**DESCRIPTION**

*Electronic Commerce Research and Applications* aims to create and disseminate enduring knowledge for the fast-changing e-commerce environment. A major dilemma in e-commerce research is how to achieve a balance between the currency and the life span of knowledge.

*Electronic Commerce Research and Applications* will contribute to the establishment of a research community to create the knowledge, technology, theory, and applications for the development of electronic commerce. This is targeted at the intersection of technological potential and business aims.

E-commerce is a multi-disciplinary area, which should be developed in co-operation with existing fields such as Information Systems and Technology; Computing and Informatics; Marketing, Finance and Supply Chain Management; Business Strategy and Management; Artificial Intelligence/Machine Learning; Data Science and Business Data Analytics; Public Policy; and Legal Studies. We will solicit papers on current technologies from these areas, as well as publish papers on completely new topics. We also seek proposals for special issues on new topics in e-commerce that will create new directions for research.

Electronic Commerce Research and Applications is inviting submission of articles, including but not limited to the following topics: Agent-based commerce; electronic auctions; e-business models; B2C and B2B EC; consumer behavior; customer relationship management and data mining; recommender systems; Internet search engines and Web mining; big data analytics; social media and commerce analytics; responsible and trustworthy artificial intelligence; pricing and marketing; digital economy and digital transformation; e-government, public policy and digital divide issues; electronic payment systems; sharing economy; (IT and e-services; exchanges and electronic marketplaces;) e-commerce in supply chain and inventory management; legal issues in e-commerce; (industry studies and case analysis;) economic and management science modeling; organizational and theory-building research; empirical studies of e-commerce problems; behavioral studies of e-commerce issues; protocols, technology and process standards for e-commerce; (transformation of industries;) security and trust; credit card and smart card applications; mobile-commerce and ubiquitous computing; inter-organizational systems in e-commerce; emerging technologies and technological innovation.
ABSTRACTING AND INDEXING

Academic Journal Guide (Chartered Association of Business Schools)
Scopus
Science Citation Index Expanded
Current Contents
INSPEC
El Compendex
Social Sciences Citation Index
Social SciSearch
ABI/Inform

EDITORIAL BOARD

Editor-in-Chief
Christopher Yang, Drexel University, Philadelphia, Pennsylvania, United States of America

Co-Editor
Maurizio Naldi, LUMSA University, Roma, Italy

Managing Editor
Bhupesh Shetty, Drexel University College of Computer and Informatics, Philadelphia, Pennsylvania, United States of America

Senior Special Issues Editor
Lina Zhou, UNC Charlotte, Charlotte, North Carolina, United States of America

Senior Editors
Ajit Appari, Northeastern University, Boston, Massachusetts, United States of America
Yoris A. Au, Georgia Southern University, Statesboro, Georgia, United States of America
Shih-Fen Cheng, Singapore Management University School of Computing and Information Systems, Singapore, Singapore
Alina Chircu, Bentley University, Waltham, Massachusetts, United States of America
Hui Fang, Shanghai University of Finance and Economics, Shanghai, China
Juan Feng, City University of Hong Kong, Hong Kong, Hong Kong
Nelson Granados, Pepperdine University Graziadio School of Business and Management, Los Angeles, California, United States of America
He Huang, Chongqing University, Chongqing, China
Atanu Lahiri, The University of Texas at Dallas, Richardson, Texas, United States of America
Lihui Lin, Tsinghua University, Beijing, China
Sourav Ray, McMaster University, Hamilton, Ontario, Canada
Benjamin Shao, Arizona State University, Tempe, Arizona, United States of America
Sang-Yong Tom Lee, Hanyang University, Seongdong-gu, South Korea
Bin Wang, The University of Texas Rio Grande Valley College of Engineering and Computer Science, Edinburg, Texas, United States of America
G. Alan Wang, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, United States of America
Youwei Wang, Fudan University, Shanghai, China
Hongyan Xu, Chongqing University, Chongqing, China
Alejandro Zentner, The University of Texas at Dallas, Richardson, Texas, United States of America
Dongsong Zhang, UNC Charlotte, Charlotte, North Carolina, United States of America
Jennifer Jie Zhang, The University of Texas at Arlington, Arlington, Texas, United States of America
Jie Zhang, Nanyang Technological University School of Computer Science and Engineering, Singapore, Singapore
Zhongju Zhang, Arizona State University, Tempe, Arizona, United States of America
San-Yih Hwang, National Sun Yat-sen University, Kaohsiung, Taiwan

