# LOCATION OF ARTICLES FROM E-JOURNALS: INFORMATION SEEKING BEHAVIOUR OF THE AEROSPACE SCIENTISTS AND ENGINEERS OF BANGALORE

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## Abstract

***Abstract*** *Today Governments, R&D institutions and Universities invest substantial sums of money for providing scholars with the digital literature they need for their research work with the intention that improved access to electronic information resources will lead to increasing scholarly productivity. The transformation of the physical library to the virtual library probably saves time, since one can access publications from one's desktop. The extent of publications available online combined with easier access has tremendously improved scholars' ability to keep abreast in their field, and perhaps inspire new ideas and ultimately enhance the quality of their work. A research survey was conducted to study the Location of Articles from E-Journals by the Aerospace Scientists and Engineers of Bangalore.. The major conclusions of this study are:* ***(a) E-Journal Online List:*** *The $\chi 2$ test indicates that the 'e-Journal Online List' and the different types of aerospace organizations* ***have no significant association (Chi-Square=15.57, P = 0.411).*** ***(b) Directly from Publisher's Web-Site:*** *The $\chi 2$ test indicates that 'Directly from Publisher's Website' and the different types of aerospace organizations* ***have no significant association (Chi-Square=16.16, P = 0.371). (c) Subject List Located on the Publisher's Web-Site:*** *The $\chi 2$ test indicates that 'Subject List Located on the Publisher's Website' and the different types of aerospace organizations* ***have significant association (Chi-Square=31.09, P = 0.009). (d) Access / Link Provided at the Scientists Desktop through the Organization's Intranet:*** *The $\chi 2$ test indicates that 'Access / Link Provided at your Desktop through your Organization's Intranet' and the different types of aerospace organizations* ***have significant association (Chi-Square=44.80, P = 0.000), (e) Alphabetical List Located on Publisher's Web-Site:*** *The $\chi 2$ test indicates that 'Alphabetical List Located on the Publisher's Website' and the different types of aerospace organizations* ***have no significant association (Chi-Square=19.87, P = 0.177), (f) From A Database:*** *The $\chi 2$ test indicates that 'From a Database' and the different types of aerospace organizations* ***have no significant association (Chi-Square=18.49, P = 0.248), (g) Personal Bookmark:*** *The $\chi 2$ test indicates that 'Personal Bookmark' and the different types of aerospace organizations* ***have no significant association (Chi-Square=21.58, P = 0.119).***

***Index Terms:*** *Use Patterns, Location of Articles from E-Journals, Aerospace Scientists and Engineers, City of Bangalore.*

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## 1. INTRODUCTION

Several studies on the influence of the use of electronic information resources on scholarly work have indicated that the use of electronic literature has improved their work considerably in several ways.

Today Governments, R&D institutions and Universities invest substantial sums of money for providing scholars with the digital literature they need for their research work with the intention that improved access to electronic information resources will lead to increasing scholarly productivity. The transformation of the physical library to the virtual library probably saves time, since one can access publications from one's desktop. The extent of publications available online combined with easier access has tremendously improved scholars' ability to keep abreast in their field, and perhaps inspire new ideas and ultimately enhance the quality of their work.

Several studies on the perceived influence of e-resources use on scholarly productivity have indicated that factors like: (a) Easier to find material, (b) Easier to get hold of material, (c) Extended range of material available electronically, (d) Easier to keep updated in one's field of research, (e) Improved quality of work, (f) Inspired new ideas, (g) Greatly saved working time, (h) Reduced time browsing in libraries, (i) multi-user access, fast access, (j) 24 hour access, (k) Available before print, (l) Multiple file formats for downloading and storing (PDF, RTF, DOC, HTML etc..), (m) enhanced access and visibility to scientific papers, (n) Keeps current about global R&D etc. has indicated that the use of electronic resources has considerably influenced the quality of work of the scholars and inspired new ideas to some extent.

