# *Quality perceptions of design journals: The design scholars' perspective*

*Gerda Gemser, Cees de Bont* and *Paul Hekkert,* Faculty of Industrial Design Engineering, Delft University of Technology, Landbergstraat 15, 2628 CE Delft, The Netherlands
*Ken Friedman,* Faculty of Design, Swinburne University of Technology, Prahran, Victoria 3181, Australia

*The primary objectives of this study were to identify a set of journals that report on industrial design research and to propose quality rankings of those journals. Based on an online survey, design journals were assessed in terms of two quality metrics: popularity and indexed average rank position. We find that both general and specialized design journals are highly valued and that geographic origin and academic background can be related with journal rankings. The results of the study offer a guide to both evaluators and those evaluated when judging or selecting research outlets.*


*Keywords: industrial design, evaluation, design research, design science, journal ranking*

Industrial design, a discipline focusing on product and service development, is relatively young as an academic field of study. In the U.S., the Carnegie Institute of Technology in Pittsburgh was the first academic program in the field, starting in the early 1930s (Lesko, 1997). The British Royal College of Art, founded in 1837 as the Government School of Design, took on university status in 1967. The Faculty of Industrial Design Engineering at Delft University of Technology was started in 1969. Most of today's respected institutions entered the field of industrial design much later. In their early years, the academic institutes of design tended to focus on teaching rather than research, educating thousands of design professionals. Today, there are several thousand design schools offering programs in industrial design, and design courses are taught in schools and faculties of business, engineering, technology, information science, and more, as well as in interdisciplinary programs.

**Corresponding author:**
Gerda Gemser
g.gemser@tudelft.nl

A scientific discipline is about theories and methods that accumulate through academic research and reflection. The first academic journals reporting on research in the field of industrial design appeared in the late 1970s and 1980s: *Design Studies* began to publish in 1979, *Design Issues* was launched in 1984

www.elsevier.com/locate/destud
0142-694X $ - see front matter *Design Studies* **33** (2012) 4–23
doi:10.1016/j.destud.2011.09.001

and the *Journal of Design History* in 1988. Since then, design research has only expanded. This is demonstrated by the increasing growth of academic journals of design research, such as the *International Journal of Design*, established in 2007, and new design research conferences such as those organized by the Design Research Society, the Design Society and the Design and Emotion society. In 2005 the Design Research Association and the Asian design research societies formed the International Association of Societies of Design Research (IASDR), establishing a global platform for design research.

Developing new products and services requires exploring and exploiting many different types of knowledge and insights. Blevis, Lim, and Stolterman (2006: 2) describe the challenge:

> "For something to be designed well, it needs to have been designed in consideration of more than mathematical integrity, cognitive models of 'users,' or usability—it needs to have been designed in consideration of contexts, environments, inter-relations, markets, emotions, aesthetics, visual forms, semiotic references and a whole host of considerations that are part of the assumed nature of successful designs."

Not surprisingly, design researchers address design topics from the perspectives of different foundational disciplines, including engineering, psychology, anthropology, sociology, arts, management, computing, information science, economics, and more. While this may lead to anxiety on the part of the insecure, others recognize this as a necessary outcome in an interdisciplinary field (Friedman, 2003: 508).

Given that design research is interdisciplinary in nature, design researchers must frequently choose whether to publish their work in design journals or in journals outside of the design field. Since promotion and pay for university faculty generally depends on publication performance (Coe & Weinstock, 1984; Gomez-Meija & Balkin, 1992; Linton & Thongpapanl, 2004), ambitious design researchers may prefer to publish in journals with high impact factors. The impact factor of a journal is a measure reflecting the average number of citations to articles published. Many design journals are not included or have a relatively low ranking in journal impact factor analyses. As a result, design researchers may be tempted to send their best work to journals outside the design field. National research funding programs often encourage this trend because many research funding schemes favor researchers and institutions that have an established publication track record when allocating research funds.

Impact factor deserves more attention than we can give it here. The common perception is that impact factor is a major differentiator among journals. This is open to debate. Leydesdorff and Bornmann (2011) argue convincingly that current impact measures do not reflect the real impact and value of some journals. In his ongoing study of citations and impact among management

journals, Starbuck (2011) notes that "Citation rates measure visibility. They do not measure quality or intellectual rigor as such. Journals low on the list may publish high quality articles or uphold rigorous standards, but people rarely cite the articles published in these journals. Quality is, of course, a highly subjective attribute." Starbuck has long been an advocate for publishing in journals notable for focus and quality, rather than publishing in journals based on impact. But focus and quality may also lead authors in an interdisciplinary field such as design to publish in journals that are based in other disciplines.