Associate Editors
Jörn Altmann, Seoul National University Technology Management, Economics, and Policy Program, Gwanak-gu, South Korea
Morad Benyoucef, University of Ottawa, Ottawa, Ontario, Canada
Silvia Bertarelli, Universita Degli Studi Di Ferrara, Ferrara, Italy
David Bounie, Télécom Paris, Paris, France
Scott Buffett, National Research Council Canada Fredericton, Fredericton, New Brunswick, Canada
Hsin Hsin Chang, National Cheng Kung University, Tainan, Taiwan
Wei-Lun Chang, National Taipei University of Technology, Taipei, Taiwan
Kuo-Ming Chao, Bournemouth University, Department of Computing and Informatics, Dorset, United Kingdom
<table>
<thead>
<tr>
<th>Author Name</th>
<th>Institution and Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowei Chen</td>
<td>University of Glasgow, Glasgow, United Kingdom</td>
</tr>
<tr>
<td>Jessica Hsiao-Fen Chen</td>
<td>National Chi Nan University Information Management, Nantou, Taiwan</td>
</tr>
<tr>
<td>Li-Chen Cheng</td>
<td>National Taipei University of Technology, Taipei, Taiwan</td>
</tr>
<tr>
<td>Qizhi Dai</td>
<td>Drexel University, Philadelphia, Pennsylvania, United States of America</td>
</tr>
<tr>
<td>Haiyang Feng</td>
<td>Tianjin University College of Management and Economics, Tianjin, China</td>
</tr>
<tr>
<td>Marta Flamini</td>
<td>International Telematic University UNINETTUNO, Roma, Italy</td>
</tr>
<tr>
<td>JenRuei Fu</td>
<td>National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan</td>
</tr>
<tr>
<td>Maria Fuentes-Blasco</td>
<td>Pablo de Olavide University, Seville, Spain</td>
</tr>
<tr>
<td>Daniel Gozman</td>
<td>The University of Sydney, Sydney, New South Wales, Australia</td>
</tr>
<tr>
<td>Guang Li</td>
<td>Northeastern University, Shenyang, China</td>
</tr>
<tr>
<td>Xitong Guo</td>
<td>Harbin Institute of Technology, Haerbin, China</td>
</tr>
<tr>
<td>Yue Guo</td>
<td>Southern University of Science and Technology, Shenzhen, Guangdong, China</td>
</tr>
<tr>
<td>Nick Hajli</td>
<td>Loughborough University, Loughborough, United Kingdom</td>
</tr>
<tr>
<td>Juho Hamari</td>
<td>Tampere University, TAMPERE, Finland</td>
</tr>
<tr>
<td>Florian Haulitschek</td>
<td>TU Berlin University, Berlin, Germany</td>
</tr>
<tr>
<td>Jonas Hedman</td>
<td>Copenhagen Business School, Frederiksberg, Denmark</td>
</tr>
<tr>
<td>Emmy Hoang Ai-Phuong</td>
<td>RMIT University, , Viet Nam</td>
</tr>
<tr>
<td>Yili (Kevin) Hong</td>
<td>University of Houston CT Bauer College of Business, Houston, Texas, United States of America</td>
</tr>
<tr>
<td>Li-Ting Huang</td>
<td>Chang Gung University, Taoyuan, Taiwan</td>
</tr>
<tr>
<td>Shiu-Li Huang</td>
<td>National Taipei University, Sanxia, Taiwan</td>
</tr>
<tr>
<td>Patrick C. K. Hung</td>
<td>University of Ontario Institute of Technology, Faculty of Business and Information Technology, Oshawa, Ontario, Canada</td>
</tr>
<tr>
<td>Yujong Hwang</td>
<td>DePaul University, Chicago, Illinois, United States of America</td>
</tr>
<tr>
<td>JHIIHUA JHANGLI</td>
<td>National Central University, Zhongli District, Taiwan</td>
</tr>
<tr>
<td>Xiao-Ling Jin</td>
<td>Shanghai University, Shanghai, China</td>
</tr>
<tr>
<td>Abhishek Kathuria</td>
<td>University of Hong Kong, Faculty of Business and Economics, Pok Fu Lam, Hong Kong</td>
</tr>
<tr>
<td>Dan Jong Kim</td>
<td>University of North Texas, Information Technology and Decision Sciences, Denton, Texas, United States of America</td>
</tr>
<tr>
<td>Jong Min Kim</td>
<td>Kean University-Wenzhou, College of Business &amp; Public Management, Wenzhou, China</td>
</tr>
<tr>
<td>Dalia Kriksciuniene</td>
<td>Vilnius University, Vilnius, Lithuania</td>
</tr>
<tr>
<td>Jieyun Li</td>
<td>Western Washington University, Bellingham, Washington, United States of America</td>
</tr>
<tr>
<td>Weizi Vicky Li</td>
<td>University of Reading, Reading, United Kingdom</td>
</tr>
<tr>
<td>Xiaolin Li</td>
<td>Nanjing University, Nanjing, China</td>
</tr>
<tr>
