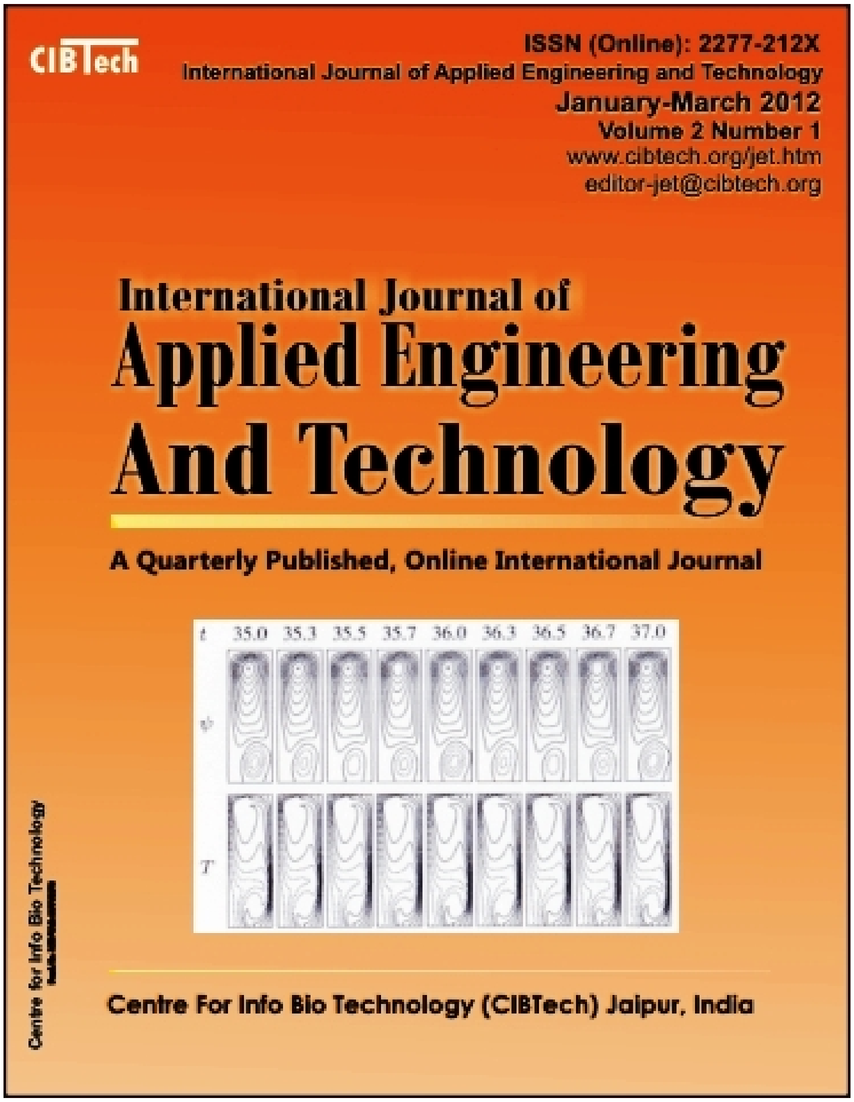

International Journal of Applied Engineering and Technology

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The **impact factor** has been used for assessing the quality of journals. Electronic editions of scientific journals and the rapid spread of scientific information modifies the pattern of bibliographic citations, and thus affect the impact factor. Even a decade ago it was proved that the presence of an electronic version of the journal circulated via Internet is associated with the impact factor score (Curti *et al.,* 2001). Therefore it will be our prime objective to circulate the journal far and wide, globally so that the authors could get benefited from its impact factor score.

Types of Papers

General article: Covering current trends in research in Engineering sciences but may be interesting to general readers outside the field.

Addendum: It includes article giving additional information on earlier published research paper of the author

Research article: Covering research work of scientific excellence.

Review article: Focusing on current advancements in the given field.

Short communication: Containing important, interesting and novel findings.

Research account: Personalized review articles on the research work carried at the author(s)' laboratory, based on the published work of the author(s).

Historical note: Includes famous scientific personalities or institutions or events of the past.

Opinion: Views on scientific activity.

Book reviews: On reference books published in various branches of Engineering and Technology.

Research Article

USE PATTERNS OF CORE AEROSPACE ENGINEERING E-DATABASES, GATEWAYS AND STANDARDS: A RESEARCH SURVEY OF AEROSPACE SCIENTISTS AND ENGINEERS OF BANGALORE

[*]R Guruprasad[1], P. Marimuthu[2] and Khaiser Nikam[3]
**Knowledge and Technology Management Division, CSIR-National Aerospace Laboratories, Bangalore*
[2]Dept. of Bio-Statistics, National Institute of Mental Health and Neuro Sciences (NIMHANS), Bangalore
[3]Dept. of Studies in Library and Information Science, University of Mysore, Mysore
**Author for Correspondence*

ABSTRACT

A large number of core Aerospace Engineering e-Databases, Gateways and Standards are frequently referred by the aerospace scientists and engineers of Bangalore for their day to day research work, for keeping updated in their subject, for gathering information, for writing technical proposals and reports, for increasing scholarly productivity and finally to be current with global R&D. A research survey was undertaken to ascertain the 'Use Patterns' of these databases, gateways and standards amongst these aerospace scientists and engineers of the selected 16 aerospace organizations of Bangalore. The study is restricted to the geographic boundary of the city of Bangalore. Out of the 650 survey questionnaires distributed to the scientists and engineers, a total number of 612 were received back and finally 583 responses found suitable for the study. The total percentage of responses usable from all the 16 aerospace organizations amounted to 89.7 percent. The analysis is based on the responses received from the aerospace scientists and engineers representing these selected aerospace organizations. The responses from the participants towards the use of core aerospace engineering databases, gateways and standards were graded on a scale of 4 to 0, 4 representing 'Daily' and '0' representing 'Never'. The major findings that the authors would like to report in this paper are: (a) *Analysis of Variance (ANOVA)* was applied for testing the significant difference among the mean scores attained from 16 aerospace organizations towards the Use Patterns of 'Aerospace Engineering e-Databases', 'Gateways' and 'Standards'. It is observed that all the 16 aerospace organizations show a significant difference ($P < 0.05$) in their mean scores viz., 'Aerospace Databases', 'AIAA Meeting Papers', ''IEEE Explore', 'NASA Technical Reports Server (NTRS)', 'NTIS (CSA)', 'Thomas Register' and 'AIAA' *except for* 'Aerospace and High Technology Database through Cambridge Science Abstracts (CSA)', 'Inside Science', 'SAE International(P=0.089)', 'Compendex', 'INSPEC', 'Aerospace Defence Industry Data Finder' and 'Aerospace Industries Association' [Core Aerospace Engineering e-Databases]; 'AERADE', 'GALCIT', 'IAIN', 'FAA', 'NASA', 'Space Today Online' and 'Yahoo Index for Aeronautics and Space Administration' *except for* 'ERAU' [Aerospace Gateways]; 'AIA NAS SET', 'NAS 1352', 'NAS 1637', 'NAS 410', 'NASM20470', 'NASM21209', 'NASM33537', '14 CFR 1-59', 'AGMA 911', 'API/IP SPEC 1581', 'AP/IP SPEC 1583', 'API/IP STD 1529', 'API/IP STD 1542', 'ARINC 429 P1' 'ARINC 600', 'ASTM D 1655', 'ASTM D 471', 'ASTM E 1742', 'ASTM E 399', 'AWS D17.1', 'BS EN 2282', 'BS EN 2424', 'DATCOM' 'JAA & GM Complete Set', 'JAA Complete Set', 'MIL-STD-704', 'NEMA WC 27500', 'RTCA DO178', RTCA DO254', 'SAE AMS 2175', 'SAE AMS 2644', 'SAE AMS-H-6875', 'SAE AMS QQ-P-416', 'SAE AS 478', 'SAE AE 9100', 'SAE AS 9102', 'DO178-B', 'DO-254', 'DO-160D', 'ARINC 400 Series', 'ARINC 500 Series', 'ARINC 600 Series', 'ARINC 700 Series', 'ARINC 800 Series' and 'ARINC 900 Series', *except for* 'AGMA 925(P = 0.071)' [Aerospace Standards].

Key Words: *Patterns of Use, Aerospace Scientists and Engineers, Core Aerospace Engineering E-Databases, Gateways and Standards*

Research Article

INTRODUCTION

An e-Database is a file or collection of bibliographic citations or records of materials stored electronically in a manner that can be searched, retrieved and manipulated. An e-Database is an organized collection of information, of a particular subject or multi-disciplinary subject areas; information within an e-database can be searched and retrieved electronically. Contents include – journal articles, newspaper articles, book reviews and conference proceedings which are usually updated on a daily, weekly, monthly or quarterly basis. Basically, there are two types of e-databases: (a) Full-text databases and (b) Bibliographic databases. Full-text databases contain the whole content of an article such as citation information, text, illustrations, diagrams and tables. Bibliographic databases contain only citation information of an article, such as author name, journal title, publication date and page numbers.

On the other hand, an Online Database is a database accessible from a network, including from the Internet. These online databases are delivered primarily via a web browser. They are often purchased by a monthly subscription. They embed common collaboration features such as sharing, e-mail notifications, etc. Another definition says that an online database is 'an electronic collection of information, often containing journal articles, or references to journal articles, accessed via the Internet'.

Basically, a Gateway is a network point that acts as an entrance to another network. Generally, there are two kinds of Gateways: (a) Library Gateways: which are collections of databases and information sites, arranged by subject, that have been assembled, reviewed and recommended by specialists, usually librarians. These Gateway collections support research and reference needs, by identifying and pointing to recommend, academically-oriented pages on Web; (b) Subject Specific Databases (Vortals): generally devoted to a single subject, created by professors, researchers, experts, governmental agencies, business interests and other subject specialists who have a deep interest in the subject. One can be pretty sure that these Gateways have been reviewed and evaluated by subject specialists for their accuracy and content.

