

AN OVERVIEW OF ETHICAL CONSIDERATIONS WHEN USING RFID WITH CONSUMERS

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ABSTRACT

RFID has recently garnered significant interest in the area of customer relationship management by tagging consumers wirelessly and automatically identifying them at a distance. Through a descriptive meta-analysis, this article provides results that indicate that the use of RFID technology in consumer applications raises relatively important ethical and moral concerns, particularly in terms of privacy.

The results of our descriptive meta-analysis reveal little empirical research and therefore highlight the need to deepen our knowledge on the ethical considerations brought forth from using RFID. The most important ethical considerations were in terms of privacy, which includes capturing shopping habits, consumer demographic information, and tracking of a person's movements. Literature emphasized technological solutions to counter RFID ethical issues, leaving industry normative procedures and regulatory frameworks in the background.

Keywords: RFID, Consumers, Ethical Risk, Descriptive Meta-Analysis, Privacy, Accessibility, Property, Accuracy

INTRODUCTION

RFID consists of a microchip that contains uniquely identifiable data that can be scanned at a distance through wireless communications. In contrast to more common identification methods, RFID does not require a visual line-of-sight, as the microchip's signal can be read through objects and even while embedded in them. For example, concert goers can have their tickets scanned directly from within their wallet or pocket in order to provide quicker access to a concert site (Swedberg, 2009).

Although the foundation for RFID technology goes back to the Second World War (Landt, 2001), it remained almost untapped in marketing until very recently and is a recent area of research for the business community in which opinions regarding its application diverge among researchers, experts, journalists, and lobbyists (Boeck et al., 2009) as well as between beneficial aspects (saving of lives, reduction of shrinkage and counterfeiting, speed, reliability, and optimization of data) (Roberti, 2008) and negative aspects (privacy invasion) (Lewan, 2008). These divergent opinions warrant that we ask the question whether there are ethical and moral issues regarding the use of RFID technology with consumers. Will consumers be tracked everywhere? Will they be detected, observed, analyzed, and targeted within the intimacy of their private lives? Can the technology be hacked? These issues represent an important roadblock to the widespread use of RFID in marketing, as they have raised concerns among a portion of the general public and agencies in charge of protecting personal data.

This paper presents an overview of ongoing research in the form of a descriptive meta-analysis based on 121 references gathered through a literature review that covers the ethical considerations of using RFID technology. More detailed results were presented at the Hong Kong International Conference on Internet Studies (Boeck and Durif, 2013).

RESEARCH DESIGN AND METHODOLOGICAL CONCERNS

A descriptive meta-analysis was conducted in order to identify the ethical considerations of utilizing RFID when consumers are involved.

Selection of Relevant Articles for Review

In 2010, a two-step selection procedure was used to identify relevant articles, which resulted in 121 references.

(1) Literature search:

Articles were initially identified using three databases: ABI/Inform Global™, Business Source Complete, and Emerald Management Xtra, without specifying a date range. The references were selected by ten keyword combinations in the title (“document title”): “RFID and Ethics”, “RFID and Privacy”, “RFID and Accessibility”, “RFID and Property”, “RFID and Accuracy”, “RFID and Ethic*⁵”, “RFID and Priva*”, “RFID and Acces*”, “RFID and Prop*”, and “RFID and Accur*”.

(2) Establishment of basic criteria for the inclusion of references:

Only peer-reviewed studies appearing in scholarly and peer-reviewed journals listed in the three databases were selected. Both conceptual and empirical studies were selected. Three evaluators examined the abstracts and the entire article, if deemed necessary, to ensure that each reference dealt with at least one concept related to the subject of this research.

Meta-Analytic Procedure

Considered as a part of empirical research, meta-analyses offer many advantages, especially in quantifying the variables involved (Aldag & Stearns, 1988). Hunter and Schmidt (Hunter & Schmidt, 2004) identify different methods of meta-analyses (e.g. meta-analysis of correlations, meta-analysis of experimental effects, and purely descriptive meta-analysis). Since this article aims to profile the emerging research on RFID and ethics, which is conceptual to a large extent (90 out of 121 references), a descriptive meta-analysis was deemed appropriate. This type of meta-analysis provides a descriptive overview of the field of research in order to generate an overall picture of the topics being studied. However, it does not attempt to analyze methodological issues in the selected references (Glass, 1977; Glass et al., 1981).

⁵ “*” is a wildcard that includes words such as “ethical” and “ethically” when searching for “ethic*”.

Data Coding and Analysis

Three researchers separately coded the data at the reference level; differences were resolved through discussion. This type of multi-coding not only yields precise definitions, but also affords control reliability. A strong percentage of agreement between the three evaluators (90%) was observed during encoding.