## 2. THE ELECTRONIC JOURNALS AND THE CHANGING PATTERNS OF USE

It is absolutely clear that traditional print journals, even those available electronically are slowly changing. There is a paradigm shift in their usage and they are moving towards electronic formats. Many studies have revealed that the electronic versions of papers are being read about as often as the printed journal versions. The growth rates in usage of electronic information resources are sufficiently high and if this trend continues for a few more years, a time may come soon when the print versions will get 'totally eclipsed'. The coming of the World Wide Web has propelled this vigorous growth of the electronic forms of communication which simply do not fit into the traditional publishing format. With the coming of age of the electronic journals, it has totally altered the way scholarly information is disseminated throughout the world. There is no doubt that this particular innovation has changed the information usage of scientists. Invariably, the role of the librarian has dramatically changed to meet the 'vibrant electronic needs' of the scientists and engineers. Electronic journals has greatly affected not only the way information has spread, but also the way in which electronic information acquired and how scientists, engineers, scholars and researchers seek this needed information.

## 3. THE NATIONAL KNOWLEDGE RESOURCE CONSORTIUM (NKRS) AND ITS ROLE SCHOLARLY SCIENTIFIC INFORMATION DISSEMINATION

The National Knowledge Resource Consortium (NKRC), established in year 2009, is a network of libraries and information centres of 39 CSIR and 24 DST institutes. NKRC's origin goes back to the year 2001, when CSIR set up the Electronic Journals Consortium to provide access to 1200 odd journals of Elsevier Science to all its users. Over a period of time, the Consortium not only grew in terms of the number of resources but also in terms of the number of users as more like-minded institutes evinced interest to join the Consortium. Today, NKRC facilitates access to 5,000+ e-journals of all major publishers, patents, standards, citation and bibliographic databases. Apart from licensed resources, NKRC is also a single point entity that provides its users with access to a multitude of open access resources. The Consortium envisions emerging as a leader to serve the R&D sector with much needed information to strengthen the research and development system in the country.

## 4. CSIR-NATIONAL AEROSPACE LABORATORIES

NAL is a constituent Institution under the Council of Scientific and Industrial Research of India. NAL is a high technology oriented institution concentrating on advanced topics in the aerospace and related disciplines. Among the aerospace organizations of Bangalore, NAL occupies a very special place. NAL is India's premier civil aviation R&D aerospace organization in the country. Originally started as National Aeronautical Laboratory, it was renamed National Aerospace Laboratories to reflect its major involvement in the Indian space programme, its multidisciplinary activities and global positioning. It is India's only civilian aerospace laboratory with a high level of competence. The expertise of its scientists is globally acknowledged. NAL has some very sophisticated test facilities which are the best in the country and comparable to those abroad. The 1.2 m Trisonic Tunnel Complex, Full Scale Fatigue Facility, Acoustic Test Facility, Engineer-in-Loop Facility, Composite Structure Facilities, Advanced Turbomachinery and Combustion Laboratories, Failure Analysis Laboratory and Electromagnetic Laboratory are among these. All these manned by specialized teams provide value added inputs to various Indian aerospace programmes. Its main Mandate and Mission are: (a) Development of aerospace technologies with a strong science content and with a view to their practical application to the design and construction of flight vehicles, (b) NAL is also required to use its aerospace technology base for general industrial applications.NAL is the harbinger of civil aviation design and development activities in India. NAL-designed HANSA trainer aircraft is flying in different flying clubs in India and is all set to reach overseas market. The light transport aircraft, SARAS, is undergoing flight testing and is designed to meet a critical need in the civil aviation segment. In a nutshell, 'Technology' would be NAL's core engine for the future. NAL will make special efforts to identify, develop and market spin-off technologies. NAL is also required to use is aerospace technology base for general industrial applications. NAL, today in its 50th year of existence and over these years has made remarkable contributions to a variety of Indian aerospace programmes. It also has well-established aerospace related collaborative projects with reputed international agencies. NAL is the harbinger of civil aviation design and development activities in India. NAL is also best known for its main sophisticated aerospace R&D testing facilities which are not only unique for this country but also comparable to similar facilities elsewhere in the world.