Freshwater inter-alia quotes Sladen and Spence (2005) by saying that Subject Gateways have significant advantages: While offering a single point of access to Internet-based resources in a given field, selective subject gateways have one key feature which distinguishes them from more commercial enterprises – they are characterized by a quality control methodology based on skilled human input from the relevant academic discipline.

He also inter-alia quotes Koch (2005) by saying that 'A Subject Gateway is an Internet service with a primary focus on distributed Internet resources … which support systematic resource discovery … The service is based on resource description. Browsing access to the resources via a Subject structure is an important feature. Also, Quality controlled Subject Gateways are Internet services which apply a rich set of quality measures to support systematic resource discovery. Considerable manual effort is used to secure a selection of resources which meet quality criteria and to display a rich description of these resources with Standards based metadata.

The Desire information Gateways Handbook (2001) states that: One of the key roles of Internet Subject Gateways is the creation of descriptive metadata about networked resources which can be used as a basis for searching and browsing the Gateway. These descriptions can also help Gateway users to identify whether the resources are really what they need, potentially saving them a considerable amount of time browsing through the … information available elsewhere on the Internet.

Aerospace Standards are generally specifications that define materials, methods, processes or practices. They provide a basis for determining consistency and acceptable levels of quality, performance, safety and reliability. They are generally voluntary compliance documents and only become mandatory if called up in legislation or in contracts. These are 'living documents', meaning that they are constantly evolving and can be updated, superseded or withdrawn. A large number of production oriented aerospace organizations use Aerospace Standards heavily.

Aerade's And Iain's (International Pioneering Initiatives In Facilitating The Use Of Aerospace Electronic Information Resources

The Aerospace Information Management – UK (AIM-UK) project – found compelling evidence of 'under-utilization' of 'Electronic Information Resources' by the aerospace scientists and engineers. It recommended a number of initiatives to raise awareness and improve access to useful electronic information resources, and to reduce the threat of 'information overload'. In particular, there was a call to establish an Internet Gateway and Portal to the aerospace and defence community that would act as a 'jumping-off-point' for effective exploration and retrieval of information on the WWW. Launched in November, 1999, AERADE is specifically designed to meet this need. It is an initiative developed by the Cranfield University to enable aerospace and defence experts to find relevant information on the Internet. Today, the reports archive is a historical collection of over 10,000 significant technical papers and reports produced by the Aeronautic Research Council (ARC) and the National Advisory Committee for Aeronautics (NACA), Hanley; Harrington and Blagden, (1998).

In the Spring of 1995, the Technical Information Committee (TIC) of the NATO Advisory Group for Aerospace Research and Development (AGARD) set up a Working Group to examine the issues, strategies, and actions required to develop and establish an International Aerospace Information Network (IAIN). The intention was to develop a mechanism for improving the access to, and use of, aerospace and aerospace-related information, by developing a self-sustaining, worldwide, network of partner organizations committed to sharing their data and information resources. After exploring a number of options, and evaluating the many existing models of international cooperative databases, the Working Group decided that the Internet would be the most suitable vehicle to provide such a mechanism, and developed a prototype IAIN Homepage to be used as a Proof of Concept. The prototype Homepage was inaugurated in April 1997 and now provides a limited catalog of aerospace information sources from which information searches can be launched. These sources will be expanded as new sources are identified.

The success of this concept will be determined primarily on its ability to deliver the desired data and information and needed services to the user. It should include:

- the ability to search for aerospace and aerospace-related data and information across
- aerospace and aerospace-related data directory information
- the facility to order data products through a simplified "one-stop shopping" procedure the delivery of data to users on a variety of standard media, including electronic delivery where heterogeneous systems appropriate.

The Mission of AGARD: According to its Charter, the mission of AGARD is to bring together the leading personalities of the NATO nations in the fields of science and technology relating to aerospace for the following purposes:

- Recommending effective ways for the member nations to use their research and development capabilities for the common benefit of the NATO community
- Providing scientific and technical advice and assistance to the Military Committee in the field of aerospace research and development (with particular regard to its military application)
- Continuously stimulating advances in the aerospace sciences relevant to strengthening the common defence posture
- Improving the co-operation among member nations in aerospace research and development
- Exchange of scientific and technical information
- Providing assistance to member nations for the purpose of increasing their scientific and technical potential
- Rendering scientific and technical assistance, as requested, to other NATO bodies and to member nations in connection with research and development problems in the aerospace field.

The mission of AGARD is carried out through the Panels which are composed of experts appointed by the National Delegates, the Consultant and Exchange Programme and the Aerospace

Applications Studies Programme. Participation in AGARD activities is by invitation only and is normally limited to citizens of the NATO nations, Walter (2008).

Review of Literature

Lawrence (1990), addresses the need to analyze user behaviour in particular the behaviour of aerospace engineers and scientists. The prospects for integrated data base access at the individual desk top are reviewed.

Pinelli (1981), obtained a feedback from engineers and scientists in the academic and industrial community which provided an assessment of the usage and perceived quality of NASA Langley generated scientific and technical information and the familiarity and usage of selected NASA publications and services and identified ways to increase the accessibility of Langley STI.

Pinelli (1981),investigated the relationship between the use of US Government technical reports by US aerospace engineers and scientists who were AIAA (American Institute of Aeronautics and Astronautics) members. Relevance, technical quality, and accessibility were found to be more important determinants of the overall extent to which US government technical reports and three other information products were used by US aerospace engineers and scientists.

Pinelli (1991b), summarize current literature and research and discuss US government technical report use and the importance of using data obtained from the National Aeronautics and Space Administration/Department of Defence Aerospace Knowledge Diffusion Research Project. They make a case for changing existing US technology policy and present a research agenda for the US Government Technical report.

Pinelli (1991c), summarize the literature on technical reports and provides a model that depicts the transfer of federally funded aerospace R and D via the US government technical reports. They give a brief overview of on-going research into the use of the US government technical report as a rhetorical device for transferring federally funded US aerospace RandD.

Pinelli (1991d), present the results of a survey of US aerospace engineers and scientists that solicited their opinions concerning the format of NASA Langley Research Center authored technical reports.

Pinelli (1993a,b, 1997), summarizes the literature on the US government technical report and presents the results of a survey of US aerospace engineers and scientists that solicited their opinions concerning the format of NASA Langley Research Center authored technical reports.

Steinke (1990), says information on the use of electronic bibliographic databases is limited. She refers Shuman’s study in her book and says that those engineers who participated in the survey made little use of online databases. In steps used in solving a technical problem, databases ranked eighth, just before librarians and information specialists. The study revealed that approximately five percent of the engineers used online databases when searching for a solution to a technical problem. The study also revealed that ‘accessibility’ was the single most important criterion for determining the use of an online database. Further, the study also revealed that the engineers did use online databases most frequently to define or redefine the technical problem and continued to use the databases for the duration of the attempt to solve the technical problem. Coming to aerospace scientists and engineers, they use a variety of information sources when solving a technical problem. They use, in the decreasing order of frequency, the following sources: (a) personal knowledge (88.7) cases, (b) information discussion with colleagues (77.2), (c) discussion within experts within the organization (69.5), (d) discussion with supervisor (45.1), (e) textbooks (39.6), (f) technical reports (35.4), (g) journals and conference/meeting papers (35.2), (h) handbooks and standards (34.5), (i) Govt. technical reports (33.5), (j) discussion with experts outside the organization (22.5), (k) Librarians and technical information specialists (14.1), (l) Technical information sources such as online databases (8.2).

Guruprasad *et al.*, (2010), in their study have mentioned that Indian aerospace scientists and engineers become aware of ‘electronic information resources’ from various sources, like: (a) Bibliographic database search, (b) Indexing and abstracting databases, (c) Announcements in journals like STAR, (d) Current awareness publications like SCAN, (e) Cite in a report / journal / conference paper, (f)

Referred to them by the librarian of technical information specialist, (g) International search of library and aerospace resources, (h) By serendipity, by browsing or looking for materials, (i) Organizations like NASA sending information them, (k) The authors sending information directly and by (l) other means. As far as ways of obtaining 'electronic information resources', their study reveals that these engineers and scientists get the relevant information through: (a) NASA sends to them on request, (b) NASA sends it as a service, (c) The author directly sends, (d) Request/order from the library, (e) Request from NTIS (NASA Technical Information Services, (f) Getting it from other colleagues, (g) Library informs about new arrivals, (h) Getting it from other libraries, (i) Getting it from Institutional Repositories, (j) Downloading from the author's web site, (k) and downloading from third party's web site. They also opine that in their research survey of 16 leading aerospace organizations of Bangalore opine that core aerospace engineering e-databases, gateways and standards are extremely important to this community in their day to day work and to keep pace with global R&D. These electronic information resources constitute a major source of scientific and technical information to them. The authors have studied the 'Use Patterns of these Electronic Information Resources' and the inferences drawn are highlighted in this paper.

Stephen *et al.,* (1986), present an overview prepared by producer of database newly available in 1985 that covers 10 subject categories: engineering, geosciences, chemistry and materials, space sciences, aeronautics, astronautics, mathematical and computer sciences, physics, social sciences, and life sciences. Database development, unique features, document delivery, sample records, searchable fields, and database specifications are noted.

Blados and Cotter (1992), in their paper highlight that Scientific and technical information (STI) is a valuable resource that represents the results of large investments in research and development (R&D) and the expertise of a nation. NASA and its predecessor organizations have developed and managed the pre-eminent aerospace information system. We see information and information systems changing and becoming more international in scope. They also point out that the development of aeronautics and astronautics in individual nations has also led to initiatives for national aerospace databases. Considering recent technological developments in information science and technology, it is time to reconsider the mutually beneficial possibilities offered by cooperation and international resource sharing. This paper raises for consideration of new possibilities for unifying the various aerospace database efforts towards a cooperative international aerospace database initiative that can optimize the cost/benefit equation for all participants.

