no. 6, pp. 1457-1465, 2014.

[85] R. S. Chen, M. A. Tu, and J. S. Jwo, "An RFID-based enterprise application integration framework for real-time management of dynamic manufacturing processes," *The International Journal of Advanced Manufacturing Technology*, vol. 50, no. 9, pp. 1217-1234, 2010.

[86] M. Schmidt, L. Thoroe, and M. Schumann, "RFID and barcode in manufacturing logistics: interface concept for concurrent operation," *Information Systems Management*, vol. 30, no. 2, pp. 100-115, 2013.

[87] G. Q. Huang, Y. F. Zhang, and P. Y. Jiang, "RFID-based wireless manufacturing for real-time management of job shop WIP inventories," *The International Journal of Advanced Manufacturing Technology*, vol. 36, no. 7, pp. 752-764, 2008.

[88] D. Li, D. Kehoe, and P. Drake, "Dynamic planning with a wireless product identification technology in food supply chains," *The International Journal of Advanced Manufacturing Technology*, vol. 30, no. 9, pp. 938-944, 2006.

[89] R. V. Barenji, A. V. Barenji, and M. Hashemipour, "A multi-agent RFID-enabled distributed control system for a flexible manufacturing shop," *The International Journal of Advanced Manufacturing Technology*, vol. 71, no. 9, pp. 1773-1791, 2014.

[90] R. S. Poston, R. B. Reynolds, and M. L. Gillenson, "Technology solutions for improving accuracy and availability of healthcare records," *Information Systems Management*, vol. 24, no. 1, pp. 59-71, 2006.

[91] M. Maillart, A. Kamrani, B. A. Norman, J. Rajgopal, and P. J. Hawrylak, "Optimizing RFID tag-inventorying algorithms," *IIE Transactions*, vol. 42, no. 9, pp. 690-702, 2010.

[92] Y. G. Ampatzidis and S. G. Vougioukas, "Field experiments for evaluating the incorporation of RFID and barcode registration and digital weighing technologies in manual fruit harvesting," *Computers and Electronics in Agriculture*, vol. 66, no. 2, pp. 166-172, 2009.

[93] J. P. Kerry, M. N. O'grady, and S. A. Hogan, "Past, current and potential utilisation of active and intelligent packaging systems for meat and muscle-based products: A review," *Meat Science*, vol. 74, no. 1, pp. 113-130, 2006.

[94] M. Ruiz-Altisent et al., "Sensors for product characterization and quality of specialty crops—A review," *Computers and Electronics in Agriculture*, vol. 74, no. 2, pp. 176-194, 2010.

[95] T. Than, G. Alici, H. Zhou, and W. Li, "A review of localization systems for robotic endoscopic capsules," *IEEE Transactions on Biomedical Engineering*, vol. 59, no. 9, pp. 2387-2399, 2012.

[96] H. Guo, Y. Yu, and M. Skitmore, "Visualization technology-based construction safety management: A review," *Automation in Construction*, vol. 73, pp. 135-144, 2017.

[97] R. Woodhead, P. Stephenson, and D. Morrey, "Digital construction: From point solutions to IoT ecosystem," *Automation in Construction*, vol. 93, pp. 35-46, 2018.

[98] W. Wu, L. Yue, A. Jin, and D. C. Yen, "Smart supply chain management: a review and implications for future research," *The International Journal of Logistics Management*, vol. 27, no. 3, pp. 601-617, 2016.

[99] Y. Lai, H. Sun, and J. Ren, "Understanding the determinants of big data analytics (BDA) adoption in logistics and supply chain management: An empirical investigation," *The International Journal of Logistics Management*, vol. 29, no. 2, pp. 757-776, 2018.

[100] P. G. Neumann and L. Weinstein, "Risks of RFID," *Communications of the ACM*, vol. 49, no. 5, p. 136, 2006.

[101] S. Chaudhuri, U. Dayal, and V. Narasayya, "An overview of business intelligence technology," *Communications of the ACM*, vol. 54, no. 8, pp. 88-98, 2011.

[102] O. Johansson and D. Hellström, "The effect of asset visibility on managing returnable transport items," *International Journal of Physical Distribution & Logistics Management*, 2007.

[103] W. Laursen, "Managing the mega flock (individual animal management systems)," *IEE Review*, vol. 52, no. 2, pp. 38-42, 2006.

[104] M. Zeldin, "Touching the future: The promise of mentoring," in *Touching the Future: Mentoring and the Jewish Professional*, 2008, pp. 12-27.

[105] K. Koski et al., "Inkjet-printed passive UHF RFID tags: review and performance evaluation," *The International Journal of

Advanced Manufacturing Technology*, vol. 62, no. 1, pp. 167-182, 2012.