## 5. ROLE CSIR-NAL IN PROMOTING E-RESOURCES USAGE AMONGST ITS SCIENTISTS AND ENGINEERS AND

## TECHNOLOGISTS AS PART OF THE CSIR-NISCAIR-DST-NKRC CONSORTIA

Today, every NAL scientist has access to online electronic scholarly information right at their desktops. This has been possible with the help of setting up of the 'The National Knowledge Resource Consortium (NKRC) jointly established by CSIR and DST with the 'National Institute of Science Communication and Information Resources (NISCAIR), a sister CSIR Laboratories as its apex body. With the setting up of the 'National Knowledge Resource Consortium', it has been possible for every NAL scientist and engineer to access almost 5,000+ e-journals by typing up with almost 23 reputed international journal publishers. This facility enables any CSIR scientist to access, browse, search and download 'full-text' journal articles from any computer system connected to the campus wide network. This clearly indicates that 'Electronic Information Resources', more so e-Journals are extremely important to an aerospace scientist or engineer to keep pace with global R&D.

## 6. REVIEW OF LITERATURE

**Brown (1999),** in her study opines that scientists at the University of Oklahoma greatly relied on journal literature to support their research and creative activities. The mathematicians surveyed indicated an additional reliance on mono-graphs, preprints, and attendance at conferences and personal communication to support their research ac- tivities. Similarly, all scientists responding scanned the latest issues of journals to keep abreast of current developments in their fields, with the mathematicians again reporting attendance at conferences and personal communication. The study also suggests that a primary goal of science libraries is to obtain access to as many appropriate electronic bibliographic finding aids and databases possible.

**Tenopir et al., (1999),** highlight in their paper that by tracking the information-seeking and reading patterns of science, technology, medical and social science faculty members from 1977 to the present, this paper seeks to examine how faculty members locate, obtain, read, and use scholarly articles and how this has changed with the widespread availability of electronic journals and journal alternatives.

**Hemminger et al., (2007),** in their study mention that The information seeking behavior of academic scientists is being transformed by the availability of electronic resources for searching, retrieving, and reading scholarly materials. The study also reveals that, significant changes in information seeking behavior were found, including increased reliance on web based resources, fewer visits to the library, and almost entirely electronic communication of information. The survey tool and protocol used in this study have been adopted for use in a nationwide survey of the information seeking behaviour of academic scientists.

**Kwasitsu (2003),** in his study discusses the information sources used by design, process, and manufacturing engineers in an international microchip manufacturing company, and the characteristics that influence their information source selection and use. His findings differ from previous research in three ways. First, there was a significant difference in these engineers' information behavior. Second, the higher the engineers' level of education, the less likely they were to depend on their personal memories as sources of information, and the more likely they were to rely on libraries. Third, the higher the level of engineers' education, the less likely they were to consider "personal mastery" (information tool mastery) as a source influencer.

**Hertzum (2000),** in their study highlight the fact that engineers get most of their information from colleagues and internal reports. The study also reveals that, that engineers search for documents to find people, search for people to get documents, and interact socially to get information without engaging in explicit searches. This intricate interplay between document and people sources can be explained by the nature of the design task. Many possible solutions are normally available to the designer and in choosing one over the other the designer must take into account a complex set of issues involving both the product as such and its context.

**Donald et al., (2009),** in their survey show that, faculty read articles for research, teaching, writing, and other purposes; the largest number of readings is for research. The time spent reading scholarly articles (an estimated average of 132 hours and 240 articles per year) demonstrates their value to faculty's work; over one-third of readings are reported to be absolutely essential, and to affect the reader's purpose in many ways, including helping to improve results, or to broaden or change the focus. Faculty prefer print for personal subscriptions, although library electronic collections provide a majority of readings, and most readings from library collections are from electronic sources; older articles are also more commonly from electronic library collections. Faculty use a variety of means to find articles, including browsing and searching, the latter particularly for research purposes, and to locate older articles.

**Nicholas, et al., (2003),** in their study evaluate through deep log analysis the impact of "Big Deal" agreements on the online searching behaviour of users of the Emerald digital library Web site, which provides access to more than 150 journals in the fields of business and information science. The purpose of the evaluation was to map the online information seeking behaviour of the digital library user and to see whether

those signed-up to a Big Deal arrangement behaved any differently from the others.

**Rowlands, et al., (2008),** in their article, which is an edited version of a report commissioned by the British Library and JISC to identify how the specialist researchers of the future (those born after 1993) are likely to access and interact with digital resources in five to ten years' time. The purpose of the study is to investigate the impact of digital transition on the information behaviour of the Google Generation and to guide library and information services to anticipate and react to any new or emerging behaviours in the most effective way.