O'Flaherty J. J. (1997), mentions in his paper that, Aerospace library collections are a well-defined pan-European subject, for which standardized access and interconnection can add enormously to their value over any one collection and allow libraries with less-developed library services to improve these facilities and at the same time enable those which are more advanced to upgrade their systems. EURILIA, which was part of the EC Libraries Programme aimed to enhance the Libraries' R&D and education process which underpins the aerospace sector by establishing a new service based on researched user information needs and development of a standardized pan-European system for information access, retrieval, image browsing and document delivery.

Chamorro, et al., (2005), opine that their research was triggered by a concern expressed by some experienced engineering designers about the usability of new electronic retrieval systems. These systems are substituting the traditional paper-based manuals, but there is no clear understanding about how these new systems alter the way designers search for information. In fact, there is little understanding of how designers search for information in company manuals. In total, twelve designers from five company sites of an aerospace company were observed undertaking the design case of a flying control surface, accessing information only from the company's manuals. Six of the designers were provided with paper copies of the manuals, whereas the other six were asked to access the standards and manuals through the electronic system. The results presented in this paper provide a model of how designers search for information in company manuals that may help computer scientists to create more aligned retrieval tools to designers.

Goudar, (2005), mentions that the developments in ICT have enabled the Information Centers to develop many innovative tools and techniques for acquiring, organizing, retrieving and disseminating knowledge sources, generating information services and marketing them to its clientele. Consortium approach through different pricing, management and licensing models is enabling the libraries to provide access to thousands of e-journals, e-books and other kinds of e-documents. Through the AeroInfo Gateway set up at CSIR-NAL, users can search International databases like Aerospace Database, NTIS, etc., right at their desktops through the campus-wide network. They can also access more than 2500 full text journals from reputed journal publishers. The e-journals gateway provides access to more than 700 journals available free on the net.

Jeong, et al., (2007), emphasizes that while developing information technology and improving engineering environment, modern aerospace technology requires even larger scale computing and data management. In order to provide a uniform aerospace development infrastructure, three perspectives are required (i.e., integration and management of aerospace resources located in multiple organizations and areas; facilitating human collaboration in aerospace fields; and remote access and operation of aerospace facilities and instruments).

Pinelli, et al., (1991, 2002), in their two independent pilot studies as part of the phase-4 NASA/DoD Aerospace Knowledge Diffusion Research Project investigated the technical communications practices of Israeli and US aerospace engineers and scientists. Both studies had the same five objectives: first, to solicit the opinions of aerospace engineers and scientists regarding the importance of technical communications to their profession; second, to determine the use and production of technical communications by aerospace engineers and scientists; third, to seek their views about the appropriate content of an undergraduate course in technical communications: fourth, to determine aerospace engineers' and scientists' use of libraries, technical information centers, and online database; and fifth, to determine the use and importance of computer and information technology to them.

Sripada, et al., (2002), in his paper points out that, the aerospace industry poses significant challenges to information management unlike any other industry. Data management challenges arising from different segments of the aerospace business are identified through illustrative scenarios. These examples and challenges could provide focus and stimulus to further research in information management.

Komerath, et al., (1999), talk about the Aerospace Digital Library as a significant e-resource and describe that it is a resource used by learners at all levels, to solve engineering problems by learning across disciplines. At its core is a growing body of basic technical knowledge, used by college students to explore far beyond the normal reaches of engineering courses. A learner-centered gateway, set at the level of a college freshman, links the fundamental logic of technical disciplines. A set of succinct, hyperlinked Concept Modules (CMs) form the intellectual heart of ADL, giving the learner the best of knowledge as well as information.

Hatua, et al., (2011), discuss a methodology that was adopted for construction of a domain-based information system, known as Aerospace Information System (AERIS), comprising six distinct steps in identifying and sourcing, evaluating and then technically integrating resources into the information system. AERIS is an integrated gateway for resources in the domain of aerospace science and technology. AERIS is designed to provide information from varied sources such as formal publications (e.g. articles), aggregators (e.g. harvesters) and also informal resources such as blogs and discussion fora. Their research work provides a model for a comprehensive integrated gateway to domain-based information using open-source tools.

Tirenin, et al., (1991), discuss the Enhanced Multinet Gateway (EMG) which is a multilevel secure packet-based gateway that is being developed. The functions, capabilities, and security features of the EMG are described. As outlined, the EMG will provide for the secure flow of data from a single- or multilevel secure host or network to another host or network operating at an equal or higher security level. It will interface to a wide variety of commercial and tactical networks to provide a secure, adaptable means of information transmission between tactical and strategic military systems

National Aerospace Laboratories, Bangalore And Allied Aerospace Organizations In Bangalore: The Scope Of The Present Study

The city of Bangalore, Karnataka is considered the 'Aerospace Hub' of the country with many key aerospace organizations which have already been established several years ago like (a) The Hindustan Aeronautics Limited (HAL), (b) The National Aerospace Laboratories (NAL), (c)The Aeronautical Development Establishment (ADE), (d) The Indian Space Research Organization (ISRO), (e) The Aeronautical Development Agency (ADA). It also comprises many key Indian Air Force establishments like (a) Air Force Systems and Testing Establishment (ASTE), (b) Air Force Technical College (AFTC) and the (c) Institute of Aviation Medicine (IAM). In a nutshell, many of these organizations come under the broad umbrella of (i) Council of Scientific and Industrial Research (CSIR), (ii) Defense Research and Development Organizations (DRDO), (iii) The Indian Air Force (IAF), (iv) Educational Institutions like IISc, and (v) Major public sector undertakings and (vi) The Department of Space. All of them in their own way have significantly contributed to a large number of Indian aerospace programmes.

The National Aerospace Laboratories is India's premier civil aviation R&D aerospace research organization in the country. Its main mandate is the 'Development of aerospace technologies with strong science content and with a view on their practical application to the design and construction of flight vehicles'. NAL is also required 'to use its aerospace technology base for general industrial applications'. 'Technology' would be its core engine-driver for the future. 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.

Objectives of the Study

- To determine the types of electronic information resources, information requirements of the aerospace scientists and engineers.
- To ascertain the patterns of use of electronic information resources (more specifically, core aerospace engineering databases, gateways and standards) by the aerospace scientists and engineers of Bangalore.
- To ascertain whether the percentage of preference of the Use Patterns of 'Core Aerospace Engineering Databases', 'Gateways' and 'Standards' by the aerospace engineers and scientists are approximately the same.
- To study whether there exists similar patterns (homogeneous) of use of 'Core Aerospace Engineering Databases', 'Gateways' and 'Standards' amongst these aerospace scientists and engineers of the 16 aerospace organizations in Bangalore.

Null Hypothesis

- There is no significant difference in the mean scores of 'Core Aerospace Engineering Databases', 'Gateways' and 'Standards' amongst the aerospace scientists and engineers of the selected 16 aerospace organizations of Bangalore.

MATERIALS AND METHODS

Sample Selection

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.

METHODS

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. Random sampling technique has been used for selection of the sample size.

A structured questionnaire was circulated amongst the 650 (total sample size) scientists and engineers belonging to the 16 prominent aerospace organizations were selected for the study. Out of which, 612 filled-in questionnaires were received, and, finally, 583 (89.7%) usable questionnaires were selected for the study.

Various statistical tests like calculating the arithmetic mean, Co-efficient of Variation (CV), generating the P-value tests for obtaining the probability of a test statistic, Analysis of Variance (ANOVA) tests for comparing whether the arithmetic means of several groups are all equal etc., were deployed on the data using the SPSS package. The responses received were tabulated using the SPSS package.

Table 1: Distribution of Source Data

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%)**

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: Frequency of Usage of Core Aerospace Engineering e-Databases

SN	Organizations	Mean and CV	Frequency of Usage						
			Aerospace Databases	**AIAA Meeting Papers**	**IEEE Explore**	**NASA Technical Reports Server (NTRS)**	**NTIS (CSA)**	**Aerospace – Aerospace and High Technology Database through Cambridge Science Abstracts (CSA)**	**Inside Science**
1	ADA	Mean	1.45	1.14	1.16	1.17	0.91	0.67	0.60
		CV	94.31	107.25	107.32	109.69	137.94	153.56	166.99
2	AFTC	Mean	0.73	0.87	0.60	0.60	0.40	0.33	0.80
		CV	149.97	162.40	164.27	164.27	184.20	185.16	165.02
3	ADE	Mean	1.42	1.42	1.08	1.58	1.00	0.92	0.67
		CV	106.24	97.34	107.49	73.55	104.45	127.04	160.96
4	ASTE	Mean	0.72	0.79	0.66	0.83	0.48	0.52	0.45
		CV	160.44	159.42	169.55	137.27	232.39	216.90	227.70
5	CABS	Mean	1.29	0.71	0.71	1.07	0.50	0.50	0.50

Research Article

SN	Organizations	Mean and CV	Frequency of Usage: Aerospace Databases	AIAA Meeting Papers	IEEE Explore	NASA Technical Reports Server (NTRS)	NTIS (CSA)	Aerospace – Aerospace and High Technology Database through Cambridge Science Abstracts (CSA)	Inside Science
		CV	103.13	127.94	127.94	123.95	188.11	188.11	170.97
6	CEMILAC	Mean	1.31	0.62	0.83	1.00	0.97	0.66	0.48
		CV	120.84	189.72	158.44	138.87	145.11	188.16	204.32
7	C-MMACS	Mean	1.33	1.17	0.83	0.83	0.67	0.67	0.50
		CV	90.83	100.20	159.50	159.50	181.66	181.66	244.95
8	DARE	Mean	1.33	1.33	1.67	1.67	1.56	1.33	1.22
		CV	99.22	91.86	84.85	94.87	85.71	91.86	114.09
9	LRDE	Mean	3.00	3.00	3.50	2.00	2.50	2.50	1.50
		CV	0.00	0.00	20.20	70.71	28.28	84.85	141.42
10	GTRE	Mean	1.38	1.43	1.19	1.67	1.33	0.90	0.57
		CV	90.09	92.79	101.56	81.24	116.99	147.89	162.02
11	HAL	Mean	1.11	0.80	0.78	0.72	0.60	0.64	0.54
		CV	120.64	143.88	144.50	157.46	173.22	164.81	167.87
12	IAM	Mean	0.70	0.30	0.42	0.70	0.42	0.33	0.42
		CV	170.09	193.21	212.72	158.33	243.19	233.18	220.73
13	ISRO-ISTRAC	Mean	0.91	1.36	1.27	1.41	0.77	0.64	0.59
		CV	135.40	107.46	103.39	99.55	143.62	178.48	199.96
14	IISc	Mean	1.59	1.94	1.74	1.26	0.62	0.71	0.44
		CV	91.86	78.12	92.28	93.98	164.41	158.02	202.67
15	JNCASR	Mean	0.00	1.00	1.00	1.00	0.00	0.00	0.00
		CV	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	NAL	Mean	1.58	1.54	1.10	1.27	0.93	0.68	0.51
		CV	86.19	90.73	117.74	96.51	119.99	145.76	169.58
Total Users		Mean	1.28	1.15	1.00	1.07	0.78	0.66	0.54
		CV	105.97	115.46	126.16	115.80	146.42	160.54	175.94
P Values			0.006	0.000	0.000	0.003	0.009	0.281	0.827