While connecting the interdisciplinary and young discipline of design with other fields is valuable, publishing in journals outside the design field raises problems as well. First, contributions to design research become somewhat invisible to the design research community, a problem that hinders the development of a healthy dialog (cf. Chen, 2007). Furthermore, when design research appears in a non-design journal, it is often outside the core research interests of the journal readership. One consequence of this is that design research scholars attract fewer citations in these journals than do the core researchers for that particular field. A related problem is that design journals have difficulty in moving up in academic rankings if they do not receive the best contributions of design researchers who tend to submit their best work to journals in other fields. Indeed, when establishing the *International Journal of Design*, the editor made a vigorous plea to design researchers to submit their "best work" to this new journal to become a "respected" journal in the field (Chen, 2007: 1–2).

The main purpose of this study is to identify a set of academic journals relevant to research on developing and interacting with products and services and evaluate them for their overall quality. Understanding journal quality is vital because research quality is a primary criterion on which universities and other research funding bodies evaluate faculty research performance. As research fields mature, academics often conduct journal ranking studies to examine the prestige and appropriateness of their relevant journals (Caligiuri, 1999). Surprisingly, few evaluations have been made for journals that publish design-related research. Friedman et al. (2008) made a first attempt and delivered a long list of journals perceived as being design-oriented. However, in this study only popularity was measured and no explicit rank order of the journals for their overall quality was established. Furthermore, the list provided by Friedman et al (2008) captured journals across very diverse design-related fields and included both academic and professional journals. The objective of the current study is to identify and rank *academic* journals that primarily focus on the dissemination of research on *developing and interacting with products and services*. Therefore, we do not focus on, for example, practice-oriented journals without a peer-review system, journals on architecture, and journals rooted in foundational disciplines such as economics, management, or psychology. However, since the design field is interdisciplinary in nature, identifying the boundary for relevant design journals was difficult and required

a certain degree of subjectivity. Nonetheless, our study is the first rigorous analysis of research journals in the field of industrial design, based on the survey responses of an expert respondent group of journal editors and editorial board members. Rather than the haze of intuitive assessments by different individuals or the heat of arguments among different groups, we hope that our findings provide the kind of useful information that journal studies offer in other fields when the smoke of controversy clears.

In the next two sections, more details will be given on assessing journal quality, our propositions, and the methods used in our study. Then we will present and elaborate on the results of our survey. The last section provides a summary and conclusions.

# 1 Assessing journal quality

## 1.1 Perception-based versus citation-based journal ranking studies

To rank industrial design journals, we use a perception-based approach rather than a citation-based approach. A perception-based approach is a common and widely accepted method to rank academic journals (Albrecht, Thompson, Hoopes, & Rodrigo, 2010).[1] Furthermore, peer-based evaluation is the basis for nearly all evaluation in academic settings (Wijnberg & Gemser, 2000). Third, researchers who integrated both a perception-based and citation-based approach, found that both ranking approaches yielded similar results (Donohue & Fox, 2000; Dubois & Reeb, 2000). Finally, in the design field, a citation approach is restricted in coverage because of the limited number of design journals that are indexed in the Thomson Reuters Science Citation Index (SCI), Thomson Reuters Social Science Citation Index (SSCI), or in Scopus.

## 1.2 Defining journal quality

In perception-based studies, it is common practice not to define what constitutes a high quality journal, to allow respondents to form their own opinion (Rousseau, 2008). Still, the concept of journal quality merits further study (Barman, Tersine, & Buckley, 1991; Coe & Weinstock, 1984). Although there exists no clear consensus, an array of factors is known to be responsible for the overall perceived quality of an academic journal, including editorial review policies, the quality of published articles, origin of the publication, the age of the journal, circulation size, impact factor, and reputation of the editor and editorial board (Coe & Weinstock, 1984; Hawkins, Ritter, & Walter, 1973).