## 7. OBJECTIVES OF THE STUDY

- To determine whether the percentage of preference for for Location of Articles from Electronic Journals by the Aerospace Scientists and Engineers of the selected 16 aerospace organizations are approximately the same.

- To determine whether the location of articles from electronic journals by the aerospace scientists and engineers are homogeneous in nature.

## 8. NULL HYPOTHESES

- There is no association between the location of articles from electronic journals by the Aerospace Scientists and Engineers of Bangalore.

## 9. MATERIALS AND METHODS

The present study is restricted to the selected 16 prominent aerospace organizations in Bangalore. A total number of 650 survey questionnaires were distributed amongst the aerospace scientists and engineers belonging to these 16 aerospace organizations. A total number of 612 questionnaires were received back finally 583 (89.7%) were selected for the study which were found suitable for the study. A survey questionnaire has been used to conduct this research study. The total population size of this research study is restricted to the 1220 aerospace scientists and engineers in Bangalore. The distribution of Source Data is indicated in *Table 1*. The investigator also divided the whole population of the study into two major categories: namely, aerospace scientists and engineers. It may be seen from *Table 2*, that out of 583 respondents, 295 (50.6%) are aerospace scientists and the remaining 288(49.4%) are aerospace engineers. The sample questionnaire distributed to the respondents (as part of a larger study) is indicated in *Table 3*. The location of articles from E-Journals by the Aerospace Scientists and Engineers of Bangalore are depicted in *Table 4*. Random sampling technique has been used for selection of the sample size.

**Table-1: Distribution of Source Data (Sample Size)**

| Sl.No. | Organizations | No. of Questionnaires distributed | No. of Questionnaires received | No. of usable questionnaires usable |
|---|---|---|---|---|
| **1.** | **ADA** | 67 | 63 | 58 |
| **2.** | **AFTC** | 19 | 16 | 15 |
| **3.** | **ADE** | 14 | 12 | 12 |
| **4.** | **ASTE** | 33 | 30 | 29 |
| **5.** | **CABS** | 16 | 15 | 14 |
| **6.** | **CEMILAC** | 33 | 30 | 29 |
| **7.** | **C-MMACS** | 8 | 6 | 6 |
| **8.** | **DARE** | 11 | 9 | 9 |
| **9.** | **LRDE** | 5 | 3 | 2 |
| **10.** | **GTRE** | 24 | 22 | 21 |
| **11.** | **HAL** | 144 | 140 | 134 |
| **12.** | **IAM** | 40 | 36 | 33 |
| **13.** | **ISRO-ISTRAC** | 25 | 24 | 22 |
| **14.** | **IISc** | 38 | 37 | 34 |
| **15.** | **JNCASR** | 5 | 3 | 1 |
| **16.** | **NAL** | 168 | 166 | 164 |
| **Total** | | **650** | **612** | **583 (89.7%)** |

**Geographical Boundary of the Study (16 Prominent Aerospace Organizations of Bangalore, INDIA).**

**Key:** ADA=Aeronautical Development Agency, AFTC=Air Force Technical College, ADE=Aeronautical Development Establishment, ASTE=Aircraft Systems Testing Establishment, CABS=Centre for Airborne Systems, CEMILAC=Centre for Military Airworthiness and Certification, C-MMACS=Centre for Mathematical Modeling and Computer Simulation, DARE=Defense Avionics Research Establishment, LRDE=Electronics and Radar Development Establishment, GTRE=Gas Turbine Research Establishment, HAL=Hindustan Aeronautics Limited, IAM=Institute of Aerospace Medicine, ISRO-ISTRAC=Indian Space Research Organization, IISc=Indian Institute of Science, JNCASR=Jawaharlal Nehru Centre for Advanced Scientific Research, NAL=National Aerospace Laboratories.