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Table 2: Contd…

SN	Organizations	Mean and CV	Frequency of Usage: Thomas Register	SAE International (aerospace .sae.org)	Compendex	INSPEC	Aerospace and Defense Industry Data Finder	Aerospace Engineering : (A) Aerospace Industries Association – AIA	Aerospace Engineering : (B) American Institute of Aeronautics and Astronautics – AIAA
1	ADA	Mean	0.52	0.57	0.52	0.57	0.69	1.00	1.17
		CV	178.30	164.98	174.59	161.66	158.86	127.04	107.34
2	AFTC	Mean	0.53	0.33	0.13	0.33	0.40	0.53	0.33
		CV	185.71	217.12	387.30	244.95	227.56	185.71	217.12
3	ADE	Mean	0.92	1.00	0.83	0.67	1.08	1.25	1.50
		CV	135.28	120.60	160.45	173.21	107.49	84.42	82.88
4	ASTE	Mean	0.34	0.31	0.34	0.28	0.31	0.59	0.59
		CV	260.26	259.83	260.26	272.25	273.73	190.82	190.82
5	CABS	Mean	0.57	0.43	0.43	0.36	0.71	1.14	1.00
		CV	164.08	176.38	218.78	208.58	159.42	96.20	96.08
6	CEMILAC	Mean	1.24	0.97	0.59	0.55	0.76	0.83	0.93
		CV	133.86	136.96	206.51	203.14	160.11	158.44	146.18
7	C-MMACS	Mean	0.50	0.67	0.50	0.50	0.50	0.50	1.33
		CV	244.95	181.66	244.95	244.95	244.95	244.95	112.92
8	DARE	Mean	1.89	1.44	1.33	1.11	1.56	1.78	1.44
		CV	85.55	98.58	91.86	105.00	97.02	96.52	104.49
9	LRDE	Mean	1.50	1.50	1.50	1.50	1.50	1.00	3.00
		CV	141.42	141.42	141.42	141.42	141.42	141.42	47.14
10	GTRE	Mean	0.52	0.90	0.67	0.76	0.76	0.81	1.62
		CV	166.64	130.33	173.21	175.62	154.77	149.36	76.84
11	HAL	Mean	0.54	0.63	0.56	0.51	0.59	0.81	0.84
		CV	182.34	166.91	197.81	190.12	187.45	148.60	142.39
12	IAM	Mean	0.42	0.33	0.30	0.27	0.27	0.36	0.45
		CV	220.73	207.67	225.71	210.49	210.49	236.35	183.17
13	ISRO-ISTRAC	Mean	0.59	0.41	0.41	0.73	0.55	0.73	1.09
		CV	185.82	257.58	257.58	175.89	217.12	165.34	132.41
14	IISc	Mean	0.53	0.53	0.38	0.38	0.53	0.88	2.29
		CV	193.05	193.05	232.28	223.18	193.05	152.22	69.15
15	JNCASR	Mean	2.00	1.00	1.00	0.00	0.00	0.00	0.00
		CV	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	NAL	Mean	0.56	0.62	0.54	0.53	0.59	0.93	1.38
		CV	170.08	156.18	173.20	171.46	164.86	138.53	102.30
Total Users		Mean	0.60	0.61	0.52	0.52	0.60	0.85	1.14
		CV	175.46	165.87	192.00	185.46	174.93	145.03	118.09
P Values			0.004	0.089	0.389	0.495	0.178	0.286	0.000

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Table 3: Frequency of Usage of Aerospace Gateways

SN	Organizations	Mean and CV	Frequency of Usage: ERAU (Embry Riddle Aeronautical University)	AERADE (Aerospace Defence Resources)	GALCIT (Graduate Aeronautical Laboratories, CALTECH)	IAIN (International Aerospace Information Network)	FAA (Federal Aeronautics and Space Administration)	NASA (National Aeronautics Space Administration)	Space Today Online	Yahoo Index for Aeronautics and Aerospace
1	ADA	Mean	0.38	0.48	0.31	0.34	0.52	1.21	0.69	0.64
		CV	230.72	178.83	219.35	176.46	170.79	113.80	163.43	177.88
2	AFTC	Mean	0.27	0.40	0.47	0.60	0.33	1.00	0.67	0.47
		CV	299.55	227.56	196.17	207.02	269.92	146.39	176.27	196.17
3	ADE	Mean	0.92	1.50	1.33	1.25	1.08	1.42	1.17	1.25
		CV	135.28	96.40	112.31	113.78	127.29	97.34	114.61	91.05
4	ASTE	Mean	0.21	0.17	0.21	0.17	0.59	0.72	0.31	0.48
		CV	326.26	312.68	326.26	312.68	190.82	147.15	245.15	238.89
5	CABS	Mean	0.64	0.86	0.43	0.86	1.71	1.29	0.71	0.36
		CV	198.71	150.78	218.78	157.57	86.91	88.57	185.64	260.06
6	CEMILAC	Mean	0.72	1.07	0.76	0.90	0.97	1.10	1.03	0.90
		CV	151.71	139.05	178.44	158.71	152.83	135.60	137.88	161.48
7	C-MMACS	Mean	0.00	0.00	0.33	0.00	0.00	0.83	0.00	0.33
		CV	0.00	0.00	244.95	0.00	0.00	159.50	0.00	244.95
8	DARE	Mean	0.11	0.78	0.44	0.22	0.22	1.67	1.67	1.33
		CV	300.00	167.36	228.10	300.00	300.00	108.17	90.00	91.86
9	LRDE	Mean	1.00	1.50	1.50	1.50	1.00	1.50	1.00	1.00
		CV	141.42	141.42	141.42	141.42	141.42	141.42	141.42	141.42
10	GTRE	Mean	0.81	0.81	0.67	0.90	0.95	1.48	0.67	0.95
		CV	163.97	159.25	179.58	155.94	150.25	106.29	173.21	167.59
11	HAL	Mean	0.31	0.40	0.38	0.36	0.61	0.66	0.45	0.49
		CV	242.50	221.45	231.88	238.17	191.07	167.12	202.31	200.34
12	IAM	Mean	0.36	0.30	0.24	0.33	0.64	0.97	0.39	0.48
		CV	236.35	267.14	292.23	233.18	187.66	135.16	228.28	219.50
13	ISRO-ISTRAC	Mean	0.32	0.23	0.50	0.55	0.59	1.59	1.14	0.36
		CV	245.11	232.50	220.39	209.62	185.82	90.28	128.23	288.37
14	IISc	Mean	0.35	0.24	0.35	0.15	0.24	0.97	0.32	0.15
		CV	259.89	277.98	219.27	379.25	277.98	120.27	224.71	379.25
15	JNCASR	Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		CV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	NAL	Mean	0.34	0.44	0.40	0.48	0.66	1.22	0.57	0.43
		CV	230.39	208.36	201.74	197.11	159.23	105.56	161.23	206.09
Total Users		Mean	0.38	0.47	0.42	0.46	0.64	1.05	0.59	0.52
		CV	226.64	204.07	214.37	210.07	175.07	123.03	174.84	198.78
P Values			0.113	0.000	0.042	0.002	0.015	0.016	0.001	0.025

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Table 4: Frequency of Usage of Aerospace Standards