## 1.3 Determinants of perceived journal quality

Prior journal ranking studies have asked whether journal affiliation, as reflected in being in the editorial board or having published in the journal (Axarloglou & Theoharakis, 2003), had an impact on quality assessment scores. Since the ranking of a journal can affect one's own standing

(Luukhonen, 1992), perception-based surveys may suffer from a respondent's self-serving bias towards affiliated journals. Prior studies on the impact of journal affiliation on journal ranking have shown mixed results: in some studies affiliated respondents with a journal had a significantly more favorable view than non-affiliated respondents (Axarloglou & Theoharakis, 2003; Donohue & Fox, 2000; Theoharakis & Hirst, 2002); in a few studies no significant effects were found (Barman et al., 1991; Lowe & Locke, 2005); while there was also one study in which affiliated respondents ranked the journals they were involved in significantly lower, rather than higher (Brinn, Jones, & Pendlebury, 1996).[2] Even though the results are somewhat inconclusive, we hypothesize that, *compared to non-affiliated respondents, respondents affiliated with an industrial design journal will prefer the journals they are involved in*.

In prior perception-based ranking studies it was found that the quality perception of journals may depend on a researcher's academic background (Hawkins et al., 1973) or, similar, research interest or research specialization (Axarloglou & Theoharakis, 2003; Donohue & Fox, 2000; Lowe & Locke, 2005; Theoharakis & Hirst, 2002). *On the basis of these results we predict that, compared to respondents with non-related academic backgrounds, respondents will prefer industrial design journals related to their academic background*. Thus, for example, respondents with an academic background in management or economics, may prefer design management journals, while respondents with an academic background in fine or applied arts may prefer design journals that are rooted in or strongly affiliated with the arts disciplines.

Prior perception-based studies also found that ranking of journals might vary by geographic region (Albrecht et al., 2010; Axarloglou & Theoharakis, 2003; Mylonopoulos & Theoharakis, 2001; Theoharakis & Hirst, 2002).[3] Albrecht et al. (2010) observed that the demographics of the editorial team (editors, assistant editors, associate editors) may provide an explanation of why journal rankings differ according to geographic area. Because the editorial team plays such an active role in the marketing and managing of the journals (Albrecht et al., 2010), this may in part be reflected in journal preferences along geographic lines. Thus, *we predict that respondents will prefer industrial design journals with an editorial team located in the same geographic region as they are*.

# 2 Research methodology

## 2.1 Sampling frame

Invitations to participate in the study were sent to editors and editorial board members of academic journals publishing regularly on industrial design. Since journal editors and editorial board members are actively engaged in design research, they constitute a good representation of the design academic community (for studies with a similar approach, focusing on senior academics as

a sampling frame, see e.g. Brinn, Jones, & Pendlebury, 1998; Caligiuri, 1999; Coe & Weinstock, 1983; Mason, Steagall, & Fabritius, 1997).

## 2.2 The survey

To encourage response and speed the data gathering process, we constructed an internet-based survey (internet-based surveys were also used by, e.g.: Albrecht et al., 2010; Friedman et al., 2008; Lowe & Locke, 2005; Lowry, Romans, & Curtis, 2004; Mylonopoulos & Theoharakis, 2001; Rousseau, 2008; Theoharakis & Hirst, 2002). We invited people to participate by email. The email contained a brief description of the purpose of the study and a link to the online survey. The initial email was sent out early November 2010 (8th of November), followed by two reminders (on the 17th and 25th of November). The survey was administered electronically using NetQ survey software. The survey was in English. The survey was programmed to prevent participants from taking the survey more than once.

Respondents were asked to select and rank only those journals with which they were clearly familiar. The survey provided a list of journals publishing regularly on industrial design research to facilitate respondent recall and selection. The list of journals was selected based on the journals identified in Friedman et al.'s (2008) study,[4] personal communications with faculty from various universities, and survey-pre-testing. Our list includes both general and specialized industrial design journals and can be found in the Appendix. To account for the possibility that we had over-looked a journal in the list, the survey provided an opportunity for respondents to list additional journals not included in the survey. There were 56 additional journals suggested by the respondents, with none of these journals mentioned by more than two respondents. This suggests there were no important omissions in our original journal list.

Respondents were asked to select five journals they perceived to be top tier based on their academic contribution to the design discipline. Once respondents had identified their top five design journals, they were asked to rank these journals on the basis of perceived academic quality from 1 to 5 with 5 being the best journal (1 = good to 5 = best). As noted by Albrecht et al. (2010), this type of weighting method assumes linearity between preferences and has been adopted in other opinion-based studies (e.g., Albrecht et al. 2010; Caligiuri, 1999; Lowry et al., 2004; Mylonopoulos & Theoharakis, 2001; Theoharakis & Hirst, 2002). Although we stressed that ranking should be based on the academic quality of a journal, we did not include an explicit definition of what constitutes a top tier design journal. After selecting and ranking five journals, respondents were asked to indicate whether they had published in the journals selected and whether they are member of the editorial board.