**Table-2: Category Wise Distribution of the Respondents**

| Sl. | | Categories | Organization | |
|---|---|---|---|---|

| No. | Organizations | Aerospace Scientist | Aerospace Engineer | Wise, Total No. of Respondents | % of Total Sample |
|---|---|---|---|---|---|
| 1 | ADA | 39 | 19 | 58 | 9.9 |
| 2 | AFTC | 0 | 15 | 15 | 2.6 |
| 3 | ADE | 12 | 0 | 12 | 2.1 |
| 4 | ASTE | 2 | 27 | 29 | 5.0 |
| 5 | CABS | 13 | 1 | 14 | 2.4 |
| 6 | CEMILAC | 26 | 3 | 29 | 5.0 |
| 7 | C-MMACS | 2 | 4 | 6 | 1.0 |
| 8 | DARE | 7 | 2 | 9 | 1.5 |
| 9 | LRDE | 2 | 0 | 2 | 0.3 |
| 10 | GTRE | 12 | 9 | 21 | 3.6 |
| 11 | HAL | 3 | 131 | 134 | 23.0 |
| 12 | IAM | 30 | 3 | 33 | 5.7 |
| 13 | ISRO-ISTRAC | 5 | 17 | 22 | 3.8 |
| 14 | IISc | 21 | 13 | 34 | 5.8 |
| 15 | JNCASR | 1 | 0 | 1 | 0.2 |
| 16 | NAL | 120 | 44 | 164 | 28.1 |
| Total for all Organizations | | 295 | 288 | 583 | 100.0 |
| Percent for all Organizations | | (50.6) | (49.4) | (100.0) | |
| Chi-Square | | 278.811 | | | |
| P Value | | 0.000 | | | |

**Table-3: How do you locate required articles in the e-journal? (can choose multiple choice)**

| Sl.No. | Locating Required Articles | |
|---|---|---|
| (1) | Directly from the Publisher's Website | O |
| (2) | Alphabetical list located on the Publisher's Website | O |
| (3) | Subject list located on the Publisher's Website | O |
| (4) | Access/Link provided at your desktop through the Organization's Intranet | O |
| (5) | E-journal online list | O |
| (6) | Personal Bookmark | O |
| (7) | From a Database | O |