SN	Organizations	Mean and CV	Frequency of Usage										
			AIA NAS SET	**NAS 1352**	**NAS 1637**	**NAS 410**	**NASM 20470**	**NASM 21209**	**NASM 33537**	**14 CFR 1-59**	**AGMA 911**	**AGMA 925**	**API/IP SPEC 1581**
1	ADA	Mean	0.45	0.48	0.36	0.55	0.53	0.41	0.40	0.48	0.47	0.40	0.40
		CV	162.76	170.20	229.62	170.34	175.99	202.62	182.58	174.57	209.92	216.15	210.93
2	AFTC	Mean	0.60	0.47	0.53	0.47	0.53	0.27	0.40	0.27	0.13	0.33	0.33
		CV	151.71	196.17	185.71	196.17	211.02	222.61	207.02	222.61	387.30	185.16	244.95
3	ADE	Mean	0.83	0.33	0.58	0.67	0.33	0.67	0.75	0.92	0.75	0.42	0.75
		CV	133.76	147.71	170.78	160.96	266.29	147.71	162.06	127.04	128.71	190.31	140.71
4	ASTE	Mean	0.14	0.17	0.14	0.14	0.10	0.14	0.10	0.21	0.10	0.14	0.10
		CV	319.81	349.00	319.81	421.15	395.61	421.15	395.61	326.26	395.61	421.15	395.61
5	CABS	Mean	0.64	0.57	0.43	0.50	0.57	0.64	0.64	0.71	0.43	0.14	0.07
		CV	189.11	202.63	254.20	218.39	202.63	198.71	225.07	185.64	254.20	254.20	374.17
6	CEMILAC	Mean	1.14	0.93	0.45	0.48	0.38	0.66	0.55	0.45	0.34	0.31	0.76
		CV	140.38	140.43	242.81	225.70	258.06	179.10	197.28	257.03	222.97	299.60	201.32
7	C-MMACS	Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		CV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	DARE	Mean	1.44	1.33	1.44	1.11	1.44	1.22	1.56	1.22	0.67	0.44	0.11
		CV	104.49	106.07	110.07	130.77	125.34	121.20	102.21	121.20	150.00	163.46	300.00
9	LRDE	Mean	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
		CV	141.42	141.42	141.42	141.42	141.42	141.42	141.42	141.42	141.42	141.42	141.42
10	GTRE	Mean	0.43	0.57	0.38	0.57	0.38	0.52	0.24	0.29	0.33	0.57	0.81
		CV	228.28	231.98	255.53	231.98	226.97	238.59	262.45	274.32	289.83	231.98	177.38
11	HAL	Mean	0.51	0.51	0.44	0.47	0.51	0.43	0.46	0.56	0.52	0.39	0.33
		CV	201.70	211.31	220.20	216.17	207.25	222.14	216.38	187.85	184.42	204.57	232.55
12	IAM	Mean	0.27	0.21	0.18	0.27	0.24	0.21	0.24	0.24	0.24	0.18	0.27
		CV	307.77	306.37	290.20	293.80	292.23	306.37	326.60	326.60	326.60	290.20	293.80
13	ISRO-ISTRAC	Mean	0.14	0.09	0.09	0.09	0.09	0.14	0.14	0.32	0.09	0.05	0.00
		CV	342.88	469.04	469.04	469.04	469.04	469.04	342.88	327.28	469.04	469.04	0.00
14	IISc	Mean	0.15	0.12	0.15	0.12	0.12	0.12	0.15	0.15	0.18	0.15	0.12
		CV	379.25	456.77	414.55	456.77	456.77	456.77	414.55	414.55	354.86	414.55	456.77
15	JNCASR	Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		CV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	NAL	Mean	0.26	0.20	0.14	0.21	0.23	0.21	0.24	0.26	0.17	0.18	0.17
		CV	250.80	302.42	324.58	274.92	261.31	292.53	265.29	263.37	347.03	338.54	328.33
Total Users		Mean	0.42	0.38	0.31	0.36	0.36	0.34	0.35	0.39	0.32	0.28	0.29
		CV	218.31	235.86	262.43	242.01	242.01	248.00	240.76	228.58	250.26	266.21	272.82
P Values			0.000	0.000	0.000	0.005	0.001	0.002	0.000	0.006	0.004	0.071	0.000

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Table 4: Contd..

SN	Organizations	Mean and CV	Frequency of Usage										
			API/IP SPEC 1583, S13	API/IP STD 1529	API/IP STD 1542	ARINC 429 P1	ARINC 600	ASTM D 1655	ASTM D 471	ASTM E 1742	ASTM E 399	AWS D17.1	BS EN 2282
1	ADA	Mean	0.34	0.33	0.40	0.52	0.48	0.36	0.36	0.40	0.28	0.24	0.21
		CV	214.22	209.22	221.25	185.51	202.52	211.41	223.71	205.57	233.18	260.98	252.18
2	AFTC	Mean	0.13	0.27	0.53	0.67	0.53	0.53	0.47	0.67	0.47	0.60	0.60
		CV	263.90	299.55	198.77	166.90	171.65	198.77	178.67	156.98	196.17	175.93	175.93
3	ADE	Mean	0.75	0.75	0.67	0.67	0.75	0.67	0.58	0.83	0.67	0.83	0.75
		CV	162.06	151.76	147.71	184.64	151.76	147.71	154.34	152.08	184.64	152.08	162.06
4	ASTE	Mean	0.14	0.10	0.24	0.59	0.38	0.10	0.03	0.03	0.03	0.03	0.03
		CV	421.15	395.61	325.74	179.59	248.25	395.61	538.52	538.52	538.52	538.52	538.52
5	CABS	Mean	0.07	0.07	0.07	0.14	0.21	0.36	0.07	0.07	0.07	0.29	0.21
		CV	374.17	374.17	374.17	254.20	198.71	235.73	374.17	374.17	374.17	213.94	270.17
6	CEMILAC	Mean	0.38	0.17	0.69	0.86	0.93	0.66	0.21	0.90	0.55	0.86	0.34
		CV	258.06	440.32	186.27	163.24	157.05	205.08	237.46	166.90	208.84	160.27	302.93
7	C-MMACS	Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		CV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	DARE	Mean	0.22	0.44	2.00	1.67	2.00	1.33	1.44	1.22	1.44	1.56	1.56
		CV	300.00	228.10	79.06	84.85	79.06	99.22	85.57	98.33	120.47	85.71	85.71
9	LRDE	Mean	1.00	1.00	1.00	1.50	1.50	1.00	1.00	1.50	1.00	1.00	1.00
		CV	141.42	141.42	141.42	141.42	141.42	141.42	141.42	141.42	141.42	141.42	141.42
10	GTRE	Mean	0.38	0.67	0.62	0.57	0.43	0.67	0.67	0.67	0.62	0.38	0.33
		CV	255.53	203.10	213.55	225.28	251.00	197.48	197.48	203.10	231.15	255.53	289.83
11	HAL	Mean	0.37	0.35	0.40	0.52	0.48	0.54	0.48	0.42	0.49	0.43	0.40
		CV	231.62	227.27	223.86	214.78	208.14	193.19	204.95	220.17	200.34	220.26	223.61
12	IAM	Mean	0.18	0.18	0.30	0.27	0.30	0.30	0.27	0.21	0.15	0.18	0.21
		CV	290.20	321.13	302.95	307.77	324.64	324.64	307.77	306.37	291.50	290.20	306.37
13	ISRO-ISTRAC	Mean	0.00	0.00	0.05	0.18	0.18	0.14	0.14	0.14	0.00	0.00	0.00
		CV	0.00	0.00	469.04	365.47	365.47	469.04	469.04	469.04	0.00	0.00	0.00
14	IISc	Mean	0.12	0.12	0.12	0.12	0.09	0.15	0.12	0.09	0.12	0.09	0.09
		CV	456.77	456.77	456.77	456.77	583.10	379.25	456.77	583.10	456.77	583.10	583.10
15	JNCASR	Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		CV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	NAL	Mean	0.15	0.13	0.15	0.26	0.21	0.16	0.17	0.20	0.27	0.20	0.15
		CV	337.67	368.60	367.62	298.48	327.08	344.90	321.86	312.28	256.36	325.51	356.99
Mean Scores of Frequency of Usage of Aerospace Standards		Mean	0.25	0.24	0.33	0.43	0.40	0.36	0.31	0.34	0.34	0.32	0.26
		CV	283.03	288.76	259.34	230.05	238.44	245.85	254.88	250.38	249.73	258.07	280.41
P Values			0.037	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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Table 4: Contd…

SN	Organizations	Mean and CV	Frequency of Usage: BS EN 2424	DAT COM	JAA & GM Complete Set	JAA Complete Set	MIL-STD-704	NEMA WC 27500	RTCA DO178	RTCA DO254	SAE AMS 2175	SAE AMS 2644	SAE AMS-H-6875
1	ADA	Mean	0.28	0.21	0.31	0.34	0.57	0.34	0.60	0.43	0.33	0.29	0.28
		CV	242.87	252.18	257.54	252.18	195.08	240.20	188.66	208.92	231.48	221.46	212.49
2	AFTC	Mean	0.53	0.47	0.60	0.47	0.67	0.67	0.60	0.53	0.40	0.47	0.53
		CV	185.71	178.67	175.93	178.67	166.90	156.98	175.93	185.71	227.56	178.67	171.65
3	ADE	Mean	0.92	0.92	0.75	0.58	0.83	0.67	0.58	0.92	0.75	0.58	0.50
		CV	143.06	127.04	140.71	170.78	143.21	160.96	170.78	135.28	128.71	135.94	159.54
4	ASTE	Mean	0.03	0.03	0.03	0.03	0.55	0.03	0.21	0.17	0.00	0.14	0.14
		CV	538.52	538.52	538.52	538.52	197.28	538.52	326.26	381.88	0.00	538.52	538.52
5	CABS	Mean	0.14	0.14	0.21	0.29	0.57	0.29	0.29	0.21	0.21	0.14	0.21
		CV	254.20	254.20	270.17	288.90	190.65	164.08	213.94	198.71	270.17	254.20	198.71
6	CEMILAC	Mean	0.31	0.48	0.24	0.79	0.83	0.69	0.34	0.38	0.59	0.48	0.55
		CV	273.73	238.89	285.64	185.74	185.71	197.99	260.26	248.25	206.51	232.39	219.79
7	C-MMACS	Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		CV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	DARE	Mean	1.11	1.89	1.44	1.33	1.22	1.67	1.33	1.22	1.11	1.44	1.33
		CV	114.24	81.35	98.58	106.07	98.33	94.87	106.07	98.33	114.24	104.49	106.07
9	LRDE	Mean	1.00	1.00	1.00	1.50	1.50	1.00	1.00	1.00	1.00	1.00	1.00
		CV	141.42	141.42	141.42	141.42	141.42	141.42	141.42	141.42	141.42	141.42	141.42
10	GTRE	Mean	0.48	0.48	0.48	0.52	0.67	0.52	0.38	0.48	0.52	0.43	0.71
		CV	226.36	262.45	253.91	230.83	219.09	230.83	255.53	235.90	230.83	228.28	198.70
11	HAL	Mean	0.39	0.40	0.36	0.48	0.47	0.46	0.38	0.32	0.44	0.47	0.54
		CV	218.73	219.68	240.62	206.55	211.40	204.47	238.50	218.19	197.94	201.51	186.33
12	IAM	Mean	0.21	0.21	0.24	0.33	0.33	0.24	0.24	0.24	0.15	0.18	0.27
		CV	306.37	306.37	309.90	256.17	233.18	292.23	326.60	326.60	291.50	290.20	307.77
13	ISRO-ISTRAC	Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.00	0.00	0.00
		CV	0.00	0.00	0.00	0.00	0.00	0.00	469.04	469.04	0.00	0.00	0.00
14	IISc	Mean	0.15	0.15	0.12	0.09	0.09	0.09	0.09	0.09	0.09	0.12	0.15
		CV	379.25	379.25	456.77	583.10	583.10	583.10	583.10	583.10	583.10	456.77	414.55
15	JNCASR	Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		CV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	NAL	Mean	0.16	0.18	0.18	0.15	0.27	0.21	0.21	0.22	0.17	0.15	0.17
		CV	324.62	298.23	325.11	313.34	271.79	304.48	322.69	285.67	321.86	314.32	308.50
Mean Scores of Frequency of Usage of Aerospace Standards		Mean	0.27	0.30	0.28	0.33	0.43	0.34	0.33	0.31	0.30	0.30	0.34
		CV	265.11	262.57	275.36	258.81	227.62	250.33	258.77	250.60	257.26	256.49	246.63
P Values			0.000	0.000	0.000	0.000	0.003	0.000	0.007	0.003	0.000	0.000	0.000