[106] L. Xie et al., "A low power clock generator with self-calibration for UHF RFID tags in intelligent terrestrial sensor networks," *Wireless Networks*, vol. 25, no. 1, pp. 19-30, 2019.

[107] G. J. Suma and R. V. S. Lalitha, "Vehicular Ad hoc Networks: A hybrid approach to data dissemination in exigency situations," *Wireless Networks*, vol. 22, no. 5, pp. 1725-1737, 2016.

[108] J. C. Chen et al., "Warehouse management with lean and RFID application: a case study," *The International Journal of Advanced Manufacturing Technology*, vol. 69, no. 1, pp. 531-542, 2013.

[109] S.-h. Gwon et al., "Advanced RFID application for a mixed-product assembly line," *The International Journal of Advanced Manufacturing Technology*, vol. 56, no. 1, pp. 377-386, 2011.

[110] G. H. Gessner, L. Volonino, and L. A. Fish, "One-up, one-back ERM in the food supply chain," *Information Systems Management*, vol. 24, no. 3, pp. 213-222, 2007.

[111] V. Mirzabeiki, J. Holmström, and K. Främling, "Collaborative tracking and tracing: the value of a composite design," *The International Journal of Logistics Management*, vol. 25, no. 3, pp. 522-536, 2014.

[112] Z. Wang and Y. Yu, "Robust production control policy for a single machine and single part-type manufacturing system with inaccurate observation of production surplus," *IIE Transactions*, vol. 44, no. 12, pp. 1061-1082, 2012.

[113] N. Wang, N. Zhang, and M. Wang, "Wireless sensors in agriculture and food industry—Recent development and future perspective," *Computers and Electronics in Agriculture*, vol. 50, no. 1, pp. 1-14, 2006.

[114] S. Majidifar et al., "A novel phase coding method in chipless RFID systems," *AEU-International Journal of Electronics and Communications*, vol. 69, no. 7, pp. 974-980, 2015.

[115] X. Zhao et al., "Wideband high gain circularly polarized UHF RFID reader microstrip antenna and array," *AEU-International Journal of Electronics and Communications*, vol. 77, pp. 76-81, 2017.

[116] Y. Tu et al., "An improved 860–960 MHz fully integrated CMOS power amplifier designation for UHF RFID transmitter," *AEU-International Journal of Electronics and Communications*, vol. 67, no. 7, pp. 574-577, 2013.

[117] S. Fiocchi et al., "Temperature increase in the fetus exposed to UHF RFID readers," *IEEE Transactions on Biomedical Engineering*, vol. 61, no. 7, pp. 2011-2019, 2014.

[118] A. Colin et al., "An energy-aware debugger for intermittently powered systems," *IEEE Micro*, vol. 37, no. 3, pp. 116-125, 2017.

[119] C. Bardaki, P. Kourouthanassis, and K. Pramatari, "Deploying RFID-enabled services in the retail supply chain: lessons learned toward the internet of things," *Information Systems Management*, vol. 29, no. 3, pp. 233-245, 2012.

[120] J. E. Scott, "Mobility, business process management, software sourcing, and maturity model trends: propositions for the IS organization of the future," *Information Systems Management*, vol. 24, no. 2, pp. 139-145, 2007.

[121] H. Cavusoglu et al., "Information technology diffusion with influentials, imitators, and opponents," *Journal of Management Information Systems*, vol. 27, no. 2, pp. 305-334, 2010.

[122] G. M. Gaukler and W. H. Hausman, "RFID in mixed-model automotive assembly operations: process and quality cost savings," *IIE Transactions*, vol. 40, no. 11, pp. 1083-1096, 2008.

[123] L. Ruiz-Garcia and L. Lunadei, "The role of RFID in agriculture: Applications, limitations and challenges," *Computers and Electronics in Agriculture*, vol. 79, no. 1, pp. 42-50, 2011.

[124] W. Nam et al., "A Wireless Sensor Network (WSN) application for irrigation facilities management based on Information and Communication Technologies (ICTs)," *Computers and Electronics in Agriculture*, vol. 143, pp. 185-192, 2017.

[125] A. I. Awad, "From classical methods to animal biometrics: A review on cattle identification and tracking," *Computers and Electronics in Agriculture*, vol. 123, pp. 423-435, 2016.

[126] R. J. Lehmann, R. Reiche, and G. Schiefer, "Future internet and the agri-food sector: State-of-the-art in literature and research," *Computers and Electronics in Agriculture*, vol. 89, pp. 158-174, 2012.

[127] P. Jacob and U. Thiemann, "New ESD challenges in RFID manufacturing," *Microelectronics Reliability*, vol. 76, pp. 395-399, 2017.