**Table 4: Location of Required Articles from e-Journals (Multiple Choices)**

| SN | Organizations | Location of Articles from e-Journals [** 'Only 'Yes' Responses Have Been Tabulated'] | | | | | | | Total No. of Choices Selected | Organization Wise Total No. of Respondents | % of Total Sample |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Directly from Publisher's Website | Alphabetical list located on Publisher's Website | Subject list located on the Publisher's Website | Access/ Link provided at your desktop through the Organization's Intranet | e-Journal Online List | Personal Bookmark | From a Database | | | |
| 1 | ADA [n=58] | 16 | 8 | 14 | 12 | 22 | 9 | 9 | 90 | 58 | 9.9 |
| | | (27.6) | (13.8) | (24.1) | (20.7) | (37.9) | (15.5) | (15.5) | | | |
| 2 | AFTC [n=15] | 3 | 4 | 6 | 1 | 4 | 4 | 2 | 24 | 15 | 2.6 |
| | | (20.0) | (26.7) | (40.0) | (6.7) | (26.7) | (26.7) | (13.3) | | | |
| 3 | ADE [n=12] | 4 | 1 | 1 | 1 | 3 | 1 | 4 | 15 | 12 | 2.1 |
| | | (33.3) | (8.3) | (8.3) | (8.3) | (25.0) | (8.3) | (33.3) | | | |
| 4 | ASTE [n=29] | 9 | 7 | 2 | 1 | 4 | 1 | 5 | 29 | 29 | 5.0 |
| | | (31.0) | (24.1) | (6.9) | (3.4) | (13.8) | (3.4) | (17.2) | | | |
| 5 | CABS [n=14] | 4 | 3 | 6 | 0 | 3 | 2 | 1 | 19 | 14 | 2.4 |
| | | (28.6) | (21.4) | (42.9) | (0.0) | (21.4) | (14.3) | (7.1) | | | |
| 6 | CEMILAC [n=29] | 13 | 7 | 5 | 8 | 5 | 1 | 2 | 41 | 29 | 5.0 |
| | | (44.8) | (24.1) | (17.2) | (27.6) | (17.2) | (3.4) | (6.9) | | | |
| 7 | C-MMACS [n=6] | 4 | 2 | 3 | 3 | 1 | 0 | 1 | 14 | 6 | 1.0 |
| | | (66.7) | (33.3) | (50.0) | (50.0) | (16.7) | (0.0) | (16.7) | | | |
| 8 | DARE [n=9] | 2 | 5 | 3 | 0 | 3 | 1 | 1 | 15 | 9 | 1.5 |
| | | (22.2) | (55.6) | (33.3) | (0.0) | (33.3) | (11.1) | (11.1) | | | |
| 9 | LRDE [n=2] | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 4 | 2 | 0.3 |
| | | (50.0) | (0.0) | (50.0) | (50.0) | (0.0) | (50.0) | (0.0) | | | |
| 10 | GTRE [n=21] | 4 | 6 | 13 | 10 | 5 | 2 | 2 | 42 | 21 | 3.6 |
| | | (19.0) | (28.6) | (61.9) | (47.6) | (23.8) | (9.5) | (9.5) | | | |
| 11 | HAL [n=134 | 33 | 30 | 33 | 19 | 34 | 10 | 21 | 150 | 134 | 23.0 |
| | | (24.6) | (22.4) | (24.6) | (14.2) | (25.4) | (7.5) | (15.7) | | | |
| 12 | IAM [n=33] | 9 | 9 | 6 | 6 | 11 | 6 | 7 | 54 | 33 | 5.7 |
| | | (27.3) | (27.3) | (18.2) | (18.2) | (33.3) | (18.2) | (21.2) | | | |
| 13 | ISRO-ISTRAC [n=22] | 9 | 1 | 6 | 5 | 5 | 5 | 1 | 32 | 22 | 3.8 |
| | | (40.9) | (4.5) | (27.3) | (22.7) | (22.7) | (22.7) | (4.5) | | | |
| 14 | IISc [n=34] | 14 | 3 | 9 | 7 | 13 | 8 | 7 | 61 | 34 | 5.8 |
| | | (41.2) | (8.8) | (26.5) | (20.6) | (38.2) | (23.5) | (20.6) | | | |
| 15 | JNCASR [n=1] | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0.2 |
| | | (0.0) | (0.0) | (0.0) | (0.0) | (0.0) | (0.0) | (100.0) | | | |
| 16 | NAL n=164] | 44 | 36 | 50 | 54 | 57 | 23 | 37 | 301 | 164 | 28.1 |
| | | (26.8) | (22.0) | (30.5) | (32.9) | (34.8) | (14.0) | (22.6) | | | |
| Total for all Organizations | | 169 | 122 | 158 | 128 | 170 | 74 | 101 | 892 | 583 | 100.0 |
| Percent for all Organizations | | (29.0) | (20.9) | (27.1) | (22.0) | (29.2) | (12.7) | (17.3) | | (100.0) | |
| Chi-Square | | 16.16 | 19.87 | 31.09 | 44.80 | 15.57 | 21.58 | 18.49 | | | |
| P Values | | 0.371 | 0.177 | 0.009 | 0.000 | 0.411 | 0.119 | 0.248 | | | |

## 10. RESULTS AND DISCUSSION

The aerospace scientists and engineers look into various e-journal sources for location of required articles for their day to day research work. Table 3 presents the various sources through which e-journal articles are searched, located and used. It is seen that out of the 583 respondents, 170 respondents have opted for 'e-Journal Online List' amounting to 29.2%. This is followed by 169 respondents who have opted for 'Directly from Publisher's Website' representing 29.0%. 'Subject List Located on the Publisher's Website' accounts for 158 respondents amounting to 27.1%. A total number of 128 respondents have opted 'Access/Link Provided at your Desktop Through the Organization's Intranet' representing 22.0%. 'Alphabetical List Located on the Publisher's Website' accounts for 122 respondents aggregating 20.9%. A total of 101 respondents have chosen the option 'From a Database' representing 17.3%. The lowest number of respondents amounting to 74 and aggregating 12.7% has opted for 'Personal Bookmark' as their choice.

- The $\chi 2$ test indicates that the 'e-Journal Online List' and the different types of aerospace organizations have no significant association (Chi-Square=15.57, P = 0.411). The percentages of preference for 'e-Journal Online List' by the 16 aerospace organizations are approximately the same.