We classified the references in an analytical framework based on several criteria. Manual coding of keywords and topics was performed for *Ethical Considerations* by grouping the ethical considerations around the four categories identified by Mason (1995) in a study on the ethical consequences of new technologies: *Privacy*, *Accessibility*, *Property* and *Accuracy*. *Privacy* encompasses all the personal data collected by businesses and marketing managers, *Accessibility* corresponds to individual rights and the security of personal data, *Property* refers to the possession of private data and its distribution channels, and *Accuracy* involves the keeping of authentic and correct data.

EMPIRICAL FINDINGS

The results of the study are presented in three parts. The first part includes the descriptive meta-analysis of the 121 references. The second part presents the detailed ethical considerations when using RFID technology with consumers. The last part proposes solutions to reduce the ethical risk associated with RFID as identified from the literature.

Descriptive Analysis

Out of the 121 identified references, only 30 are based on empirical research (i.e. 24.8%). This indicates very little investigation into the topic and also highlights a need to deepen our knowledge on the ethical considerations brought forth from using RFID by performing more empirically based research. They mostly include quantitative studies (17 studies out of 30) based on relatively small samplings. The average sample size in these studies was of 112.57 respondents per study (173.47 respondents for the quantitative studies in contrast to 18.45 respondents for the qualitative studies).

The preferred data collection method in the quantitative studies was the survey (13 studies out of the 17), while interview techniques were preferred as a data collection method during qualitative studies (7 studies out of the 13). Respondents were mostly consumers (18 studies out of 30) and were performed in the context of the consumer

packaged goods industry (8 studies out of 30), product manufacturing (4 studies out of 30), and the service industry (4 studies out of 30). Geographically, they were mostly performed in the USA (9 studies out of 30), in the UK (4 studies out of 30), and in China (3 studies out of 30).

The Ethical Considerations In Relation To the Use of RFID

The results from the codification of the **ethical considerations** in relation to the use of RFID indicate that the most cited category was *Privacy* (474 occurrences in the 121 references), followed by *Accessibility* (369 occurrences in the 121 references), *Property* (319 occurrences in the 121 references), and *Accuracy* (only 6 occurrences in the 121 references).

In regard to the most cited category, *Privacy*, which includes the aspects of captured shopping habits (buying and purchasing behaviour, stores visited, customer profile, shopping habits, product interest, and surveillance), demographic information, and the tracking of a person's movements, presents the greatest potential for ethical dilemmas. It is surprising that the elements related to banking or medical information, often highlighted in the news, were secondary ethical issues rather than major ones.

Ethical considerations in the *Accessibility* category came in second among the 121 selected references. The main ethical concern lies in the fact that organizations such as businesses or governments can possess and use personal information on individuals and consumers. While the risk that personal information on individuals becomes accessible to or diverted by criminals often attracts media attention, the meta-analysis indicates that the main areas of concern are businesses (148 occurrences in the articles) and governments (121 occurrences). There thus seems to be a great mistrust of how businesses will use personal consumer data they own or will own.

In all of the subcategories included in the *Property* category, the methods used to collect the data directly without going through a third party (e.g. collecting information, reading the data at a distance through a wireless or contactless method, linking it to a database, the nature of radio signals, reading without line of sight, and storing data) seem to provide the most ethical concerns (156 occurrences in the references). Data exchange is also a source of potential ethical and moral dilemma. It is interesting to note that some channels used to distribute the data such as personalized advertising (29), data sharing (11 occurrences), surreptitious scanning (8), and selling and buying (7) can cause ethical

injuries.

Finally, the meta-analysis indicates that the least referenced category is *Accuracy*. This does not mean per se that the integrity, correctness, and authenticity of data are not threatened or should not be taken into account by marketing managers, but that they are not the main sources of ethical dilemmas that appear from the use of RFID technology.

The Proposed Solutions to Limit the Ethical Issues

The results of the codification of the **proposed solutions** to limit the ethical issues tied to the use of RFID technology indicate that supply chain management-type solutions are by far the most cited (337 occurrences out of 1459), followed by collecting solutions (236), normative solutions (208), other solutions (178), physical solutions (163), legal solutions (116), implant solutions (83), sales and services solutions (83), workforce management solutions (40), and social pressure solutions (25).

It seems that the literature emphasizes technology to counter technology, leaving industry normative procedures and regulatory frameworks in the background. Additionally, the views of consumer groups or associations are not much taken into account. Finally, the most common proposed solution across all types is encryption (12 occurrences), chip neutralization (10), tag destruction (8 occurrences), consumer education (8 occurrences), and legislation (7 occurrences), which seem more important in addressing the ethical dilemmas surrounding the use of RFID.