[128] R. Navon and R. Sacks, "Assessing research issues in automated project performance control (APPC)," *Automation in Construction*, vol. 16, no. 4, pp. 474-484, 2007.

[129] C. Z. Li et al., "An Internet of Things-enabled BIM platform for on-site assembly services in prefabricated construction," *Automation in Construction*, vol. 89, pp. 146-161, 2018.

[130] J. K. W. Wong, J. Ge, and S. X. He, "Digitisation in facilities management: A literature review and future research directions," *Automation in Construction*, vol. 92, pp. 312-326, 2018.

[131] R. Navon and R. Sacks, "Assessing research issues in automated project performance control (APPC)," *Automation in Construction*, vol. 16, no. 4, pp. 474-484, 2007.

[132] C.-T. Tzeng et al., "Combination of radio frequency identification (RFID) and field verification tests of interior decorating materials," *Automation in Construction*, vol. 18, no. 1, pp. 16-23, 2008.

[133] M. Tu, "An exploratory study of Internet of Things (IoT) adoption intention in logistics and supply chain management: A mixed research approach," *The International Journal of Logistics Management*, 2018.

[134] S. J. Grawe, "Logistics innovation: a literature-based conceptual framework," *The International Journal of Logistics Management*, 2009.

[135] A. Chaudhuri et al., "Decision-making in cold chain logistics using data analytics: a literature review," *The International Journal of Logistics Management*, 2018.

[136] M. Faezipour et al., "Progress and challenges in intelligent vehicle area networks," *Communications of the ACM*, vol. 55, no. 2, pp. 90-100, 2012.

[137] V. Waller and R. B. Johnston, "Making ubiquitous computing available," *Communications of the ACM*, vol. 52, no. 10, pp. 127-130, 2009.

[138] C. S. Tang and J. Zimmerman, "Information and communication technology for managing supply chain risks," *Communications of the ACM*, vol. 56, no. 7, pp. 27-29, 2013.

[139] C. A. C. M. Staff, "Apple builds great platforms, too, not just products," *Communications of the ACM*, vol. 51, no. 12, p. 8, 2008.

[140] M. Balog and L. Knapčíková, "Advances of intelligent techniques used in Industry 4.0: proposals and testing," *Wireless Networks*, vol. 27, no. 3, pp. 1665-1670, 2021.

[141] R. Y. Zhong et al., "Visualization of RFID-enabled shopfloor logistics Big Data in Cloud Manufacturing," *The International Journal of Advanced Manufacturing Technology*, vol. 84, no. 1, pp. 5-16, 2016.

[142] L. Sydänheimo, L. Ukkonen, and M. Kivikoski, "Effects of size and shape of metallic objects on performance of passive radio frequency identification," *The International Journal of Advanced Manufacturing Technology*, vol. 30, no. 9, pp. 897-905, 2006.

[143] L. Sydänheimo, L. Ukkonen, and M. Kivikoski, "Effects of size and shape of metallic objects on performance of passive radio frequency identification," *The International Journal of Advanced Manufacturing Technology*, vol. 30, no. 9, pp. 897-905, 2006.

[144] Y. Zhang et al., "Task-driven manufacturing cloud service proactive discovery and optimal configuration method," *The International Journal of Advanced Manufacturing Technology*, vol. 84, no. 1, pp. 29-45, 2016.

[145] B.-E. Lee and S.-H. Suh, "An architecture for ubiquitous product life cycle support system and its extension to machine tools with

product data model," *The International Journal of Advanced Manufacturing Technology*, vol. 42, no. 5, pp. 606-620, 2009.

[146] M. Ramadan, H. Al-Maimani, and B. Noche, "RFID-enabled smart real-time manufacturing cost tracking system," *The International Journal of Advanced Manufacturing Technology*, vol. 89, no. 1, pp. 969-985, 2017.

[147] J. Wang, Z. Luo, and E. C. Wong, "RFID-enabled tracking in flexible assembly line," *The International Journal of Advanced Manufacturing Technology*, vol. 46, no. 1, pp. 351-360, 2010.

[148] R. Manduchi and J. Coughlan, "(Computer) vision without sight," *Communications of the ACM*, vol. 55, no. 1, pp. 96-104, 2012.

[149] J. Hopkins and P. Hawking, "Big Data Analytics and IoT in logistics: a case study," *The International Journal of Logistics Management*, 2018.

[150] X. Tao et al., "Greenhouse gas emission monitoring system for manufacturing prefabricated components," *Automation in Construction*, vol. 93, pp. 361-374, 2018.

[151] M. M. Soltani, A. Motamedi, and A. Hammad, "Enhancing cluster-based RFID tag localization using artificial neural networks and virtual reference tags," *Automation in Construction*, vol. 54, pp. 93-105, 2015.