To gain more insight into the importance of criteria for rating journals, we included a survey question asking respondents to assess the importance of

different evaluation mechanisms. On the last pages of the survey, academic and demographic information was collected

## 2.3 Response rate

In total, 1129 editorial boards members and editors were invited by email to participate in the survey. Of the 1129 email invitations we sent out, 91 emails 'bounced' due to incorrect email addresses or due to long-term absence of the respondents. The survey received a total of 316 responses, which represents a 30.4% usable worldwide response rate. This is comparable to the response rate of similar online surveys.[5] Comments received by email indicated that part of the non-response arose from a lack of sufficient knowledge on industrial design journals of some of those included in the sampling frame. People indicated that they were not sufficiently knowledgeable about the design journals to pick five (respondents were asked to pick no more and no less than five journals).

To thank the respondents for their cooperation, respondents could participate in a lottery in which 50 copies of a new design methods book, to be published early 2011, would be given away for free. Of the respondents, 81,3% indicated they wanted to participate in this lottery.

By region, 47% of the respondents were located in Europe; 34% in North America; and 18% in Australasia (see Table 1 below). Almost half of the respondents (46%) had a design-related academic background (see Table 1 below).

## 2.4 Measuring perceived quality of design journals

To evaluate perceptions of design journals, we use two quality metrics: popularity and an index of average rank position.

Similar to prior journal ranking studies (Axarloglou & Theoharakis, 2003; Mylonopoulos & Theoharakis, 2001), in our study we use the term *Popularity* to indicate the number of times a journal is selected by survey respondents. The term popularity is thus used in a technical sense rather than using it in the common sense of the word. In specific, the term popularity applies only to responses from our respondents and not to any form of general popularity. Popularity is calculated by counting the number of times the respondents selected to rank a particular journal (Axarloglou & Theoharakis, 2003; Mylonopoulos & Theoharakis, 2001).

The quality metric Popularity only measures preference for or familiarity with journals independent of the rank order position assigned by the survey respondents. To measure how respondents ranked the journals on the basis of perceived academic quality (from 1 to 5), we use the quality metric Average Rank Position (ARP). The ARP given by the respondents who chose to rank the particular journal (Axarloglou & Theoharakis 2003) is defined as:

**Table 1 Respondents' profile**

| *Academic background* | n | *%* | *World region* | n | *%* |
|---|---|---|---|---|---|
| Computer sciences[a] | 21 | 7 | Australasia | 57 | 18 |
| Economics/management or business | 21 | 7 | Europe | 148 | 47 |
| Engineering & (industrial) design; architecture[b] | 145 | 46 | North America | 107 | 34 |
| Humanities[c] | 50 | 16 | Other | 4 | 1 |
| Social and behavioral sciences[d] | 49 | 15 | | | |
| Other[e] | 30 | 9 | | | |
| Total | 316 | 100 | Total | 316 | 100 |

[a] Includes Human-Computer Interaction.
[b] Includes graphic and visual communication design, design history.
[c] Includes philosophy, language, culture studies; liberal arts and sciences.
[d] Includes psychology, sociology, and anthropology.
[e] Includes natural sciences (physics, chemistry; biology); mathematics, and multidisciplinary.

$$\mathrm{ARP}_i = \frac{\sum_{j=1}^{5} R_{ij} * j}{\sum_{j=1}^{5} R_{ij}}$$
$$(1 \leq \mathrm{ARP}_i \leq 5)$$

where $i$ denotes the journal and $R_{ij}$ the number of times that journal $i$ has been ranked in the $j$th position. A lower ARP reflects a higher perceived journal importance. To this end, we recoded the data so that the 5th position represented the last position rather than the first.