CONCLUSION

Faced with the growing popularity of RFID technology being used in the management of consumer data, this article focused on the ethical issues surrounding the use of RFID. Since is it a nascent research topic, we opted to conduct a descriptive meta-analysis in order to present the ethical considerations of RFID's current and future use when consumers are involved. The literature presents a perplexed and suspicious view of RFID technology and its application towards consumer applications.

The use of RFID technology in consumer applications raises relatively important ethical and moral concerns, particularly in terms of privacy. Indeed, if personal data such as information on shopping habits, demographic information, movement of individuals, customers' lifestyle, and medical and banking information were collected without consent, then we would face a situation in which RFID has surpassed privacy limits. The

literature is also clear that the risk of privacy intrusion comes mainly from the accessibility of personal consumer data by businesses. They also seem the target of the most criticism when dealing with RFID ethical dilemmas. Similarly, the issues of privacy (data collection without prior authorization and consent from consumers, the sale of their personal data or receiving unsolicited customized advertising) and the security of personal data collected by businesses are also part of the most important issues in many studies that deal on electronic commerce technologies (Stead and Gilbert, 2001).

We have also identified the proposed solutions set forth in the articles to compensate for the moral and ethical issues related to the use of RFID technology. These are mainly of a physical nature and consist of encrypting the information contained in the chip or offering consumers the possibility to disable or destroy the chip. Clearly, businesses have a role in educating consumers about the use of captured data and the security measures that are taken to safeguard the data. All businesses must adopt a clear and precise ethical code of conduct to prevent the unethical conduct of their employees. Governments also have their share of responsibility in initiating a stronger legislative framework. If these measures are not adopted, consumer groups assume the role of putting pressure on businesses and governments to ensure the privacy and security of personal consumer data.

It is clear that further research, mainly empirical, as well as another descriptive meta-analysis that will include non-academic and non-peer-reviewed references to provide a broader vision of the phenomenon is necessary. This article offers a first step towards understanding the ethical considerations of RFID's current and future use when consumers are involved.

ACKNOWLEDGEMENT

This research was supported by the Social Sciences and Humanities Research Council.

REFERENCES

- ldag, R.J., & Stearns, T.M. (1988). Issues in research methodology. *Journal of Management*, 14 (2), 253-276. doi: <http://dx.doi.org/10.1177/014920638801400207>
- Boeck, H., Durif, F., Grégoire, M. & Roy, J. (2009, May). *Should consumers be afraid of RFID technology? A confrontation between literature and experts*. Paper presented at the 38th European Marketing Academy (EMAC) Conference, Nantes, France.

- Boeck, H., & Durif, F. (2013, September). *Is it necessary to worry about ethical risk when using rfid with consumers?* Paper presented at the International Conference on Internet Studies, Hong Kong.
- Glass, G. (1977). Integrating findings: The meta-analysis of research, *Journal of Research in Science Teaching*, 5(1), 3-18. <http://dx.doi.org/10.3102/0091732X005001351>.
- Glass, G.V., McGaw, B., & Smith, M.L. (1981). *Meta-analysis in social research*. (Vol. 56). Beverly Hills, CA: Sage publications.
- Hunter, J.E., & Schmidt, F.L. (2004). *Methods of meta-analysis: Correcting errors and biases in research findings*. Sage Publications.
- Landt, J. (2005, November). Shrouds of time: The history of RFID. *Association for Automatic Identification and Mobility*, Retrieved from http://www.aimglobal.org/technologies/rfid/resources/shrouds_of_time.pdf.
- Lewan, T. (2008, March). Businesses praise chips as privacy groups worry. *USA Today*, Retrieved from http://www.usatoday.com/tech/news/surveillance/2008-01-27-rfid_N.htm.
- Mason, R.O. (1995). Applying ethics to information technology issues. *Communications of the ACM*, 38(12), 55-57. <http://dx.doi.org/10.1145/219663.219681>.
- Roberti, M. (2008, March). Two visions of an RFID-enabled future. *RFID Journal*, Retrieved from <http://www.rfidjournal.com/article/articleview/3899/1/128/>.
- Stead, B.A., & Gilbert, J. (2001). Ethical issues in electronic commerce. *Journal of Business Ethics*, 34(2), 75-85. <http://dx.doi.org/10.1023/A:1012266020988>.
- Swedberg, C. (2013, January 14). Ohio music festival sings RFID's praises. *RFID Journal*, Retrieved from <http://www.rfidjournal.com/article/print/4985>.