[152] Z. Ma and C.-C. Chen, "A hybrid coding retransmitted chipless tag loaded by microstrip resonator," *Microelectronics Reliability*, vol. 93, pp. 1-7, 2019.

[153] I. Bose, K. Tetzner, K. Borner, and K. Bock, "Air-stable, high current density, solution-processable, amorphous organic rectifying diodes (ORDs) for low-cost fabrication of flexible passive low frequency RFID tags," *Microelectronics Reliability*, vol. 54, no. 9-10, pp. 1643-1647, 2014.

[154] C. Verdouw, H. Sundmaeker, B. Tekinerdogan, D. Conzon, and T. Montanaro, "Architecture framework of IoT-based food and farm systems: A multiple case study," *Computers and Electronics in Agriculture*, vol. 165, p. 104939, 2019.

[155] M. G. Cappai, N. G. Rubiu, and W. Pinna, "Economic assessment of a smart traceability system (RFID + DNA) for origin and brand protection of the pork product labelled 'suinetto di Sardegna'," *Computers and Electronics in Agriculture*, vol. 145, pp. 248-252, 2018.

[156] C. Manteuffel, P. C. Schön, and G. Manteuffel, "Beyond electronic feeding: The implementation of call feeding for pregnant sows," *Computers and Electronics in Agriculture*, vol. 79, no. 1, pp. 36-41, 2011.

[157] M. Oner, A. Ustundag, and A. Budak, "An RFID-based tracking system for denim production processes," *The International Journal of Advanced Manufacturing Technology*, vol. 90, no. 1, pp. 591-604, 2017.

[158] S. Merilampi, T. Björninen, V. Haukka, P. Ruuskanen, L. Ukkonen, and L. Sydänheimo, "Analysis of electrically conductive silver ink on stretchable substrates under tensile load," *Microelectronics Reliability*, vol. 50, no. 12, pp. 2001-2011, 2010.

[159] W.-Y. Choi, "Combining multipolling method with frame aggregation for collecting RFID tag information in IEEE 802.11 wireless LANs," *AEU-International Journal of Electronics and Communications*, vol. 65, no. 4, pp. 345-348, 2011.

[160] S. Bhaskar and A. K. Singh, "Meandered cross-shaped slot circularly polarised antenna for handheld UHF RFID reader," *AEU-International Journal of Electronics and Communications*, vol. 100, p. 106113, 2019.

[161] A. J. Sjolander, J. A. Thomasson, R. Sui, and Y. Ge, "Wireless tracking of cotton modules. Part 2: Automatic machine identification and system testing," *Computers and Electronics in Agriculture*, vol. 75, no. 1, pp. 34-43, 2011.

[162] M. Ruiz-Altisent et al., "Sensors for product characterization and quality of specialty crops—A review," *Computers and Electronics in Agriculture*, vol. 74, no. 2, pp. 176-194, 2010.

[163] L. Ren et al., "DE 2: localization based on the rotating RSS using a single beacon," *Wireless Networks*, vol. 22, no. 2, pp. 703-721, 2016.

[164] S. Razavi and O. Moselhi, "GPS-less indoor construction location sensing," *Automation in Construction*, vol. 28, pp. 128-136, 2012.

[165] A. Montaser and O. Moselhi, "RFID indoor location identification for construction projects," *Automation in Construction*, vol. 39, pp. 167-179, 2014.

[166] J. De Las Morenas, A. García, and J. Blanco, "Prototype traceability system for the dairy industry," *Computers and Electronics in Agriculture*, vol. 101, pp. 34-41, 2014.

[167] M. Pastell and L. Frondelius, "A hidden Markov model to estimate the time dairy cows spend in feeder based on indoor positioning data," *Computers and Electronics in Agriculture*, vol. 152, pp. 182-185, 2018.

[168] K. Satit and A.-int Somjit, "RESTful economic-ADS model for cost-effective chain-wide traceability system-based cloud computing," *Computers and Electronics in Agriculture*, vol. 139, pp. 164-179, 2017.

[169] O. Johansson and D. Hellström, "The effect of asset visibility on managing returnable transport items," *International Journal of Physical Distribution & Logistics Management*, 2007.

[170] B. T. Hazen, R. E. Overstreet, and C. G. Cegielski, "Supply chain innovation diffusion: going beyond adoption," *The International Journal of Logistics Management*, 2012.

[171] P. T.-W. Lee et al., "Developing the fifth generation port concept model: an empirical test," *The International Journal of Logistics Management*, 2018.

[172] P. Bremer, "Towards a reference model for the cold chain," *The International Journal of Logistics Management*, 2018.

[173] S. Razavi and C. T. Haas, "Using reference RFID tags for calibrating the estimated locations of construction materials," *Automation in Construction*, vol. 20, no. 6, pp. 677-685, 2011.