<td>Xiaotong Li</td>
<td>The University of Alabama in Huntsville, Huntsville, Alabama, United States of America</td>
</tr>
<tr>
<td>Yung-Ming Li</td>
<td>National Yang Ming Chiao Tung University, Hsinchu, Taiwan</td>
</tr>
<tr>
<td>Xiwu Liao</td>
<td>Xi'an Jiaotong University School of Management, Xian, China</td>
</tr>
<tr>
<td>ChuanRen Liu</td>
<td>The University of Tennessee Knoxville, Knoxville, Tennessee, United States of America</td>
</tr>
<tr>
<td>Hefu Liu</td>
<td>University of Science and Technology of China, Hefei, Anhui, China</td>
</tr>
<tr>
<td>Shan Li</td>
<td>Xi'an Jiaotong University, Xian, China</td>
</tr>
<tr>
<td>Patrick Mailillé</td>
<td>Institut Mines-Télécom Atlantique, École Mines-Telecom, Rennes, France</td>
</tr>
<tr>
<td>Luis F. Martinez</td>
<td>Nova School of Business and Economics, Universidade Nova de Lisboa, Carcavelos, Portugal</td>
</tr>
<tr>
<td>David Murungi</td>
<td>Bentley University, Waltham, Massachusetts, United States of America</td>
</tr>
<tr>
<td>Mehrbakhsh Nilashi</td>
<td>UCSI University, Kuala Lumpur, Malaysia</td>
</tr>
<tr>
<td>Zeyu Peng</td>
<td>East China University of Science and Technology, Shanghai, China</td>
</tr>
<tr>
<td>Xujin Pu</td>
<td>Jiangnan University, Wuxi, Jiangsu, China</td>
</tr>
<tr>
<td>Jing Ren</td>
<td>Singapore University of Social Sciences, Singapore, Singapore</td>
</tr>
<tr>
<td>Paolo Roma</td>
<td>University of Palermo, Palermo, Italy</td>
</tr>
<tr>
<td>Carla Ruiz Mafe</td>
<td>University of Valencia, Valencia, Spain</td>
</tr>
<tr>
<td>Danish Saifee</td>
<td>The University of Alabama, Tuscaloosa, Alabama, United States of America</td>
</tr>
<tr>
<td>Giuseppe Maria Luigi Sarne'</td>
<td>University of Milan-Bicocca, Milano, Italy</td>
</tr>
<tr>
<td>Richard D. Shang</td>
<td>Long Island University - Brooklyn Campus, New York, New York, United States of America</td>
</tr>
<tr>
<td>Bin Shen</td>
<td>Donghua University Glorious Sun School of Business and Management, Shanghai, China</td>
</tr>
<tr>
<td>Peijian Song</td>
<td>Nanjing University, Nanjing, China</td>
</tr>
<tr>
<td>Kalina Staykova</td>
<td>Copenhagen Business School, Frederiksberg, Denmark</td>
</tr>
<tr>
<td>Kristof Stouthuyzen</td>
<td>Vlerick Business School, Gent, Belgium</td>
</tr>
<tr>
<td>Zhu Sun</td>
<td>Macquarie University, Department of Computing, Sydney, Australia</td>
</tr>
<tr>
<td>Fumiko Takeda</td>
<td>The University of Tokyo, Bunkyo-Ku, Japan</td>
</tr>
<tr>
<td>Xuning Tang</td>
<td>Deloitte Touche Tohmatsu Ltd, London, United Kingdom</td>
</tr>
<tr>
<td>Timm Teubner</td>
<td>TU Berlin University, Berlin, Germany</td>
</tr>
<tr>
<td>Narongsak Thongpapan</td>
<td>Brock University Goodman School of Business, St Catharines, Ontario, Canada</td>
</tr>
<tr>
<td>Jin Tian</td>
<td>Tianjin University College of Management and Economics, Tianjin, China</td>
</tr>
<tr>
<td>Liuan Wang</td>
<td>Beijing Institute of Technology School of Management and Economics, Beijing, China</td>
</tr>
<tr>
<td>Weiqian Wang</td>
<td>City University of Hong Kong, Hong Kong, Hong Kong</td>
</tr>
<tr>
<td>Stefan Weber</td>
<td>Trinity College Dublin School of School of Computer Science and Statistics, Dublin, Ireland</td>
</tr>
<tr>
<td>Keli Xiao</td>
<td>Stony Brook University, Stony Brook, New York, United States of America</td>
</tr>
<tr>
<td>Kaiquan Xu</td>
<td>Nanjing University, Nanjing, China</td>
</tr>
<tr>
<td>Zhijun Yan</td>
<td>Beijing Institute of Technology School of Management and Economics, Beijing, China</td>
</tr>
</tbody>
</table>
Cheng Yi, Tsinghua University, Beijing, China
Weiguo Zhang, South China University of Technology, Guangzhou, China
Xiaofei Zhang, Nankai University Business School, Tianjin, China
Kang Zhao, The University of Iowa, Department of Business Analytics, Iowa City, Iowa, United States of America
Yilu Zhou, Fordham University, New York, New York, United States of America
Zhongyun Zhou, Tongji University, Shanghai, China