Research Article

Table-4: Contd…

SN	**Organizations**	**Mean and CV**	**Frequency of Usage**						
			SAE AMS QQ-P-416	**SAE AS 478**	**SAE AE 9100**	**SAE AS 9102**	**Other Standards Related to Aerospace and Avionics**		
							DO178-B	**DO-254**	**DO-160D**
1	ADA	Mean	0.45	0.31	0.50	0.21	0.62	0.45	0.40
		CV	187.68	202.06	199.12	235.37	175.52	209.65	200.07
2	AFTC	Mean	0.33	0.47	0.67	0.33	0.53	0.60	0.47
		CV	185.16	196.17	176.27	217.12	185.71	216.39	212.24
3	ADE	Mean	0.58	0.67	0.67	0.50	0.50	0.83	0.50
		CV	154.34	116.77	116.77	134.84	134.84	123.58	159.54
4	ASTE	Mean	0.14	0.14	0.14	0.10	0.38	0.31	0.34
		CV	538.52	421.15	538.52	538.52	258.06	311.73	282.40
5	CABS	Mean	0.07	0.14	0.14	0.21	0.14	0.07	0.14
		CV	374.17	374.17	254.20	198.71	374.17	374.17	254.20
6	CEMILAC	Mean	0.31	0.62	0.59	1.10	0.86	0.66	0.62
		CV	212.75	203.85	216.34	148.01	157.24	216.91	203.85
7	C-MMACS	Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		CV	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	DARE	Mean	1.56	1.44	1.67	1.11	1.56	1.44	1.22
		CV	107.14	92.31	84.85	130.77	107.14	104.49	89.42
9	LRDE	Mean	1.00	1.50	1.00	1.00	2.00	1.50	1.50
		CV	141.42	141.42	141.42	141.42	0.00	141.42	141.42
10	GTRE	Mean	0.71	0.76	0.76	0.62	0.95	0.57	0.67
		CV	198.70	189.77	185.17	200.96	174.05	218.37	213.89
11	HAL	Mean	0.47	0.46	0.46	0.52	0.38	0.44	0.51
		CV	192.89	199.08	197.72	185.90	238.50	218.43	189.88
12	IAM	Mean	0.21	0.18	0.15	0.21	0.21	0.24	0.27
		CV	306.37	290.20	291.50	306.37	282.80	253.24	307.77
13	ISRO-ISTRAC	Mean	0.00	0.05	0.05	0.32	0.36	0.23	0.18
		CV	0.00	469.04	469.04	327.28	262.20	269.25	323.67
14	IISc	Mean	0.15	0.12	0.09	0.09	0.06	0.06	0.06
		CV	414.55	456.77	583.10	583.10	583.10	583.10	583.10
15	JNCASR	Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		CV	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	NAL	Mean	0.17	0.13	0.15	0.16	0.29	0.20	0.27
		CV	301.60	336.77	321.66	338.27	293.77	340.15	289.30
Mean Scores of Frequency of Usage of Aerospace Standards		Mean	0.32	0.31	0.34	0.34	0.41	0.36	0.38
		CV	246.06	250.24	246.21	248.63	234.60	252.82	235.35
P Values			0.000	0.000	0.000	0.000	0.000	0.001	0.013

Research Article

Table 4: Contd…

SN	**Organizations**	**Mean and CV**	**Frequency of Usage (Other Standards Related to Aerospace and Avionics)**					
			ARINC 400 Series	**ARINC 500 Series**	**ARINC 600 Series**	**ARINC 700 Series**	**ARINC 800 Series**	**ARINC 900 Series**
1	ADA	Mean	0.34	0.29	0.28	0.31	0.28	0.34
		CV	240.20	285.87	261.17	264.52	242.87	269.16
2	AFTC	Mean	0.60	0.40	0.40	0.60	0.73	0.73
		CV	164.27	158.11	184.20	164.27	181.98	158.58
3	ADE	Mean	0.58	0.75	0.67	0.75	0.50	0.67
		CV	170.78	140.71	147.71	128.71	134.84	147.71
4	ASTE	Mean	0.38	0.31	0.31	0.28	0.24	0.28
		CV	258.06	286.96	286.96	304.78	344.05	304.78
5	CABS	Mean	0.14	0.21	0.36	0.14	0.29	0.21
		CV	254.20	198.71	235.73	254.20	288.90	270.17
6	CEMILAC	Mean	1.03	0.62	0.34	0.52	0.86	0.62
		CV	135.44	194.55	260.26	245.75	157.24	203.85
7	C-MMACS	Mean	0.00	0.00	0.00	0.00	0.00	0.00
		CV	0.00	0.00	0.00	0.00	0.00	0.00
8	DARE	Mean	0.78	1.22	1.11	1.33	1.22	1.56
		CV	124.95	127.92	130.77	106.07	98.33	97.02
9	LRDE	Mean	1.50	1.00	1.50	1.00	1.50	1.50
		CV	141.42	141.42	141.42	141.42	141.42	141.42
10	GTRE	Mean	0.67	0.71	0.52	0.43	0.52	0.52
		CV	213.89	212.98	253.41	261.62	253.41	222.79
11	HAL	Mean	0.39	0.34	0.34	0.32	0.33	0.35
		CV	218.73	236.49	255.46	252.33	241.38	252.74
12	IAM	Mean	0.18	0.30	0.27	0.24	0.33	0.27
		CV	290.20	302.95	321.13	309.90	306.19	321.13
13	ISRO-ISTRAC	Mean	0.23	0.23	0.09	0.14	0.14	0.18
		CV	330.71	330.71	323.67	257.58	342.88	275.59
14	IISc	Mean	0.06	0.06	0.06	0.09	0.06	0.06
		CV	583.10	583.10	583.10	429.31	583.10	583.10
15	JNCASR	Mean	0.00	0.00	0.00	0.00	0.00	0.00
		CV	0.00	0.00	0.00	0.00	0.00	0.00
16	NAL	Mean	0.23	0.16	0.20	0.16	0.19	0.18
		CV	304.60	364.06	331.12	348.92	324.01	342.74
Mean Scores of Frequency of Usage of Aerospace Standards		Mean	0.35	0.31	0.29	0.29	0.32	0.32
		CV	243.60	270.03	277.28	273.48	262.00	267.05
P Values			0.000	0.002	0.032	0.001	0.000	0.000

Findings

- Analysis of Variance (ANOVA) was applied for testing the significant difference among the 16 mean scores attained from the scientists and engineers of the aerospace organizations for 'Use of Core Aerospace Engineering Databases'. It is observed that all the 16 aerospace organizations show a significant difference ($P < 0.05$) in their mean scores viz., 'Aerospace Databases', 'AIAA Meeting Papers', 'IEEE Explore', 'NASA Technical Reports Server (NTRS)', 'NTIS (CSA)' 'Thomas Register' and 'American Institute of Aeronautics and Astronautics', ***except for*** 'Aerospace and High

Technology Database through Cambridge Science Abstracts (CSA)', 'Inside Science', SAE International (aerospace.sae.org) (P=0.089), 'Compendex', 'INSPEC', 'Aerospace Defense Industry Data Finder' and 'Aerospace Industries Association'.

- Analysis of Variance (ANOVA) was applied for testing the significant difference among the 16 mean scores attained from the scientists and engineers of the aerospace organizations for 'Frequency of Usage of Aerospace Gateways'. It is observed that all the 16 aerospace organizations show a significant difference ($P < 0.05$) in their mean scores viz., 'AERADE', 'GALCIT', 'IAIN', 'FAA', 'NASA', 'Space Today Online' and 'Yahoo Index for Aeronautics and Space Administration' ***except for*** 'ERAU'.
- Analysis of Variance (ANOVA) was applied for testing the significant difference among the 16 mean scores attained from the scientists and engineers of the aerospace organizations for 'Frequency of Usage of Aerospace Standards'. It is observed that all the 16 aerospace organizations show a significant difference ($P < 0.05$) in their mean scores viz., 'AIA NAS SET', 'NAS 1352', 'NAS 1637', 'NAS 410', 'NASM20470', 'NASM21209', 'NASM33537', '14 CFR 1-59', 'AGMA 911', 'API/IP SPEC 1581', API/IP SPEC 1583, 'API/IP STD 1529', 'API/IP STD 1542', 'ARINC 429 P1', 'ARINC 600', ASTM D 1655', 'ASTM D 471', ASTM E 1742', 'ASTM E 399', 'AWS D17.1', 'BS EN 2282', 'BS EN 2424', 'DATCOM', JAA & GM Complete Set', JAA Complete Set', 'MIL-STD-704', 'NEMA WC 27500', 'RTCA DO178', 'RTCA DO254', 'SAE AMS 2175', 'SAE AMS 2644', SAE AMS- H-6875', 'SAE AMS QQ-P-416', 'SAE AS 478', 'SAE AE 9100', SAE AS 9102', 'DO178-B', DO-254', DO-160D', ARINC 400 Series', ARINC 500 Series', ARINC 600 Series', 'ARINC 700 Series', 'ARINC 800 Series' and 'ARINC 900 Series' ***except for*** 'AGMA 925 ($P = 0.071$)'.