[174] A. Costin, N. Pradhananga, and J. Teizer, "Leveraging passive RFID technology for construction resource field mobility and status monitoring in a high-rise renovation project," *Automation in Construction*, vol. 24, pp. 1-15, 2012.

[175] S. M. C. Porto et al., "Localisation and identification performances of a real-time location system based on ultra wide band technology for monitoring and tracking dairy cow behaviour in a semi-open free-stall barn," *Computers and Electronics in Agriculture*, vol. 108, pp. 221-229, 2014.

[176] C. Chen et al., "An imaging system for monitoring the in-and-out activity of honey bees," *Computers and Electronics in Agriculture*, vol. 89, pp. 100-109, 2012.

[177] M. Levi-Bliech et al., "Mobile technology and business process performance: The mediating role of collaborative supply–chain capabilities," *Information Systems Management*, vol. 35, no. 4, pp. 308-329, 2018.

[178] F. Zand, S. Solaimani, and C. van Beers, "A role-based typology of information technology: model development and assessment," *Information Systems Management*, vol. 32, no. 2, pp. 119-135, 2015.

[179] E. K. Clemons et al., "Understanding the information-based transformation of strategy and society," *Journal of Management Information Systems*, vol. 34, no. 2, pp. 425-456, 2017.

[180] E. H. Park, B. Ramesh, and L. Cao, "Emotion in IT investment decision making with a real options perspective: The intertwining of cognition and regret," *Journal of Management Information Systems*, vol. 33, no. 3, pp. 652-683, 2016.

[181] P. Gray, "The Loyal (?) Opposition, Crowds, and GIS," *Information Systems Management*, vol. 25, no. 3, pp. 292-296, 2008.

[182] C. N. Verdouw, A. J. M. Beulens, and J. G. A. J. Van Der Vorst, "Virtualisation of floricultural supply chains: A review from an Internet of Things perspective," *Computers and Electronics in Agriculture*, vol. 99, pp. 160-175, 2013.

[183] C. R. Cunha et al., "The use of mobile devices with multi-tag technologies for an overall contextualized vineyard management," *Computers and Electronics in Agriculture*, vol. 73, no. 2, pp. 154-164, 2010.

[184] M. Thakur and E. Forås, "EPCIS based online temperature monitoring and traceability in a cold meat chain," *Computers and Electronics in Agriculture*, vol. 117, pp. 22-30, 2015.

[185] J. Maselyne et al., "Methods to construct feeding visits from RFID registrations of growing-finishing pigs at the feed trough," *Computers and Electronics in Agriculture*, vol. 128, pp. 9-19, 2016.

[186] U. McCarthy et al., "Impact of reader antenna polarisation, distance, inlay design, conveyor speed, tag location and orientation on the coupling of UHF RFID as applied to modified atmosphere packaged meat," *Computers and Electronics in Agriculture*, vol. 69, no. 2, pp. 135-141, 2009.

[187] C. Amador and J. P. Emond, "Evaluation of sensor readability and thermal relevance for RFID temperature tracking," *Computers and Electronics in Agriculture*, vol. 73, no. 1, pp. 84-90, 2010.

[188] J. Maselyne et al., "Validation of a High Frequency Radio Frequency Identification (HF RFID) system for registering feeding patterns of growing-finishing pigs," *Computers and Electronics in Agriculture*, vol. 102, pp. 10-18, 2014.

[189] M. G. Cappai et al., "Analysis of fieldwork activities during milk production recording in dairy ewes by means of individual ear tag (ET) alone or plus RFID based electronic identification (EID)," *Computers and Electronics in Agriculture*, vol. 144, pp. 324-328, 2018.

[190] J. Maselyne et al., "Range measurements of a High Frequency Radio Frequency Identification (HF RFID) system for registering feeding patterns of growing–finishing pigs," *Computers and Electronics in Agriculture*, vol. 108, pp. 209-220, 2014.

[191] G. Pichler et al., "Comparison of remote sensing based RFID and standard tree marking for timber harvesting," *Computers and Electronics in Agriculture*, vol. 140, pp. 214-226, 2017.

[192] A. Khanna and S. Kaur, "Evolution of Internet of Things (IoT) and its significant impact in the field of Precision Agriculture," *Computers and Electronics in Agriculture*, vol. 157, pp. 218-231, 2019.

[193] J. Qian et al., "Optimization of QR code readability in movement state using response surface methodology for implementing continuous chain traceability," *Computers and Electronics in Agriculture*, vol. 139, pp. 56-64, 2017.

[194] S. Bayano-Tejero et al., "Machine to machine connections for integral management of the olive production," *Computers and Electronics in Agriculture*, vol. 166, p. 104980, 2019.