Advisory Board
Guoqing Chen, Tsinghua University, Beijing, China
Jian Chen, Tsinghua University, Beijing, China
Kai-Lung Hui, The Hong Kong University of Science and Technology, Hong Kong, Hong Kong
Nick Jennings, University of Southampton, Southampton, United Kingdom
Robert Kauffman, Copenhagen Business School, Department of Digitalization, Frederiksberg, Denmark
Jae Kyu Lee, Xi’an Jiaotong University, Xian, China
Jiye Mao, Renmin University of China, Beijing, China
Ivan Png, National University of Singapore, Singapore, Singapore
Norman Sadeh, Carnegie Mellon University, Pittsburgh, Pennsylvania, United States of America
Qiang Ye, Harbin Institute of Technology, Haerbin, China
Leon Zhao, The Chinese University of Hong Kong, Hong Kong, Hong Kong
Vladimir Zwass, Fairleigh Dickinson University - Florham Campus, Madison, New Jersey, United States of America
GUIDE FOR AUTHORS

Submission checklist
You can use this list to carry out a final check of your submission before you send it to the journal for review. Please check the relevant section in this Guide for Authors for more details.

Ensure that the following items are present:

One author has been designated as the corresponding author with contact details:
• E-mail address
• Full postal address

All necessary files have been uploaded:
Manuscript:
• Include keywords
• All figures (include relevant captions)
• All tables (including titles, description, footnotes)
• Ensure all figure and table citations in the text match the files provided
• Indicate clearly if color should be used for any figures in print
Graphical Abstracts / Highlights files (where applicable)
Supplemental files (where applicable)

Further considerations
• Manuscript has been ‘spell checked’ and ‘grammar checked’
• All references mentioned in the Reference List are cited in the text, and vice versa
• Permission has been obtained for use of copyrighted material from other sources (including the Internet)
• A competing interests statement is provided, even if the authors have no competing interests to declare
• Journal policies detailed in this guide have been reviewed
• Referee suggestions and contact details provided, based on journal requirements

For further information, visit our Support Center.

Special Issues Proposals
Please kindly complete the Special Issue Proposal form and send it to ecrareview@elsevier.com. Please ensure the form is completed fully so that the Special Issue Overseeing Editor for the journal has all the information they need to review the proposal.

You will then be contacted directly by the Special Issue Overseeing Editor with their response.

All questions and queries on this should be directed to ecrareview@elsevier.com. We will only be able to give feedback to Guest Editors that follow this process.

BEFORE YOU BEGIN

Ethics in publishing
Please see our information on Ethics in publishing.

Declaration of competing interest
Corresponding authors, on behalf of all the authors of a submission, must disclose any financial and personal relationships with other people or organizations that could inappropriately influence (bias) their work. Examples of potential conflicts of interest include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications/registrations, and grants or other funding. All authors, including those without competing interests to declare, should provide the relevant information to the corresponding author (which, where relevant, may specify they have nothing to declare). Corresponding authors should then use this tool to create a shared statement and upload to the submission system at the Attach Files step. Please do not convert the .docx template to another file type. Author signatures are not required.
Declaration of generative AI in scientific writing

The below guidance only refers to the writing process, and not to the use of AI tools to analyse and draw insights from data as part of the research process.

Where authors use generative artificial intelligence (AI) and AI-assisted technologies in the writing process, authors should only use these technologies to improve readability and language. Applying the technology should be done with human oversight and control, and authors should carefully review and edit the result, as AI can generate authoritative-sounding output that can be incorrect, incomplete or biased. AI and AI-assisted technologies should not be listed as an author or co-author, or be cited as an author. Authorship implies responsibilities and tasks that can only be attributed to and performed by humans, as outlined in Elsevier's AI policy for authors.

Authors should disclose in their manuscript the use of AI and AI-assisted technologies in the writing process by following the instructions below. A statement will appear in the published work. Please note that authors are ultimately responsible and accountable for the contents of the work.

Disclosure instructions
Authors must disclose the use of generative AI and AI-assisted technologies in the writing process by adding a statement at the end of their manuscript in the core manuscript file, before the References list. The statement should be placed in a new section entitled ‘Declaration of Generative AI and AI-assisted technologies in the writing process’.

Statement: During the preparation of this work the author(s) used [NAME TOOL / SERVICE] in order to [REASON]. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

This declaration does not apply to the use of basic tools for checking grammar, spelling, references etc. If there is nothing to disclose, there is no need to add a statement.

Submission declaration and verification
Submission of an article implies that the work described has not been published previously (except in the form of an abstract, a published lecture or academic thesis, see ‘Multiple, redundant or concurrent publication’ for more information), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. To verify compliance, your article may be checked by Crossref Similarity Check and other originality or duplicate checking software.

Preprints
Please note that preprints can be shared anywhere at any time, in line with Elsevier's sharing policy. Sharing your preprints e.g. on a preprint server will not count as prior publication (see ‘Multiple, redundant or concurrent publication’ for more information).

Use of inclusive language
Inclusive language acknowledges diversity, conveys respect to all people, is sensitive to differences, and promotes equal opportunities. Content should make no assumptions about the beliefs or commitments of any reader; contain nothing which might imply that one individual is superior to another on the grounds of age, gender, race, ethnicity, culture, sexual orientation, disability or health condition; and use inclusive language throughout. Authors should ensure that writing is free from bias, stereotypes, slang, reference to dominant culture and/or cultural assumptions. We advise to seek gender neutrality by using plural nouns ("clinicians, patients/clients") as default/wherever possible to avoid using "he, she," or "he/she." We recommend avoiding the use of descriptors that refer to personal attributes such as age, gender, race, ethnicity, culture, sexual orientation, disability or health condition unless they are relevant and valid. When coding terminology is used, we recommend to avoid offensive or exclusionary terms such as "master", "slave", "blacklist" and "whitelist". We suggest using alternatives that are more appropriate and (self-) explanatory such as "primary", "secondary", "blocklist" and "allowlist". These guidelines are meant as a point of reference to help identify appropriate language but are by no means exhaustive or definitive.