As noted by Axarloglou and Theoharakis (2003), the ARP measure does not consider the number of respondents that actually selected and ranked the journal. As a result, a low popularity journal with a small number of respondents that ranked it very highly will show a low ARP and thus a high-perceived quality. Thus, Popularity and Average Rank Position need to be balanced. To do so, we used a weighted index of Average Rank Position (Index) (Theoharakis & Hirst, 2002), calculated as follows:

$$\mathrm{Index}_i = 100 * \frac{\sum_{j=1}^{5} R_{ij} * (6-j)}{5 * n} = 100 * \frac{6 - \mathrm{ARP}_i}{5 * n} * \mathrm{popularity}_i$$
$$0 \leq \mathrm{Index}_i \leq 100$$

where $n$ denotes the number of respondents in the sample. The Index assigns to the $j$th rank position a declining weight equal to $(6-j)/5$, with the fifth position and the first rank positions receiving a weight of 1/5 and 5/5 respectively.

# 3 Results

## 3.1 Rankings on a worldwide scale

Table 2 shows the weighted Index and Popularity for those journals that were evaluated by at least 15% of the sample (cf. approach of Dubois & Reeb,

**Table 2 Rankings on a worldwide scale**

| *Rank* | *Journal*[a] | *Index* | *Popularity* | *Listed*[b] | *Impact factor*[c] |
|---|---|---|---|---|---|
| 1 | **Design Studies** | 26.14 | 140 | SCI | 0.98 (1.71) |
| 2 | **Design Issues** | 21.27 | 114 | A&HCI | – |
| 3 | Human Factors | 13.67 | 69 | SCI & SSCI | 1.46 (1.82) |
| 4 | Journal of Design History | 13.23 | 65 | – | – |
| 5 | Human-Computer Interaction | 12.91 | 69 | SCI | 6.19 (7.32) |
| 6 | Applied Ergonomics | 11.90 | 59 | SCI & SSCI | 1.11 (1.50) |
| 7 | **Journal of Engineering Design** | 11.20 | 59 | SCI | 1.58 (1.62) |
| 8 | **International Journal of Design**[d] | 10.25 | 57 | SCI, SSCI, & A&HCI | – |
| 9 | Computer-Aided Design | 9.94 | 48 | SCI | 1.67 (2.33) |
| 9 | Research in Engineering Design | 9.94 | 59 | SCI | 1.04 (1.67) |
| 11 | Ergonomics | 9.81 | 52 | SCI & SSCI | 1.42 (1.80) |
| 12 | **The Design Journal** | 9.43 | 46 | A&HCI | – |
| 13 | Design and Culture | 9.37 | 51 | – | – |
| 14 | **Journal of Design Research** | 9.18 | 47 | – | – |

[a] General design journals in bold type.

[b] Indicates whether the journal is included in the Science Citation Index (SCI), the Social Citation Index (SSCI), or the Arts & Humanities Citation Index (A&HCI) as provided by Thomson Reuters.

[c] Impact factor in 2009. In parentheses the average 5-year impact factor. Source: Thomson Reuters Journal Citation Reports 2010. No impact factor available for those journals listed in the A&HCI or those listed in none of the three indices.

[d] The International Journal of Design has recently been indexed in Thomson Reuters SCI-E, SSCI, and A&HCI but the impact factor is not yet known.

2000). We exclude journals evaluated by less than 15% of the respondents. First, the sample is less reliable, and second, if less than 15% of the respondents evaluated a journal that journal must be less important for industrial design research.

*Design Studies* and *Design Issues* score highest on the two quality measures Index and Popularity. In the popularity ranking provided by Friedman et al. (2008), these two journals were also in the top two places. There is not a significant difference between perceived quality of *Design Studies* and *Design Issues* according to the Wilcoxon signed rank test, a nonparametric alternative to the *t*-test ($Z$ Score $= {}^{-}0.218$; $p > 0.10$).

Based on an examination of editorial policies, a distinction can be made between general design journals that publish articles in design across the different sub-disciplines that make up the larger domain of design research and specialized design journals that focus on a design sub-discipline or specific field. In Table 2, six general design journals are listed (i.e. *Design Studies*, *Design Issues, Journal of Engineering Design, International Journal of Design; The Design Journal; Journal of Design Research;* these journals are in bold type in Table 2) and eight specialized journals, which focus on design sub-disciplines including ergonomics (*Human Factors, Applied Ergonomics; Ergonomics*), engineering (*Research in Engineering Design*), computer science (*Human-Computer Interaction*; *Computer-Aided Design*) or arts (*Journal of Design History*; *Design and Culture*). Prior findings in the economics field indicated that the more

general a journal, the greater its assessed prestige or status tends to be; and the more specialized its focus, the lower its apparent reputation (Hawkins et al., 1973). The results of our study are not clear-cut; while the top 2 journals are general design journals, the 3rd to 6th ranked journals are specialized journals.