[195] W.-S. Lee et al., "Sensing technologies for precision specialty crop production," *Computers and Electronics in Agriculture*, vol. 74, no. 1, pp. 2-33, 2010.

[196] F. Müller, D. Jaeger, and M. Hanewinkel, "Digitization in wood supply–A review on how Industry 4.0 will change the forest value chain," *Computers and Electronics in Agriculture*, vol. 162, pp. 206-218, 2019.

[197] A. Luvisi, A. Panattoni, and E. Triolo, "Electronic identification-based Web 2.0 application for plant pathology purposes," *Computers and Electronics in Agriculture*, vol. 84, pp. 7-15, 2012.

[198] P. Bhoyar et al., "Communication technologies and security challenges for internet of things: A comprehensive review," *AEU-International Journal of Electronics and Communications*, vol. 99, pp. 81-99, 2019.

[199] S. K. Goudos, K. Siakavara, and J. N. Sahalos, "Design of load-ended spiral antennas for RFID UHF passive tags using improved artificial bee colony algorithm," *AEU-International Journal of Electronics and Communications*, vol. 69, no. 1, pp. 206-214, 2015.

[200] K. Mohammadpour-Aghdam et al., "Miniaturized integrated antennas for far-field wireless powering," *AEU-International Journal of Electronics and Communications*, vol. 66, no. 10, pp. 789-796, 2012.

[201] G. C. Smith, D. L. Pendell, J. D. Tatum, K. E. Belk, and J. N. Sofos, "Post-slaughter traceability," *Meat Science*, vol. 80, no. 1, pp. 66-74, 2008.

[202] I. Mezzah, H. Chemali, and O. Kermia, "Emulation-based fault analysis on RFID tags for robustness and security evaluation," *Microelectronics Reliability*, vol. 69, pp. 115-125, 2017.

[203] P. G. Crandall et al., "Whole-chain traceability, is it possible to trace your hamburger to a particular steer, a US perspective," *Meat Science*, vol. 95, no. 2, pp. 137-144, 2013.

[204] K. Janeczek, "Reliability analysis of UHF RFID tags under long-term mechanical cycling," *Microelectronics Reliability*, vol. 75, pp. 96-101, 2017.

[205] C.-Y. Huang, "Reliability assessment of RFID reader through prognostics and health management," *Microelectronics Reliability*, vol. 53, no. 1, pp. 136-144, 2013.

[206] A. Sridhar et al., "Reliability investigations on LIFT-printed isotropic conductive adhesive joints for system-in-foil applications," *Microelectronics Reliability*, vol. 55, no. 11, pp. 2324-2330, 2015.

[207] C. Zhou and L. Y. Ding, "Safety barrier warning system for underground construction sites using Internet-of-Things technologies," *Automation in Construction*, vol. 83, pp. 372-389, 2017.

[208] C.-Y. Cho et al., "A development of next generation intelligent construction liftcar toolkit for vertical material movement management," *Automation in Construction*, vol. 20, no. 1, pp. 14-27, 2011.

[209] R.-J. Dzeng, C.-W. Lin, and F.-Y. Hsiao, "Application of RFID tracking to the optimization of function-space assignment in buildings," *Automation in Construction*, vol. 40, pp. 68-83, 2014.

[210] H. Li et al., "Chirp-spread-spectrum-based real time location system for construction safety management: A case study," *Automation in Construction*, vol. 55, pp. 58-65, 2015.

[211] M.-W. Park and I. Brilakis, "Construction worker detection in video frames for initializing vision trackers," *Automation in Construction*, vol. 28, pp. 15-25, 2012.

[212] S. Y. Yin et al., "Developing a precast production management system using RFID technology," *Automation in Construction*, vol. 18, no. 5, pp. 677-691, 2009.

[213] T. Elghamrawy and F. Boukamp, "Managing construction information using RFID-based semantic contexts," *Automation in Construction*, vol. 19, no. 8, pp. 1056-1066, 2010.

[214] J. Teizer, T. Cheng, and Y. Fang, "Location tracking and data visualization technology to advance construction ironworkers' education and training in safety and productivity," *Automation in Construction*, vol. 35, pp. 53-68, 2013.

[215] J. Teizer et al., "Autonomous pro-active real-time construction worker and equipment operator proximity safety alert system," *Automation in Construction*, vol. 19, no. 5, pp. 630-640, 2010.

[216] C.-H. Ko, "RFID 3D location sensing algorithms," *Automation in Construction*, vol. 19, no. 5, pp. 588-595, 2010.

[217] T.-H. Shin et al., "A service-oriented integrated information framework for RFID/WSN-based intelligent construction supply chain management," *Automation in Construction*, vol. 20, no. 6, pp. 706-715, 2011.