Reporting sex- and gender-based analyses

Reporting guidance
For research involving or pertaining to humans, animals or eukaryotic cells, investigators should integrate sex and gender-based analyses (SGBA) into their research design according to funder/sponsor requirements and best practices within a field. Authors should address the sex and/or gender dimensions of their research in their article. In cases where they cannot, they should discuss this as a limitation to their research's generalizability. Importantly, authors should explicitly state what definitions of sex and/or gender they are applying to enhance the precision, rigor and reproducibility of their research and to avoid ambiguity or conflation of terms and the constructs to which they refer (see Definitions section below). Authors can refer to the Sex and Gender Equity in Research (SAGER) guidelines and the SAGER guidelines checklist. These offer systematic approaches to the use and editorial review of sex and gender information in study design, data analysis, outcome reporting and research interpretation - however, please note there is no single, universally agreed-upon set of guidelines for defining sex and gender.

**Definitions**

Sex generally refers to a set of biological attributes that are associated with physical and physiological features (e.g., chromosomal genotype, hormonal levels, internal and external anatomy). A binary sex categorization (male/female) is usually designated at birth (“sex assigned at birth”), most often based solely on the visible external anatomy of a newborn. Gender generally refers to socially constructed roles, behaviors, and identities of women, men and gender-diverse people that occur in a historical and cultural context and may vary across societies and over time. Gender influences how people view themselves and each other, how they behave and interact and how power is distributed in society. Sex and gender are often incorrectly portrayed as binary (female/male or woman/man) and unchanging whereas these constructs actually exist along a spectrum and include additional sex categorizations and gender identities such as people who are intersex/have differences of sex development (DSD) or identify as non-binary. Moreover, the terms "sex" and "gender" can be ambiguous—thus it is important for authors to define the manner in which they are used. In addition to this definition guidance and the SAGER guidelines, the resources on this page offer further insight around sex and gender in research studies.

**Author contributions**

For transparency, we require corresponding authors to provide co-author contributions to the manuscript using the relevant CRediT roles. The CRediT taxonomy includes 14 different roles describing each contributor’s specific contribution to the scholarly output. The roles are: Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Resources; Software; Supervision; Validation; Visualization; Roles/Writing - original draft; and Writing - review & editing. Note that not all roles may apply to every manuscript, and authors may have contributed through multiple roles. More details and an example.

**Changes to authorship**

Authors are expected to consider carefully the list and order of authors before submitting their manuscript and provide the definitive list of authors at the time of the original submission. Any addition, deletion or rearrangement of author names in the authorship list should be made only before the manuscript has been accepted and only if approved by the journal Editor. To request such a change, the Editor must receive the following from the corresponding author: (a) the reason for the change in author list and (b) written confirmation (e-mail, letter) from all authors that they agree with the addition, removal or rearrangement. In the case of addition or removal of authors, this includes confirmation from the author being added or removed.

Only in exceptional circumstances will the Editor consider the addition, deletion or rearrangement of authors after the manuscript has been accepted. While the Editor considers the request, publication of the manuscript will be suspended. If the manuscript has already been published in an online issue, any requests approved by the Editor will result in a corrigendum.

**Article transfer service**

This journal uses the Elsevier Article Transfer Service to find the best home for your manuscript. This means that if an editor feels your manuscript is more suitable for an alternative journal, you might be asked to consider transferring the manuscript to such a journal. The recommendation might be provided by a Journal Editor, a dedicated Scientific Managing Editor, a tool assisted recommendation, or a combination. If you agree, your manuscript will be transferred, though you will have the opportunity to make changes to the manuscript before the submission is complete. Please note that your manuscript will be independently reviewed by the new journal. More information.
Copyright
Upon acceptance of an article, authors will be asked to complete a 'Journal Publishing Agreement' (see more information on this). An e-mail will be sent to the corresponding author confirming receipt of the manuscript together with a 'Journal Publishing Agreement' form or a link to the online version of this agreement.

Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. Permission of the Publisher is required for resale or distribution outside the institution and for all other derivative works, including compilations and translations. If excerpts from other copyrighted works are included, the author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Elsevier has preprinted forms for use by authors in these cases.

For gold open access articles: Upon acceptance of an article, authors will be asked to complete a 'License Agreement' (more information). Permitted third party reuse of gold open access articles is determined by the author's choice of user license.

Author rights
As an author you (or your employer or institution) have certain rights to reuse your work. More information.

Elsevier supports responsible sharing
Find out how you can share your research published in Elsevier journals.

Role of the funding source
You are requested to identify who provided financial support for the conduct of the research and/or preparation of the article and to briefly describe the role of the sponsor(s), if any, in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication. If the funding source(s) had no such involvement, it is recommended to state this.

Open access
Please visit our Open Access page for more information.

Elsevier Researcher Academy
Researcher Academy is a free e-learning platform designed to support early and mid-career researchers throughout their research journey. The "Learn" environment at Researcher Academy offers several interactive modules, webinars, downloadable guides and resources to guide you through the process of writing for research and going through peer review. Feel free to use these free resources to improve your submission and navigate the publication process with ease.

Language (usage and editing services)
Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific English may wish to use the English Language Editing service available from Elsevier's Author Services.