In Table 2 we added information on whether the journals are listed in the Thomson Reuters science, social science, or arts & humanities citation index and what their ISI impact factor is. Three of the fourteen journals ranked highest in our sample are not included in any of the three indices. Furthermore, the top two journals have either a relatively low impact factor compared to the other journals in the list or no impact factor, which suggests that for design researchers the ISI impact factor is not a dominant factor in assessing industrial design journal quality (see also the results reported in Table 3). Pearson correlation analyses show that neither Popularity nor Index is significantly correlated with the journals' impact factor (popularity: $r = -0.091$, $p > 0.10$; Index: $r = -0.098$, $p > 0.10$).

Table 3 shows the results of the survey question on the importance of criteria to evaluate journal quality. The results suggest that a journal's impact factor is indeed not of predominant importance for design researchers in determining journal quality. Instead, perceived rigor and relevance of contents and editorial quality appear particularly influential for design journal quality assessments.

## 3.2 Rankings by geographic region

There are some notable similarities and differences in the ways respondents from Australasia, Europe and North America, perceive design journals, as shown in Table 4. First, in all three regions *Design Studies* and *Design Issues* are ranked the highest, both in terms of Index and Popularity. However, with regard to position 3−14 there are considerable differences between the three regions. Based on a Kruskal-Wallis test, and after applying a Bonferonni correction, we found that the rankings between the three regions are not significantly different ($p < 0.0035$, two-tailed test).

**Table 3 Reasons for ranking**

| *Reason* | *Mean* | *St. Dv.* |
|---|---|---|
| General quality of articles | 6.62 | 0.736 |
| Quality of the editorial process and review reports | 6.04 | 1.092 |
| Academic reputation of the editors and editorial board | 5.31 | 1.482 |
| Specific journal subject area | 5.20 | 1.466 |
| The widespread circulation of the journal | 4.92 | 1.597 |
| The research methodology generally followed in the journal | 4.91 | 1.638 |
| Relevance to design practice | 4.83 | 1.600 |
| Impact factor of the journal | 4.69 | 1.738 |
| Open access/free circulation of the journal | 4.06 | 1.896 |
| Prestige of professional organization with which the journal is affiliated | 3.60 | 1.801 |
| Prestige of university with which the journal is affiliated | 2.77 | 1.686 |

Scale: 1 = not important; 7 = very important.

**Table 4 Ranking by region**[a]

| *Journal* | *Worldwide (n = 316)* | | | *Australasia (n = 57)* | | | *Europe (n = 148)* | | | *North America (n = 107)* | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Rank* | *Index* | *Popularity* | *Rank* | *Index* | *Popularity* | *Rank* | *Index* | *Popularity* | *Rank* | *Index* | *Popularity* |
| Design Studies | 1 | 26.14 | 140 | 1 | 4.94 | 26 | 1 | 13.80 | 73 | 1 | 7.34 | 40 |
| Design Issues | 2 | 21.27 | 114 | 2 | 3.86 | 19 | 2 | 10.13 | 54 | 2 | 7.15 | 40 |
| Human Factors | 3 | 13.67 | 69 | 11 | 1.71 | 9 | 8 | 4.87 | 24 | 3 | 6.71 | 34 |
| Journal of Design History | 4 | 13.23 | 65 | 8 | 1.84 | 9 | 3 | 6.39 | 33 | 4 | 5.00 | 23 |
| Human-Computer Interaction | 5 | 12.91 | 69 | 6 | 2.22 | 11 | 7 | 5.57 | 32 | 5 | 4.75 | 24 |
| Applied Ergonomics | 6 | 11.90 | 59 | 7 | 2.15 | 13 | 6 | 5.82 | 28 | 8 | 3.61 | 17 |
| Journal of Engineering Design | 7 | 11.20 | 59 | 8 | 1.84 | 12 | 4 | 6.20 | 30 | 11 | 3.16 | 17 |
| International Journal of Design | 8 | 10.25 | 57 | 4 | 3.42 | 17 | 12 | 3.86 | 25 | 12 | 2.91 | 14 |
| Computer-Aided Design | 9 | 9.94 | 48 | 3 | 3.48 | 13 | 11 | 4.05 | 22 | 13 | 2.09 | 11 |
| Research in Engineering Design | 9 | 9.94 | 59 | 5 | 2.28 | 12 | 10 | 4.30 | 27 | 9 | 3.35 | 20 |
| Ergonomics | 11 | 9.81 | 52 | 14 | 1.14 | 9 | 9 | 4.75 | 22 | 7 | 3.80 | 20 |
| The Design Journal | 12 | 9.43 | 46 | 13 | 1.39 | 6 | 5 | 5.89 | 29 | 14 | 2.03 | 10 |
| Design and Culture | 13 | 9.37 | 51 | 12 | 1.58 | 11 | 13 | 3.80 | 18 | 6 | 3.99 | 22 |
| Journal of Design Research | 14 | 9.18 | 47 | 10 | 1.77 | 11 | 14 | 3.61 | 18 | 10 | 3.23 | 16 |