Finding the Aerospace Resources on the Internet

There are a larger number of web resources on Core Aerospace Engineering e-Databases, Gateways and Standards. Few of the selected resources which the authors felt would be of useful and ready reference to the aerospace scientists and engineers are listed below. These web resources offer searching capabilities, access to full-text, ftp access and on-line ordering.

Table 5: Selective Web Resources of Core Aerospace Engineering e-Databases, Gateways and Standards

SL. NO.	Selected Web Resources of Aerospace Engineering Databases, Gateways and Standards URLS:	Brief Description of the Resources
A E R O S P A C E --- E N G I N E E R I N G ---- E-D A T A B A S E S		
1.	http://www.lib.umd.edu/guides/aerospace.html	University of Maryland: Guide to Information Resources in Aerospace Engineering
2.	http://www.library.gatech.edu/research_help/subject/index.php?/aerospace/databases	Georgia Tech Library: Aerospace Engineering Databases
3.	http://guides.lib.virginia.edu/aerospace http://guides.lib.virginia.edu/content.php?pid=16749&sid=130740	University of Virginia Library: Aerospace Engineering Subject Guide
4.	http://www.lib.ku.edu/databases/index.cfm?rtype=subject&page=db&bsid=8&sid=3	The University of Kansas: Aerospace Engineering Databases
5.	URL: http://rmit.libguides.com/aerospaceeng / http://rmit.libguides.com/content.php?pid=14686&sid=98570	RMIT University Research Guide to Aerospace Engineering: This research guide provides starting points for finding information on aerodynamics, aircraft, avionics, composite materials, dynamics & control, flight, fluid dynamics, helicopters, maintenance, technical reports, & all aspects of aerospace engineering

SL. NO.	Selected Web Resources of Aerospace Engineering Databases, Gateways and Standards URLS:	Brief Description of the Resources
6.	http://www.uta.edu/library/sel/db-engineering.php http://www.lib.utexas.edu/indexes/titles.php?subject=Aerospace+Engineering http://libguides.uta.edu/content.php?pid=3696&sid=21204	The University of Texas: Science and Engineering Library; Engineering Databases by Subject The University of Texas at Austin: Aerospace Engineering Databases Aerospace Engineering: Specialized Databases
7.	http://libguides.slu.edu/aerospace	St. Louis University: Aerospace Engineering
8.	http://www.lib.vt.edu/subject-guides/AOE/aerospace.html	VirginiaTech: University Libraries: Aerospace Engineering
9.	http://library.ucf.edu/Databases/Subjects/aero.php	University of Central Florida Libraries: Aerospace Engineering
10.	http://guides.lib.unsw.adfa.edu.au/content.php?pid=29627&sid=216764	The University of New South Wales: Canberra: Aerospace Engineering Databases
11.	http://guides.lib.monash.edu/content.php?pid=87463&sid=688368	MONASH University Library: Mechanical and Aerospace Engineering Resources
12.	http://www.libraries.wvu.edu/databases/subjects.php?id=112	West Virginia University: Mechanical and Aerospace Engineering Databases
13.	http://guides.library.utoronto.ca/content.php?pid=226953&sid=1878304	University of Toronto Libraries: Aerospace Engineering
14.	http://guides.library.iit.edu/content.php?pid=114615&sid=990258	Illinois Institute of Technology, Paul V. Galvin Library: Aerospace Engineering Resources for research in the aerospace engineering discipline
15.	http://www.lib.rpi.edu/html/ml/alpha/subject_1123.html	RensSearch: Rensselaer Libraries: Aerospace Engineering Article Databases
16.	http://libguides.kustar.ac.ae/content.php?pid=270576&sid=2232292	Khalifa University: Aerospace Engineering Databases
17.	http://guides.lib.umich.edu/content.php?pid=8132&sid=97643	University of Michigan: Aerospace Databases
18.	http://guides.lib.ua.edu/content.php?pid=87266&sid=649149	The University of Alabama: Aerospace Engineering Reference Guide
19.	http://guides.ucf.edu/content.php?pid=41587&sid=328768	University of Central Florida Universities: Aerospace Engineering
20.	http://guides.library.ucla.edu/content.php?pid=57693&sid=48000	UCLA Library: Databases in Aerospace Engineering
21.	http://libguides.lib.fit.edu/content.php?pid=121727&sid=1046707	Florida Institute of Technology: Evans Library: Key Databases for Mechanical and Aerospace Engineering
22.	http://library.mst.edu/subjectguides/reflib2/AerospaceEngineering.html	Missouri University of Science and Technology: Curtis Laws Wilson Library: Mechanical and Aerospace Engineering Resources
23.	http://erau.libguides.com/content.php?pid=41001&sid=1068796	Embry Riddly Aeronautical Library, Prescott, Azizona: Christine and Steven F. Udvar –Hazy Library and Learning Center
24.	http://www.lib.odu.edu/subjectguides/rqs.phtml?subject_id=50	Old Dominion University: Patricia, W., and J. Douglas Perry Library: Selected Resources for: *Aerospace Engineering* **...** Index, it is the most comprehensive interdisciplinary engineering *database* in the world. **..**
25.	http://subjectguides.library.unsw.edu.au/content.php?pid=7632&sid=264269	The University of New South Wales – Sydney / Canberra, Australia: Aerospace Engineering Key Databases
26.	http://www.library.utexas.edu/indexes/titles.php?subject=Aerospace+Engineering	The University of Texas at Austin: Databases – Aerospace Engineering

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SL. NO.	Selected Web Resources of Aerospace Engineering Databases, Gateways and Standards URLS:	Brief Description of the Resources
27.	http://www.galileo.usg.edu/scholar/westga/subjects/aerospace-engineering/articles-databases/?Welcome	GALILEO SCHOLAR: An Initiative of the University System of Georgia; Aerospace Engineering – Articles and Databases
28.	http://ucblibraries.colorado.edu/engineering/aerospace.htm	University of Colarado, Boulder: Subject Guide for Aerospace Engineering
29.	http://www.lib.ncsu.edu/subjects/content.php?subject=3	NC State University : NCSU Libraries: Aerospace Engineering Databases and Reference Tools
30.	http://www.doncio.navy.mil/iltoolkit/default.htm http://www.doncio.navy.mil/iltoolkit/Subj_Sci_Aerospace.htm	Department of the Navy Chief Information Officer: Information Literacy Toolkit: Aerospace Engineering
31.	http://guides.library.msstate.edu/content.php?pid=49391&sid=1961151 http://guides.library.msstate.edu/aerospace	Mississippi State University: Aerospace Engineering Research Databases
32.	http://www.lib.ucdavis.edu/dept/pse/resources/subjects/engr-aerospace.php	UC DAVIS University Library: Aerospace Engineering Subject Guide
33.	http://libguides.gatech.edu/content.php?pid=94888&sid=1013571	Georgia Tech Library: Best Databases in Aerospace Engineering
34.	http://libguides.gatech.edu/content.php?pid=94888&sid=1013571	The University of Manchester: The John Rylands University Library: Key Databases in Aerospace Engineering
35.	http://www.mcgill.ca/library/library-findinfo/subjects/science/aero/	Core Aerospace Databases, Additional Databases, Selected Internet Sites, Other Resources
36.	http://library.princeton.edu/catalogs/articles.php?subjectID=110	Aerospace Engineering: Core Resources
37.	http://libraryadventures.com/subject-specific-resources/space/databases/ http://library.dialog.com/bluesheets/html/bl0104.html	This subject resource guide is available courtesy of Jennifer Doherty © 2009. She can be contacted at jenniferadoherty@yahoo.com. **AeroBase** provides references, abstracts, and controlled-vocabulary indexing of key scientific and technical documents, as well as books, reports, and conferences, covering aerospace research and development. This database supports basic and applied research in aeronautics, astronautics, and space sciences, as well as technology development and applications in complementary and supporting fields such as chemistry, geosciences, physics, communications, and electronics. All reports included in the database are unclassified.
38.	http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1085&context=libraryscience&sei-redir=1&referer=http%3A%2F%2Fwww.google.co.in%2Furl%3Fsa%3Dt%26rct%3Dj%26q%3Dresearch%2Bpapers%3Ause%2Bof%2Baerospace%2Bengineering%2Bdatabases%2Bby%2Baerospace%2Bscientists%2Band%2Bengineers%26source%3Dweb%26cd%3D49%26ved%3D0CGEQFjAIOCg%26url%3Dhttp%253A%252F%252Fdigitalcommons.unl.edu%252Fcgi%252Fviewcontent.cgi%253Farticle%253D1085%2526context%253Dlibraryscience%26ei%3DCdcXT6ODGoTmrAfS85lR%26usg%3DAFQjCNGhtVXP-Kn_WMnycn2fD1JtJdy_Qg#search=%22research%20papers%3Ause%20aerospace%20engineering%20databases%20by%20aerospace%20scientists%20engineers%22	Digital Commons@University of Nebraska, Lincoln, De Petro, T. G., and Naylor, T., (1997), 'Selective Guide to Literature on Aerospace Engineering' Faculty Publications, UNL Libraries, Paper 80. http://digitalcommons.unl.edu/libraryscience/80 For more information, please contact proyster@unl.edu.