Submission
General Submissions.
ECRA uses electronic submissions only as a means for reviewing new and revised papers. All manuscripts and any supplementary material should be submitted via the journal's online submission and peer-review system, Editorial Manager, at https://www.editorialmanager.com/ECRA/default.aspx. Thereafter, please follow the instructions given on this website to submit your paper.

Special Issues and Special Section Submissions.
If you are submitting a paper to a Special Section or Special Issue of ECRA, then follow these instructions:
1. Author registers in Editorial Manager, and follows the submission instructions given on the site.
2. Select 'Submit Manuscript' from the 'Main Menu.'
3. When choosing 'Article Type' please select the title of the Special Section or Special Issue to which you wish to submit.
Then follow the steps as laid out in Editorial Manager. Your manuscript will be submitted to the Editorial Office, which then assigns it to the Guest Editor in charge of that specific Special Section or Special Issue.

**Suggesting reviewers**
Please submit the names and institutional e-mail addresses of several potential reviewers.

You should not suggest reviewers who are colleagues, or who have co-authored or collaborated with you during the last three years. Editors do not invite reviewers who have potential competing interests with the authors. Further, in order to provide a broad and balanced assessment of the work, and ensure scientific rigor, please suggest diverse candidate reviewers who are located in different countries/regions from the author group. Also consider other diversity attributes e.g. gender, race and ethnicity, career stage, etc. Finally, you should not include existing members of the journal's editorial team, of whom the journal are already aware.

Note: the editor decides whether or not to invite your suggested reviewers.

**PREPARATION**

**Peer review**
This journal operates a single anonymized review process. All contributions will be initially assessed by the editor for suitability for the journal. Papers deemed suitable are then typically sent to a minimum of two independent expert reviewers to assess the scientific quality of the paper. The Editor is responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final. Editors are not involved in decisions about papers which they have written themselves or have been written by family members or colleagues or which relate to products or services in which the editor has an interest. Any such submission is subject to all of the journal's usual procedures, with peer review handled independently of the relevant editor and their research groups. More information on types of peer review.

**Use of wordprocessing software**
It is important that the file be saved in the native format of the wordprocessor used. The text should be in single-column format. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. In particular, do not use the wordprocessor's options to justify text or to hyphenate words. However, do use bold face, italics, subscripts, superscripts etc. If possible, do not embed "graphically designed" equations or tables, but prepare these using the wordprocessor's facility. When preparing tables, if you are using a table grid, use only one grid for each individual table and not a grid for each row. If no grid is used, use tabs, not spaces, to align columns. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier: https://www.elsevier.com/guidepublication. See also the section on Electronic illustrations. To avoid unnecessary errors you are strongly advised to use the "spell-check" and "grammar-check" functions of your wordprocessor.

**LaTeX**
You are recommended to use the Elsevier article class elsarticle.cls to prepare your manuscript and BibTeX to generate your bibliography.
Our LaTeX site has detailed submission instructions, templates and other information.

**Article Structure**

**General.**
Manuscripts submitted to ECRA should be prepared for electronic submission to the Editorial Manager website using single-column, double-spaced 11 or 12 point fonts, with 1 inch or 2.5 centimeter margins. Authors should avoid double justification. Please do not use a constant right-hand margin, since it diminishes readability for the reviewers. Also, ensure that each new paragraph is clearly indicated by indenting the first line. Also to enhance readability, authors should embed tables and figures in the manuscript in places that are near to the text that refers to them. Number all pages consecutively. Consult a recent issue of the journal to become familiar with layout and other formatting conventions. If you require a sample issue, please click on the 'Free Sample Issue' link under the 'For Readers' menu on the right hand side of this page. Here are some additional requirements related to formatting:
Title Page. Authors should include a Title Page as the first page of their submission, containing the article title, author(s) names and affiliations, an abstract not exceeding 150 words, and a list of 5 to 10 keywords that best describe the overall contents of the article for indexing and retrieval purposes. The title page should also contain related footnotes and acknowledgments that pertain to the paper and the authors.

Corresponding Author. Clearly indicate who will handle correspondence at all stages of refereeing and publication, including post-publication correspondence. Ensure that telephone and fax numbers with country and area code are provided, in addition to the e-mail address and the complete postal address.

Highlights
Highlights are mandatory for this journal as they help increase the discoverability of your article via search engines. They consist of a short collection of bullet points that capture the novel results of your research as well as new methods that were used during the study (if any). Please have a look at the example Highlights.

Highlights should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point).

Graphical abstract
Although a graphical abstract is optional, its use is encouraged as it draws more attention to the online article. The graphical abstract should summarize the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership. Graphical abstracts should be submitted as a separate file in the online submission system. Image size: Please provide an image with a minimum of 531 × 1328 pixels (h × w) or proportionally more. The image should be readable at a size of 5 × 13 cm using a regular screen resolution of 96 dpi. Preferred file types: TIFF, EPS, PDF or MS Office files. You can view Example Graphical Abstracts on our information site.

Formatting of funding sources
List funding sources in this standard way to facilitate compliance to funder's requirements:

Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa].

It is not necessary to include detailed descriptions on the program or type of grants and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding.