- The $\chi 2$ test indicates that 'Directly from Publisher's Website' and the different types of aerospace organizations have no significant association (Chi-Square=16.16, P = 0.371). The percentage of preference for 'Directly from Publisher's

Website' by the 16 aerospace organizations are approximately the same.

- The $\chi 2$ test indicates that 'Subject List Located on the Publisher's Website' and the different types of aerospace

organizations have significant association (Chi-Square=31.09, P = 0.009). The percentage of preference for 'Subject List Located on the Publisher's Website' by the 16 aerospace organizations are not approximately the same.

- The $\chi 2$ test indicates that 'Access / Link Provided at your Desktop through your Organization's Intranet' and the different types of aerospace organizations have significant association (Chi-Square=44.80, P = 0.000). The percentage of preference for 'Access / Link provided at your Desktop through the Organization's Intranet' by the 16 aerospace organizations are not approximately the same.

- The $\chi 2$ test indicates that 'Alphabetical List Located on the Publisher's Website' and the different types of aerospace organizations have no significant association (Chi-Square=19.87, P = 0.177). The percentages of preference for 'Alphabetical List Located on the Publisher's Website' by the 16 aerospace organizations are approximately the same.

- The $\chi 2$ test indicates that 'From a Database' and the different types of aerospace organizations have no significant association (Chi-Square=18.49, P = 0.248). The percentages of preference for 'From a Database' by the 16 aerospace organizations are approximately the same.

- The $\chi 2$ test indicates that 'Personal Bookmark' and the different types of aerospace organizations have no significant association (Chi-Square=21.58, P = 0.119). The percentages of preference for 'Personal Bookmark' by the 16 aerospace organizations are approximately the same.

## 12. CONCLUSIONS

The main conclusions that we would like highlight in this study are:

- The information seeking behavior of the aerospace scientists and engineers for location of electronic journal articles show a homogeneous pattern viz., (a) 'e-Journal Online List' (Chi-Square=15.57, P = 0.411), (b) 'Directly from Publisher's Website' (Chi-Square=16.16, P = 0.371), (c) 'Alphabetical List Located on the Publisher's Website' (Chi-Square=19.87, P = 0.177), (d) 'From a Database' (Chi-Square=18.49, P = 0.248), (e) 'Personal Bookmark' (Chi-Square=21.58, P = 0.119), ***except for*** (i) 'Subject List Located on the Publisher's Website' (Chi-Square=31.09, P = 0.009) and (ii) 'Access / Link Provided at your Desktop through your Organization's Intranet' (Chi-Square=44.80, P = 0.000).

- The percentages of preference by the 16 aerospace organizations are approximately the same, ***except for*** (i) 'Subject List Located on the Publisher's Website' (Chi-Square=31.09, P = 0.009) and (ii) 'Access / Link Provided at your Desktop through your Organization's Intranet' (Chi-Square=44.80, P = 0.000).

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## 14. REFERENCES

[1]. Brown, C.M. (1999), Information Seeking Behaviour of Scientists in the Electronic Information Age: Astronomers, Chemists, Mathematicians and Physicists, Journal of the American Society for Information Science, 50(10), 929-943.

[2]. Tenopir, C. et al., (2009) Electronic journals and changes in scholarly article seeking and reading patterns, Aslib Proceedings, Vol. 61 Iss: 1, pp.5 - 32

[3]. Hemminger, B.M. et al., (2007), Information Seeking Behaviour of Academic Scientists, Journal of the Association for Information Science and Technology, 58(14), 2205-2225.

[4]. Kwasitsu, L. (2003), Information Seeking Behaviour of Design, Process and Manufacturing Engineers, Library and Information Science Research, 25(4), 459-476.

[5]. Hertzum, M. (2000), The Information Seeking Practices of Engineers: Searching for Documents as well as for People, Information Processing and Management, 36(5), 761-778.

[6]. Donald, K. et al., (2009), Scholarly Journal Information Seeking and Reading Patterns of Faculties at Five Universities, 22(2), 126-144(19).

[7]. Nicholas D. et al., (2003), Digital journals, Big Deals and online searching behaviour: a pilot study, Aslib Proceedings, 55(1/2), 84-109.

[8]. Rowlands J. et al., (2008), The Google generation: the information behaviour of the researcher of the future, Aslib Proceedings, Vol. 60 (4), 290-310.

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