Research Article

SL. NO.	Selected Web Resources of Aerospace Engineering Databases, Gateways and Standards URLS:	Brief Description of the Resources
39.	http://www.lib.umd.edu/guides/aerospace.html	Aerospace Engineering: This guide was created to help students and faculty find information resources in the field of Aerospace Engineering.
AEROSPACE --- GATEWAYS		
1.	http://www.aiaa.org/	American Institute of Aeronautics and Astronautics: The World's Forum for Aerospace Information, is also the world's largest technical society dedicated to the global aerospace profession.
2.	http://www.aerospace-technology.com/projects/globalstar/	Aerospace-technology.com: News, views and contacts from the global Aerospace industry.
3.	http://www.aero.und.edu/	John D. Odegard School of Aerospace Sciences, University of North Dakota
4.	ERAU: http://erau.libguides.com/content.php?pid=41001&sid=1068796	Embry Riddle Aeronautical University: Aeronautical University Databases and Gateways
5.	http://aerade.cranfield.ac.uk/about.html An Initiative of Cranfield University, UK.	AERADE provides integrated access to a collection of key aerospace and defence resources that can be browsed or searched independently from their home pages. The three main services – Aerospace and defence resources, DEVISE and ESDU Series can also be cross-searched from the home page. AERADE is an initiative developed by Cranfield University to enable aerospace and defence experts to find quality, relevant information on the Internet. The service is a joint venture between information specialists within the Library and Information Services at the Cranfield campus (aerospace) and the Barrington Library at Shrivenham (defence).
6.	http://www.attto.org.nz/aviation-gateway	Aviation Gateway gives students the chance to get a flying start in their future aviation careers, whether they are considering training as pilots, aircraft engineers, air traffic controllers, ground operations staff or flight attendants. ATTTO's Aviation Gateway resources give students an introduction to the aviation industry, its background and make up. A
7.	http://www.galcit.caltech.edu/	The research at the Graduate Aerospace Laboratories of the California Institute of Technology (GALCIT) has evolved over the past three quarters of a century to include aerospace and biosystems engineering; however, the tradition of integrating basic experiments, theory, and simulations over a broad range of spatial and temporal scales continues to characterize our approach.
8.	http://www.iainetwork.net/	IAIN will provide a catalog to aerospace information sources from which information searches can be launched. It will provide easy access to aerospace and aerospace-related information holdings within cooperating nations.
9.	www.nasa.gov	Since its inception in 1958, NASA has accomplished many great scientific and technological feats in air and space. NASA technology also has been adapted for many non-aerospace uses by the private sector. NASA remains a leading force in scientific research and in stimulating public interest in aerospace exploration, as well as science and technology in general.

SL. NO.	Selected Web Resources of Aerospace Engineering Databases, Gateways and Standards URLS:	Brief Description of the Resources
10.	www.faa.gov	The Federal Aviation Administration (FAA) is the national aviation authority of the United States. An agency of the United States Department of Transportation, it has authority to regulate and oversee all aspects of civil aviation in the U.S.
11.	http://www.spacetoday.org	Covering Space From Earth to the Edge of the Universe. Contains important links to e-resources on: Space Shuttles Space Stations Satellites Astronauts History Solar System Deep Space Rockets Global Links Search
12.	http://www.thegateway.org/ http://www.thegateway.org/search/apachesolr_search/aerospace	The Gateway to 21st Century Skills. The Gateway has been serving teachers continuously since 1996 which makes it one of the oldest publically accessible U.S. repositories of education resources on the Web. The Gateway contains a variety of educational resource types from activities and lesson plans to online projects to assessment items. Aerospace Resources
13.	http://www.scottish-enterprise.com/your-sector/aerospace-defence-and-marine/adm-directory.aspx http://apps.scottish-enterprise.com/search/supplierdirectoryatoz.aspx?viewtreeid=167414	Scotland: Aerospace, Defence and Marine: Research and Development and Suppliers Directory Aerospace and Defence R&D suppliers
14.	http://www.au.af.mil/au/awc/awcgate/awc-thry.htm	Air War College: Gateway to the Internet: Air War College is the senior Air Force professional military school in the US. This site provides professional military students and interested researchers with an opportunity to share the educational experience of the college through an interchange of ideas and research projects. Much of our material is intended for our resident and nonresident students throughout the world. However, we believe that the information provided here and the links to other web sites will serve your educational and research needs as well and pique the interest of those who are not so familiar with the United States Air Force.
15.	http://www.soton.ac.uk/library/subjects/ses/websites.html	University of Southampton: Engineering Sciences: General Websites and Gateways
16.	http://aerospaceengineer.us/	aerospaceengineer.us is the gateway to sites on the Internet for AEROSPACE ENGINEERS
17.	http://aeroinfo.org.in/aero/?q=content/disclaimer	** Site under construction AeroInfo website is developed and maintained by NAL. It provides access to variety of Aerospace resources.
A E R O S P A C E ----- S T A N D A R D S		
1.	http://store.sae.org/aeroqa/	SAE International's Aerospace Quality Standards on the Web is the only complete collection of essential aerospace quality management standards documents dedicated to providing aerospace suppliers with the critical information they need to remain current and compliant.

SL. NO.	Selected Web Resources of Aerospace Engineering Databases, Gateways and Standards URLS:	Brief Description of the Resources
2.	http://global.ihs.com/?RID=AIA	AIA's (Aerospace Industries Association) National Aerospace Standards Committee develops and maintains more than 3,500 National Aerospace Standards defining parts and practices used in aerospace design and manufacturing. The NAS series is best known for state-of-the-art, high strength, precision fasteners. The standards meet safety, regulatory and other technical needs to ensure safe and efficient design, production, operation and maintenance of aerospace industry products
3.	http://www.aiaa.org/Secondary.aspx?id=5878 The American Institute of Aeronautics and Astronautics (AIAA): The World's Forum for Aerospace Leadership	Standards in the industry provide many benefits including economies of scale, expanded trade possibilities, and increased resource flow. AIAA is accredited by the American National Standards Institute and manages a wide range of national aerospace standards publications and activities. With several active Committees on Standards whose members volunteer their time and expertise to the development of a variety of publications. AIAA is able to support the continued enhancement of aerospace industry-wide efficiency and productivity.
4.	The University of Texas at Austin: http://www.lib.utexas.edu/engin/standards/usstds.html	Finding Engineering Standards
5.	http://www.globalspec.com/industrial-directory/national_aerospace_standard	GLOBALSPEC: The Engineering Search Engine
6.	http://www.aia-aerospace.org/assets/aerospace_standardization0105.pdf	The Future of Aerospace Standardization: Prepared by: The Future of Aerospace Standardization Working Group Aerospace Industries Association of America, Inc. January, 2005
7.	NASA: https://standards.nasa.gov/	NASA Technical Standards Program: Standards and Technical Assistance Research Tool (START). The NASA Technical Standards Program (NTSP) is sponsored by the Office of the NASA Chief Engineer.The primary mission is the enhancement of NASA's engineering capabilities by providing technical standards required to meet the needs of the Agency. The NTSP provides these standards to the Agency by doing the following: (a) providing single point access to technical standards, tools, and best practices, (b) providing NASA-wide access to standards developed by national and international organizations, (c) supporting the development of NASA and non-Government standards where needed
8.	http://standards.ieee.org/findstds/standard/aerospace_electronics.html	Aerospace Electronics Standards
9.	http://store.sae.org/digitallibrary.htm SAE International : http://www.sae.org/:	SAE International is a global association of more than 128,000 engineers and related technical experts in the aerospace, automotive and commercial-vehicle industries. SAE International's core competencies are life-long learning and voluntary consensus standards development.

SL. NO.	Selected Web Resources of Aerospace Engineering Databases, Gateways and Standards URLS:	Brief Description of the Resources
10.	http://www.ihs.com/search.aspx?globalsearchinput=aerospace+standards&x=9&y=10	(Access to most up-to-date SAE Standards with HIS). IHS is a global information company with world-class experts in the pivotal areas shaping today's business landscape: energy, economics, geopolitical risk, sustainability and supply chain management
11.	http://abc.janes.com/public/abc/index.shtml	(About Jane's International ABC Aerospace Directory). With details of thousands of Organizations and personnel in the aerospace industry, this authoritative resource is the most comprehensive of its kind. Featuring government agencies; associations, defence forces, transport carriers and airports; as well as manufacturers, distributors, sales and service companies; and company divisions and field offices. Entries detail the address, telephone, fax and electronic contact details; previous Organization identities, financial and statistical information; personnel details, parent and subsidiary information; details of products and services as well as airfield reference data, presented in a concise manner.
12.	http://www.sdn.sap.com/irj/bpx/index?rid=/webcontent/uuid/5044e5ec-3c69-2a10-8188-8232bad4b5f4	Overview of the Most Important Industry Standards for the Aerospace & Defense Industry

Conclusions

The main conclusions that we would like to draw from this study are:

- Aerospace engineering e-databases, gateways and standards are extremely important to an aerospace scientist and engineer in their day to day to work and to keep pace with global R&D. These electronic information resources constitute a major source of scientific and technical information them.
- Analysis of Variance (ANOVA) was applied for testing the significant difference among the 16 mean scores attained from the scientists and engineers of the aerospace organizations for 'Frequency Use of Core Aerospace Engineering Databases'. It is observed that all the 16 aerospace organizations show a significant difference ($P < 0.05$) in their mean scores. This implies that the 'Use Patterns' are dissimilar amongst the 16 selected aerospace organizations, except for, *except for* 'Aerospace and High Technology Database through Cambridge Science Abstracts (CSA)', 'Inside Science', SAE International (aerospace.sae.org) ($P=0.089$), 'Compendex', 'INSPEC', 'Aerospace Defense Industry Data Finder' and 'Aerospace Industries Association'.
- Analysis of Variance (ANOVA) was applied for testing the significant difference among the 16 mean scores attained from the scientists and engineers of the aerospace organizations for 'Frequency of Usage of Aerospace Gateways'. It is observed that all the 16 aerospace organizations show a significant difference ($P < 0.05$) in their mean scores. This implies that the 'Use Patterns' are dissimilar amongst the 16 selected aerospace organizations, *except for* 'ERAU'.
- Analysis of Variance (ANOVA) was applied for testing the significant difference among the 16 mean scores attained from the scientists and engineers of the aerospace organizations for 'Frequency of Usage of Aerospace Standards'. It is observed that all the 16 aerospace organizations show a significant difference ($P < 0.05$) in their mean scores. This implies that the 'Use Patterns' are dissimilar amongst the 16 selected aerospace organizations, *except for* 'AGMA 925 ($P = 0.071$)'.

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