[218] G. Demiralp et al., "Analyzing the benefits of RFID technology for cost sharing in construction supply chains: A case study on prefabricated precast components," *Automation in Construction*, vol. 24, pp. 120-129, 2012.

[219] P. M. Goodrum, M. A. McLaren, and A. Durfee, "The application of active radio frequency identification technology for tool tracking on construction job sites," *Automation in Construction*, vol. 15, no. 3, pp. 292-302, 2006.

[220] C.-H. Ko, "RFID-based building maintenance system," *Automation in Construction*, vol. 18, no. 3, pp. 275-284, 2009.

[221] E. Ergen, B. Akinci, and R. Sacks, "Tracking and locating components in a precast storage yard utilizing radio frequency identification technology and GPS," *Automation in Construction*, vol. 16, no. 3, pp. 354-367, 2007.

[222] N. Li, G. Calis, and B. Becerik-Gerber, "Measuring and monitoring occupancy with an RFID based system for demand-driven HVAC operations," *Automation in Construction*, vol. 24, pp. 89-99, 2012.

[223] A. Kelm et al., "Mobile passive Radio Frequency Identification (RFID) portal for automated and rapid control of Personal Protective Equipment (PPE) on construction sites," *Automation in Construction*, vol. 36, pp. 38-52, 2013.

[224] C. Kim et al., "On-site construction management using mobile computing technology," *Automation in Construction*, vol. 35, pp. 415-423, 2013.

[225] S. El-Omari and O. Moselhi, "Integrating automated data acquisition technologies for progress reporting of construction projects," *Automation in Construction*, vol. 20, no. 6, pp. 699-705, 2011.

[226] Y.-C. Lin, W.-F. Cheung, and F.-C. Siao, "Developing mobile 2D barcode/RFID-based maintenance management system," *Automation in Construction*, vol. 37, pp. 110-121, 2014.

[227] U.-M. Jow et al., "EnerCage: A smart experimental arena with scalable architecture for behavioral experiments," *IEEE Transactions on Biomedical Engineering*, vol. 61, no. 1, pp. 139-148, 2013.

[228] E. Sahin et al., "Ensuring supply chain safety through time temperature integrators," *The International Journal of Logistics Management*, 2007.

[229] H.-P. Fu et al., "Key factors for the adoption of RFID in the logistics industry in Taiwan," *The International Journal of Logistics Management*, 2015.

[230] S. S. Shapiro, "Privacy by design: moving from art to practice," *Communications of the ACM*, vol. 53, no. 6, pp. 27-29, 2010.

[231] S. Bono et al., "Security through legality," *Communications of the ACM*, vol. 49, no. 6, pp. 41-43, 2006.

[232] S. Sackmann et al., "Personalization in privacy-aware highly dynamic systems," *Communications of the ACM*, vol. 49, no. 9, pp. 32-38, 2006.

[233] S. S. Lim et al., "Online privacy, government surveillance and national ID cards," *Communications of the ACM*, vol. 52, no. 12, pp. 116-120, 2009.

[234] B. Fabian and O. Günther, "Security challenges of the EPCglobal network," *Communications of the ACM*, vol. 52, no. 7, pp. 121-125, 2009.

[235] Q. Jing et al., "Security of the Internet of Things: perspectives and challenges," *Wireless Networks*, vol. 20, no. 8, pp. 2481-2501, 2014.

[236] A. Ibrahim and G. Dalkılıc, "Review of different classes of RFID authentication protocols," *Wireless Networks*, vol. 25, no. 3, pp. 961-974, 2019.

[237] N. Dinarvand and H. Barati, "An efficient and secure RFID authentication protocol using elliptic curve cryptography," *Wireless Networks*, vol. 25, no. 1, pp. 415-428, 2019.

[238] K. Baghery et al., "Breaking anonymity of some recent lightweight RFID authentication protocols," *Wireless Networks*, vol. 25, no. 3, pp. 1235-1252, 2019.

[239] P. K. Maurya and S. Bagchi, "Cyclic group based mutual authentication protocol for RFID system," *Wireless Networks*, vol. 26, no. 2, pp. 1005-1015, 2020.

[240] H. Luo et al., "SLAP: Succinct and Lightweight Authentication Protocol for low-cost RFID system," *Wireless Networks*, vol. 24, no. 1, pp. 69-78, 2018.

[241] V. Gholami and M. R. Alagheband, "Provably privacy analysis and improvements of the lightweight RFID authentication protocols," *Wireless Networks*, vol. 26, no. 3, pp. 2153-2169, 2020.

[242] R. Shaji et al., "A methodological review on attack and defense strategies in cyber warfare," *Wireless Networks*, vol. 25, no. 6, pp. 3323-3334, 2019.

