



## Letter to the editor

### Comments on “Determining technology trends and forecasts of RFID by a historical review and bibliometric analysis from 1991 to 2005”

Recently, Chao et al. (2007) published the paper entitled as above. There are several mistakes in the paper noticed by checking the data and the methods followed by in the paper.

In the section *Materials and methods*, the authors mentioned “In this study, we only discuss the papers published in the period beginning 1991 because there were less data regarding RFID prior to that year”. However, two papers were published in 1985 in journals listed in SCI. No paper was published in 1992, only one paper was published in 1991, and only 2 papers each were published in 1993 and 1994.

In the same section, the authors mentioned that for the bibliometric analysis, the SCI was systematically searched for RFID-related materials published from 1991 through November 2005, i.e. without data of December in 2005, i.e., a 1 month publication loss in 2005. This means the method does NOT

appropriately match the title claim. Especially in this rapidly developing subject, 1 month less means a lot.

In the *Materials and methods* section, the authors state: “Citation analysis was based primarily on the impact factor as defined by the Journal Citation Reports (JCR) and on Citations per Publications (CPP), which are used to assess the impact of a journal relative to the entire field and is defined as the ratio of the number of citations the publication has received to the length of time since publication”. However, there are no such results, or discussion in the text. This is another point in which the methodology followed does NOT fit the results.

In the section *Distribution by country/territory and institution name*, the authors concluded that the US, Japan, Germany, Switzerland, South Korea, Canada, UK, and Finland were the top eight countries publishing RFID articles. We checked the data following the methods described in the paper. The top eight countries publishing RFID articles are US, South Korea, Japan, Germany, Switzerland, UK, Canada, and Finland (Table 1). Another big mistake is that the authors reported that the Massachusetts Institute of Technology, the University of Washington, and the Agriculture & Agriculture Food, Canada, are the top three RFID research institutions. The results are totally wrong. Actually, the University of Washington, the Massachusetts Institute of Technology, and the University of California, Berkeley, are the top three RFID research institutions and all are in the US.

Also in the section of *Distribution by publication year, document type and language*; there is a mistake. The authors state in the beginning that “all documents used in this study were accessed from the database of the Science Citation Index (SCI)” and state in another place that they include SSCI besides SCI;

**Table 1**  
Distribution of country/territory and institution name.

Country	NP	%	Institution name	NP	%
USA	96	26	Univ. Washington	8	2.2
South Korea	29	7.9	MIT	7	1.9
Japan	27	7.4	Univ. Calif. Berkeley	7	1.9
Germany	21	5.7	Agri. & Agri. Food Canada	6	1.6
Switzerland	15	4.1	Tampere Univ. Technol.	6	1.6
UK	12	3.3	Elect. & Telecommun. Res. Inst.	5	1.4
Canada	11	3.0	Intel Res. Seattle	5	1.4
Finland	9	2.5	Ajou Univ.	4	1.1
France	7	1.9	ETH	4	1.1
Netherlands	7	1.9	Korea Univ.	4	1.1
Taiwan	6	1.6	Kyoto Univ.	4	1.1
India	5	1.4	Nanyang Technol. Univ.	4	1.1
Singapore	4	1.1	DLO	3	0.82
Slovenia	4	1.1	Indian Inst. Technol.	3	0.82
Australia	3	0.82	Kyushu Univ.	3	0.82
Italy	3	0.82	Michigan State Univ.	3	0.82
Austria	2	0.55	Natl. Taiwan Univ.	3	0.82
Belgium	2	0.55	RSA Labs	3	0.82
New Zealand	2	0.55	Swiss Fed. Inst. Technol	3	0.82
China	2	0.55	Univ. Ljubljana	3	0.82
Spain	2	0.55	Univ. St. Gallen	3	0.82
Chile	1	0.27	Univ. Wisconsin	3	0.82
Czech Republic	1	0.27			
Greece	1	0.27			
Israel	1	0.27			
Mexico	1	0.27			
Poland	1	0.27			
Portugal	1	0.27			
Sweden	1	0.27			

NP: number of publications.