[a] The number of respondents per region included in the table (Australasia, Europe and North America) does not add up to n = 316 since n = 4 respondents came from other world regions, see Table 1.

Still, when examining Table 4, the demographics of the editorial team (editors, assistant editors, associate editors) does seem to provide some additional insight into journal rankings according to geographic area, as suggested in the literature. For example, the Index of the *International Journal of Design*, with its editorial basis in Asia, and calculated by using solely Australasian respondents, placed it in the top-4, while the Index of this journal for European and North American respondents suggests a much lower rank position (12th position). European respondents on the other hand ranked *The Design Journal* – which has a predominantly UK-based editorial team- much higher than North American and Australasian respondents (the Index of European respondents placed the journal in the top-5 while in the other two regions its Index positioned the journal on the 13th position or lower). North American respondents ranked *Design and Culture* – which has a predominantly North American editorial team- in the Top-6, while the European and Australasian indices of *Design and Culture* resulted in a 13th and 12th position respectively. The differences between the regions also suggest a preference for specific sub fields of design along geographic lines. For example, in comparison to European and North American indices the Australasian Index of a computer-related journal (*Computer-Aided Design*) was much higher (resulting in a top-3 position versus a bottom-4 position), while rankings for ergonomics-related journals was lower (e.g. the journal *Ergonomics* was placed last according to the Australasian Index, while placed in the mid section of the list according to European and North American indices).

## 3.3 Journal ranking and respondent affiliation

As noted earlier, journal rankings may suffer from respondents' self-serving bias towards affiliated journals (journals in which the respondents have published and/or are in the editorial board). We checked whether affiliated and non-affiliated respondents made different quality ratings for the different journals by means of a Mann–Whitney test. When applying a Bonferroni correction, we found no statistical differences (at the $p < 0.0036$ level, two-tailed test) between the average rank position of affiliated and non-affiliated respondents (Table 5).

## 3.4 Journal ranking and academic background

As noted in the introduction, design researchers tend to come from a variety of backgrounds, rather than a single discipline. Based on their academic background, design researchers may hold disparate notions about the characteristics of strong research and about outlets for publishing their work. To examine this, we calculated Index, Popularity and ARPs for respondents with an academic background in a design-related field, in humanities, or in social and behavioral sciences (see Table 6). These proved to be the most common academic backgrounds in our sample (see Table 1). We also performed a Kruskal-Wallis test examining statistical differences in average rank positions. When applying a Bonferroni correction, we found that the differences

**Table 5 Journal affiliation bias**

| *Journal Title* | *Affiliated ARP (1)* | n | *Non-Affiliated ARP (2)* | n | *Difference (2)-(1)* | *p-value* |
|---|---|---|---|---|---|---|
| Applied Ergonomics | 2.83 | 36 | 2.78 | 23 | −0.05 | 0.65 |
| Computer-Aided Design | 2.37 | 27 | 3.19 | 21 | 0.82 | 0.07 |
| Design & Culture | 3.04 | 23 | 3.14 | 28 | 0.10 | 0.87 |
| Design Issues | 3.12 | 50 | 3.00 | 64 | −0.12 | 0.64 |
| Design Studies | 3.00 | 54 | 3.08 | 86 | 0.08 | 0.77 |
| Ergonomics | 3.03 | 34 | 3.00 | 18 | −0.03 | 0.94 |
| Human-Computer Interaction | 2.62 | 13 | 3.14 | 56 | 0.53 | 0.25 |
| Human Factors | 2.76 | 34 | 2.94 | 35 | 0.15 | 0.55 |
| International Journal of Design | 2.96 | 23 | 3.26 | 34 | 0.34 | 0.35 |
| Journal of Design History | 2.88 | 26 | 2.72 | 39 | −0.17 | 0.78 |
| Journal of Design Research | 2.90 | 10 | 2.92 | 37 | 0.02 | 0.96 |
| Journal of Engineering Design | 3.03 | 30 | 2.97 | 29 | −0.07 | 0.72 |
| Research in Engineering design | 3.26 | 31 | 3.43 | 28 | 0.17 | 0.85 |
| The Design Journal | 3.16 | 25 | 2.29 | 41 | −0.87 | 0.03 |