If no funding has been provided for the research, it is recommended to include the following sentence:

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Artwork
Electronic Artwork
General points

• Make sure you use uniform lettering and sizing of your original artwork.
• Save text in illustrations as "graphics" or enclose the font.
• Only use the following fonts in your illustrations: Arial, Courier, Helvetica, Times,
• Number the illustrations according to their sequence in the text.
• Use a logical naming convention for your artwork files, if you include separate ones.
• Provide captions to illustrations.
• Produce images near to the desired size of the printed version.

A detailed guide on electronic artwork is available on our website: https://www.elsevier.com/artworkinstructions. You are urged to visit this site; some excerpts from the detailed information are given here.
Formats
Regardless of the application used, when your electronic artwork is finalised after your paper has been accepted, please "save as" or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):

EPS: Vector drawings. Embed the font or save the text as 'graphics'.
TIFF: color or grayscale photographs (halftones): always use a minimum of 300 dpi.
TIFF: Bitmapped line drawings: use a minimum of 1000 dpi.
TIFF: Combinations bitmapped line/half-tone (color or grayscale): a minimum of 500 dpi is required.
DOC, DOCX, XLS or PPT: If your electronic artwork is created in any of these Microsoft Office applications please supply 'as is'.

Please do not:
• Supply files that are optimised for screen use (like GIF, BMP, PICT, WPG); the resolution is too low;
• Supply files that are too low in resolution;
• Submit graphics that are disproportionately large for the content.

Figures, Tables and Illustrations
Provide all figures, tables and illustrations in high-quality format suitable for reproduction, which may include reduction. These should be numbered consecutively in the order in which they are referred to in the main body of the text. Mark all of these with a table or figure number and an explanatory caption or title. For detailed guidelines on electronic figures, please refer to the 'Artwork Instructions' at https://www.elsevier.com/artworkinstructions

Color artwork
Please make sure that artwork files are in an acceptable format (TIFF (or JPEG), EPS (or PDF), or MS Office files) and with the correct resolution. If, together with your accepted article, you submit usable color figures then Elsevier will ensure, at no additional charge, that these figures will appear in color online (e.g., ScienceDirect and other sites) regardless of whether or not these illustrations are reproduced in color in the printed version. For color reproduction in print, you will receive information regarding the costs from Elsevier after receipt of your accepted article. Please indicate your preference for color: in print or online only. Further information on the preparation of electronic artwork.

Reference links
Increased discoverability of research and high quality peer review are ensured by online links to the sources cited. In order to allow us to create links to abstracting and indexing services, such as Scopus, Crossref and PubMed, please ensure that data provided in the references are correct. Please note that incorrect surnames, journal/book titles, publication year and pagination may prevent link creation. When copying references, please be careful as they may already contain errors. Use of the DOI is highly encouraged.

A DOI is guaranteed never to change, so you can use it as a permanent link to any electronic article. An example of a citation using DOI for an article not yet in an issue is: VanDecar J.C., Russo R.M., James D.E., Ambeh W.B., Franke M. (2003). Aseismic continuation of the Lesser Antilles slab beneath northeastern Venezuela. Journal of Geophysical Research, https://doi.org/10.1029/2001JB000884. Please note the format of such citations should be in the same style as all other references in the paper.

Data references
This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

Reference to software
We recommend that software (including computational code, scripts, models, notebooks and libraries) should be cited in the same way as other sources of information to support proper attribution and credit, reproducibility, collaboration and reuse, and encourage building on the work of others to further research. To facilitate this, useful information is provided in this article on the essentials of software citation by FORCE 11, of which Elsevier is a member. A reference to software should always include the following elements: creator(s) e.g. the authors or project that developed the software, software title, software repository, version (where available), year, and global persistent identifier.
Preprint references
Where a preprint has subsequently become available as a peer-reviewed publication, the formal publication should be used as the reference. If there are preprints that are central to your work or that cover crucial developments in the topic, but are not yet formally published, these may be referenced. Preprints should be clearly marked as such, for example by including the word preprint, or the name of the preprint server, as part of the reference. The preprint DOI should also be provided.

Reference management software
Most Elsevier journals have their reference template available in many of the most popular reference management software products. These include all products that support Citation Style Language styles, such as Mendeley. Using citation plug-ins from these products, authors only need to select the appropriate journal template when preparing their article, after which citations and bibliographies will be automatically formatted in the journal's style. If no template is yet available for this journal, please follow the format of the sample references and citations as shown in this Guide. If you use reference management software, please ensure that you remove all field codes before submitting the electronic manuscript. More information on how to remove field codes from different reference management software.

Reference formatting
There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the article number or pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct. If you do wish to format the references yourself they should be arranged according to the following examples:

Reference style
Text: All citations in the text should refer to:
1. Single author: the author's name (without initials, unless there is ambiguity) and the year of publication;
2. Two authors: both authors' names and the year of publication;
3. Three or more authors: first author's name followed by 'et al.' and the year of publication.

Citations may be made directly (or parenthetically). Groups of references can be listed either first alphabetically, then chronologically, or vice versa.

Examples: 'as demonstrated (Allan, 2000a, 2000b, 1999; Allan and Jones, 1999).... Or, as demonstrated (Jones, 1999; Allan, 2000).... Kramer et al. (2010) have recently shown ...'