**Table 2**  
Distribution by publication year, document type and language.

Pub. year	NP	%	Document type	NP	%	Language	NP	%
1991	1	0.27	Article	270	74	English	360	98
1992	0	0	News item	55	15	German	5	1.4
1993	2	0.55	Editorial material	31	8.5	Slovak	1	0.27
1994	2	0.55	Letter	4	1.1			
1995	3	0.82	Review	4	1.1			
1996	4	1.1	Meeting abstract	2	0.55			
1997	10	2.7						
1998	5	1.4						
1999	18	4.9						
2000	9	2.5						
2001	13	3.6						
2002	14	3.8						
2003	40	11						
2004	78	21						
2005	167	46						

**Table 3**  
Distribution by source title.

Source title	NP	%
Microwaves & RF	27	7.4
Microwave Journal	22	6.0
Embedded and Ubiquitous Computing—EUC 2005 Workshops, Proceedings	15	4.1
Communications of the ACM	10	2.7
Control Engineering	9	2.5
Electronics Letters	9	2.5
EDN	6	1.6
Computers and Electronics in Agriculture	5	1.4
IEEE Micro	5	1.4
Informacije Midem—Journal of Microelectronics Electronic Components and Materials	5	1.4
Assembly Automation	4	1.1
Dr Dobbs Journal	4	1.1
IEEE Pervasive Computing	4	1.1
IEEE Transactions on Microwave Theory and Techniques	4	1.1
IEICE Transactions on Electronics	4	1.1
Microwave and Optical Technology Letters	4	1.1
R&D Magazine	4	1.1
Canadian Journal of Animal Science	3	0.82
Computational Intelligence and Security, Part 2, Proceedings	3	0.82
Electronic Design	3	0.82
Embedded and Ubiquitous Computing—EUC 2005	3	0.82
IEE Review	3	0.82
IEEE Journal of Solid-State Circuits	3	0.82
IEEE Security & Privacy	3	0.82
Industrial Management & Data Systems	3	0.82
Intech	3	0.82
Journal of Construction Engineering and Management—ASCE	3	0.82
Pervasive Computing, Proceedings	3	0.82
Proceedings of the IEEE	3	0.82
Security and Privacy in AD-HOC and Sensor Networks Technology Review	3	0.82
Ubiquitous Computing Systems	3	0.82
Wirtschaftsinformatik	3	0.82
Ambient Intelligence, Proceedings	2	0.55
Applied Engineering in Agriculture	2	0.55
BT Technology Journal	2	0.55
Computer	2	0.55
Cryptographic Hardware and Embedded Systems—CHES 2004, Proceedings	2	0.55
Electronics World	2	0.55
Fleischwirtschaft	2	0.55
Food Australia	2	0.55
Holonic and Multi-Agent Systems for Manufacturing, Proceedings	2	0.55
IEEE Microwave and Wireless Components Letters	2	0.55
IEEE Transactions on Antennas and Propagation	2	0.55
IEEE Transactions on Circuits and Systems I—Regular Papers	2	0.55
IEEE Transactions on Electron Devices	2	0.55
IEICE Transactions on Communications	2	0.55
Industrial Engineer	2	0.55
Journal of Animal Science	2	0.55
Livestock Production Science	2	0.55
Microelectronics International	2	0.55
Microelectronics Reliability	2	0.55
Packaging Technology and Science	2	0.55
Pharmazeutische Industrie	2	0.55
Pulp & Paper-Canada	2	0.55
Sadhana-Academy Proceedings in Engineering Sciences	2	0.55
Scientific American	2	0.55
Sigmod Record	2	0.55
UbiComp 2004: Ubiquitous Computing, Proceedings	2	0.55
Wireless Networks	2	0.55