[243] C.-M. Liu et al., "An electronic material flow control system for improving production efficiency in integrated-circuit assembly industry," *The International Journal of Advanced Manufacturing Technology*, vol. 42, no. 3, pp. 348-362, 2009.

[244] J. Li et al., "Big data in product lifecycle management," *The International Journal of Advanced Manufacturing Technology*, vol. 81, no. 1, pp. 667-684, 2015.

[245] B. Wang et al., "Fundamental technology for RFID-based supervisory control of shop floor production system," *The International Journal of Advanced Manufacturing Technology*, vol. 57, no. 9, pp. 1123-1141, 2011.

[246] Y. Lv et al., "RFID-based colored Petri net applied for quality monitoring in manufacturing system," *The International Journal of Advanced Manufacturing Technology*, vol. 60, no. 1, pp. 225-236, 2012.

[247] A. J. C. Trappey et al., "Design and analysis of a rule-based knowledge system supporting intelligent dispatching and its application in the TFT-LCD industry," *The International Journal of Advanced Manufacturing Technology*, vol. 35, no. 3, pp. 385-393, 2007.

[248] N. Jukić et al., "Augmenting data warehouses with big data," *Information Systems Management*, vol. 32, no. 3, pp. 200-209, 2015.

[249] M. Djeddou et al., "Improved RFID anti-collision algorithm," *AEU-International Journal of Electronics and Communications*, vol. 67, no. 3, pp. 256-262, 2013.

[250] D. B. Oliveira and E. J. Silva, "Design of the compact UHF RFID meander-line antenna loaded with CPW elements," AEU-International Journal of Electronics and Communications, vol. 77, pp. 57-60, 2017.

[251] M. Alibakhshi-Kenari, M. Naser-Moghadasi, R. A. Sadeghzadeh, B. S. Virdee, and E. Limiti, "Bandwidth extension of planar antennas using embedded slits for reliable multiband RF communications," AEU-International Journal of Electronics and Communications, vol. 70, no. 7, pp. 910-919, 2016.

[252] P. Jankowski-Mihulowicz, W. Kalita, and B. Pawlowicz, "Problem of dynamic change of tags location in anticollision RFID systems," Microelectronics Reliability, vol. 48, no. 6, pp. 911-918, 2008.

[253] Z. Riaz, D. J. Edwards, and A. Thorpe, "SightSafety: A hybrid information and communication technology system for reducing vehicle/pedestrian collisions," Automation in Construction, vol. 15, no. 6, pp. 719-728, 2006.

[254] A. H. Behzadan, Z. Aziz, C. J. Anumba, and V. R. Kamat, "Ubiquitous location tracking for context-specific information delivery on construction sites," Automation in Construction, vol. 17, no. 6, pp. 737-748, 2008.

[255] S. Hwang, "Ultra-wide band technology experiments for real-time prevention of tower crane collisions," Automation in Construction, vol. 22, pp. 545-553, 2012.

[256] S. Hwang, "Ultra-wide band technology experiments for real-time prevention of tower crane collisions," Automation in Construction, vol. 22, pp. 545-553, 2012.

[257] C.-s. Kim, B. G. Son, and M. Bourlakis, "Factors affecting successful adoption of ubiquitous computing technology in supply chain contexts: a comparative analysis of UK and Korea," The International Journal of Logistics Management, 2012.

[258] D. C. Feibert and P. Jacobsen, "Factors impacting technology adoption in hospital bed logistics," The International Journal of Logistics Management, 2018.

[259] H. Rezaie and M. Golsorkhtabaramiri, "A fair reader collision avoidance protocol for RFID dense reader environments," Wireless Networks, vol. 24, no. 6, pp. 1953-1964, 2018.

[260] P. Pupunwiwat and B. Stantic, "Minimising collisions in RFID data streams using probabilistic Cluster-Based Technique," Wireless Networks, vol. 19, no. 5, pp. 689-703, 2013.

[261] M. Golsorkhtabaramiri, N. Issazadehkojidi, N. Pouresfehani, M. Mohammadialamoti, and S. M. Hosseinzadehsadati, "Comparison of energy consumption for reader anti-collision protocols in dense RFID networks," Wireless Networks, vol. 25, no. 5, pp. 2393-2406, 2019.

[262] A. Jaballah and A. Meddeb, "A new variant of cuckoo search algorithm with self adaptive parameters to solve complex RFID network planning problem," Wireless Networks, vol. 25, no. 4, pp. 1585-1604, 2019.

[263] B. Xie, D. Fang, T. Xing, L. Zhang, X. Chen, Z. Tang, and A. Wang, "FISCP: fine-grained device-free positioning system for multiple targets working in sparse deployments," Wireless Networks, vol. 22, no. 5, pp. 1751-1766, 2016.