List: References should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters 'a', 'b', 'c', etc., placed after the year of publication.

Examples:
Reference to a journal publication:
Reference to a journal publication with an article number:
Reference to a book:
Reference to a chapter in an edited book:
Reference to a website:
Reference to a dataset:
Reference to software:

**Published Materials on the Internet and Foreign Language Sources.**
Provide as complete information as possible, although pages may not be available. Indicate the URL where the materials can be found, and indicate the last data the materials were accessed. Please click here for examples.

**Data visualization**
Include interactive data visualizations in your publication and let your readers interact and engage more closely with your research. Follow the instructions here to find out about available data visualization options and how to include them with your article.

**Research data**
This journal requires and enables you to share data that supports your research publication where appropriate, and enables you to interlink the data with your published articles. Research data refers to the results of observations or experimentation that validate research findings, which may also include software, code, models, algorithms, protocols, methods and other useful materials related to the project.

Below are a number of ways in which you can associate data with your article or make a statement about the availability of your data when submitting your manuscript. When sharing data in one of these ways, you are expected to cite the data in your manuscript and reference list. Please refer to the "References" section for more information about data citation. For more information on depositing, sharing and using research data and other relevant research materials, visit the [research data page](#).

**Data linking**
If you have made your research data available in a data repository, you can link your article directly to the dataset. Elsevier collaborates with a number of repositories to link articles on ScienceDirect with relevant repositories, giving readers access to underlying data that gives them a better understanding of the research described.

There are different ways to link your datasets to your article. When available, you can directly link your dataset to your article by providing the relevant information in the submission system. For more information, visit the [database linking page](#).

For supported data repositories a repository banner will automatically appear next to your published article on ScienceDirect.

In addition, you can link to relevant data or entities through identifiers within the text of your manuscript, using the following format: Database: xxxx (e.g., TAIR: AT1G01020; CCDC: 734053; PDB: 1XFN).

**Research Elements**
This journal enables you to publish research objects related to your original research – such as data, methods, protocols, software and hardware – as an additional paper in a Research Elements journal.

Research Elements is a suite of peer-reviewed, open access journals which make your research objects findable, accessible and reusable. Articles place research objects into context by providing detailed descriptions of objects and their application, and linking to the associated original research articles. Research Elements articles can be prepared by you, or by one of your collaborators.

During submission, you will be alerted to the opportunity to prepare and submit a manuscript to one of the Research Elements journals.

More information can be found on the [Research Elements page](#).
Data statement
To foster transparency, we encourage you to state the availability of your data in your submission. This may be a requirement of your funding body or institution. If your data is unavailable to access or unsuitable to post, you will have the opportunity to indicate why during the submission process, for example by stating that the research data is confidential. The statement will appear with your published article on ScienceDirect. For more information, visit the Data Statement page.

AFTER ACCEPTANCE
Uncorrected Proofs are not to be regarded as 'drafts,' and authors should not view them as providing an opportunity to make major content changes. Only minor copy-editing corrections are permitted. No changes in, or additions to the accepted and subsequently edited manuscript will be allowed at the end of this stage. So it is important to ensure that all changes to the Uncorrected Proof are indicated in one communication with the Elsevier Production staff. Subsequent corrections will not be possible. Prior to the Uncorrected Proof stage, an ECRA Co-Editor may request that a paper should be edited for English. Elsevier's Language Editing Service will handle this.

Online proof correction
To ensure a fast publication process of the article, we kindly ask authors to provide us with their proof corrections within two days. Corresponding authors will receive an e-mail with a link to our online proofing system, allowing annotation and correction of proofs online. The environment is similar to MS Word: in addition to editing text, you can also comment on figures/tables and answer questions from the Copy Editor. Web-based proofing provides a faster and less error-prone process by allowing you to directly type your corrections, eliminating the potential introduction of errors. If preferred, you can still choose to annotate and upload your edits on the PDF version. All instructions for proofing will be given in the e-mail we send to authors, including alternative methods to the online version and PDF.

We will do everything possible to get your article published quickly and accurately. Please use this proof only for checking the typesetting, editing, completeness and correctness of the text, tables and figures. Significant changes to the article as accepted for publication will only be considered at this stage with permission from the Editor. It is important to ensure that all corrections are sent back to us in one communication. Please check carefully before replying, as inclusion of any subsequent corrections cannot be guaranteed. Proofreading is solely your responsibility.

Offprints
The corresponding author will, at no cost, receive a customized Share Link providing 50 days free access to the final published version of the article on ScienceDirect. The Share Link can be used for sharing the article via any communication channel, including email and social media. For an extra charge, paper offprints can be ordered via the offprint order form which is sent once the article is accepted for publication. Corresponding authors who have published their article gold open access do not receive a Share Link as their final published version of the article is available open access on ScienceDirect and can be shared through the article DOI link.

AUTHOR INQUIRIES
Visit the Elsevier Support Center to find the answers you need. Here you will find everything from Frequently Asked Questions to ways to get in touch.

You can also check the status of your submitted article or find out when your accepted article will be published.

© Copyright 2018 Elsevier | https://www.elsevier.com