**Table 4**  
Distribution by subject category.

Subject category	Record count	%
Electrical & Electronic Engineering	147	40
Theory & Methods Computer Science	84	23
Telecommunications	72	20
Software Engineering Computer Science	28	7.7
Information Systems Computer Science	20	5.5
Hardware & Architecture Computer Science	19	5.2
Automation & Control Systems	16	4.4
Industrial Engineering	16	4.4
Instruments & Instrumentation	14	3.8
Manufacturing Engineering	12	3.3
Food Science & Technology	11	3.0
Multidisciplinary Materials Science	11	3.0
Interdisciplinary Applications Computer Science	10	2.7
Multidisciplinary Sciences	10	2.7
Artificial Intelligence Computer Science	9	2.5
Applied Physics	9	2.5
Dairy & Animal Science Agriculture	8	2.2
Multidisciplinary Engineering	8	2.2
Multidisciplinary Agriculture	5	1.4
Construction & Building Technology	4	1.1
Biomedical Engineering	4	1.1
Civil Engineering	4	1.1
Optics	4	1.1
Pharmacology & Pharmacy	4	1.1
Agricultural Engineering	3	0.82
Chemical Engineering	3	0.82
Fisheries	3	0.82
Hematology	3	0.82
Nanoscience & Nanotechnology	3	0.82

In the section *Distribution by source title*, the authors claim that Table 3 shows “Microwaves & Radio Frequency”, “Microwave Journal”, and “Communications of the ACM” are the journals with the most publications on RFID. This claim is wrong again. Embedded and Ubiquitous Computing—EUC 2005 Workshop, Proceedings, published 15 papers, which is much greater in number than the 10 papers published in Communications of the ACM (Table 3).

In the section *Distribution by subject category*, the authors claim their Table 4 shows “engineering” (electrical and electronic), “telecommunications”, and “computer science” (software engineering) were the three most frequently used “keywords” appearing in RFID publications. This is incorrect information. In fact, Table 4 is about “subject category”, it is not about “keywords” appearing in RFID publications.

There are thus many mistakes in this paper. A rigorous paper should not have these fundamental and essential mistakes. The bibliometric analysis results of this paper should not be accepted.

*Editors comment:* The corresponding author was invited to respond to the comments submitted on their paper and advised that the submitted response would be published with the comments. The corresponding author advised that no printed response would be offered to the comments presented in this issue of Technovation. As it is uncommon, for a paper in a social science journal to receive comments and much rarer for authors to turn down an opportunity to defend their work a point of clarification is offered. Experimental replication, follow-up studies, and comments are much more common in science journals.

Technovation welcomes such follow-up on our published papers. When such comments are submitted the process is to send them to the corresponding author of the original paper for review. After feedback is obtained from both sides, the end

for example, we read: “in the SCI, and SSCI, articles comprised the majority of published RFID document types (Table 2 and Fig. 2)”.

product is published with a response from the author. Any further discussion between the parties can then be dealt between the two groups of authors directly.

### References

Chao, C.C., Yang, J.M., Jen, W.Y., 2007. Determining technology trends and forecasts of RFID by a historical review and bibliometric analysis from 1991 to 2005. *Technovation* 27 (5), 268–279.

Yuh-Shan Ho <sup>\*,1</sup>  
Department of Environmental Sciences,  
College of Environmental Science and Engineering,  
Peking University,  
Beijing 100871,  
People's Republic of China  
E-mail addresses: [ysho@asia.edu.tw](mailto:ysho@asia.edu.tw), [dr\\_ysho@hotmail.com](mailto:dr_ysho@hotmail.com)  
(Y.-S. Ho)

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\* Current address: Trend Research Centre, Asia University, Taichung 41354, Taiwan. Tel.: +866 4 2332 3456x1797; fax: +866 4 2330 5834.

<sup>1</sup> Tel./fax: +86 10 62751923.