1 = best; 5 = good.Please note: columns 2 and 4 provide the quality metric 'average rank position' (ARP) given by affiliated and non-affiliated respondents. ARP is a measure that does not consider the number of respondents that actually selected and ranked the journal (see Section 2.4).

in average rankings between the three different academic backgrounds are significant (two-tailed tests) in the case of *Ergonomics* (Chi-square (2) = 14.557, $p < 0.001$) and *Research in Engineering Design* (Chi-square (2) = 25.117, $p < 0.000$). When comparing sets of two different types of academic backgrounds (humanities versus social and behavioral sciences; humanities versus design; design versus social and behavioral sciences) and after applying a Bonferroni correction, we found the differences in average rankings to be significant (two-tailed tests) in the case of:

*Applied Ergonomics* ($M_{\text{social}} = 2.37$, $M_{\text{humanities}}$ 4.0, Mann−Whitney test, $U = 839.50$, $p < 0.000$);

*Computer-Aided Design* ($M_{\text{design}} = 2.64$, $M_{\text{humanities}}$ 5.0, Mann−Whitney test, $U = 2787.00$, $p < 0.000$; $M_{\text{social}} = 4.0$, $M_{\text{humanities}}$ 5.0, Mann−Whitney test, $U = 1225.00$, $p < 0.000$; $M_{\text{design}} = 2.64$, $M_{\text{social}} = 4.0$, Mann−Whitney test, $U = 2728.50$, $p < 0.000$);

*Design and Culture* ($M_{\text{design}} = 3.4$, $M_{\text{humanities}}$ 2.8, Mann−Whitney test, $U = 1924.5$, $p < 0.000$; $M_{\text{social}} = 4.0$, $M_{\text{humanities}}$ 2.8, Mann−Whitney test, $U = 640.00$, $p < 0.000$);

*Design Issues* ($M_{\text{design}} = 3.11$, $M_{\text{humanities}} = 2.92$, Mann−Whitney test, $U = 1976.00$, $p < 0.000$; $M_{\text{social}} = 2.75$, $M_{\text{humanities}} = 2.92$, Mann−Whitney test, $U = 636.00$, $p < 0.000$);

*Ergonomics* ($M_{\text{social}} = 3.37$, $M_{\text{humanities}} = 1.0$, Mann−Whitney test, $U = 854.50$, $p < 0.000$);

**Table 6 Journal ranking based on academic background**

| *Rank* | *Design* (n = *145*) | | | *Humanities* (n = *50*) | | | *Social and behavioral* (n = *49*) | | |
|---|---|---|---|---|---|---|---|---|---|
| | *Journal* | *Index* | *Popularity* | *Journal* | *Index* | *Popularity* | *Journal* | *Index* | *Popularity* |
| 1 | Design Studies | 13.67 | 75 | Journal of Design History | 7.34 | 36 | Human Factors | 5.19 | 27 |
| 2 | Journal of Engineering Design | 8.73 | 46 | Design Issues | 6.84 | 37 | Applied Ergonomics | 4.37 | 19 |
| 3 | Design Issues | 8.67 | 44 | Design and Culture | 5.82 | 29 | Design Studies | 3.86 | 18 |
| 4 | Computer-Aided Design | 7.85 | 37 | Design Studies | 2.66 | 15 | Ergonomics | 3.42 | 17 |
| 5 | Research in Engineering Design | 7.59 | 44 | Journal of Design Research | 2.03 | 11 | Human-Computer Interaction | 3.23 | 22 |
| 6 | Human Factors | 5.52 | 27 | The Design Journal | 1.46 | 8 | Design Issues | 2.09 | 12 |
| 7 | The Design Journal | 5.51 | 27 | International Journal of Design | 1.08 | 7 | International Journal of Design | 1.52 | 9 |
| 8 | Applied Ergonomics | 5.32 | 27 | Human-Computer Interaction | 0.57 | 3 | Journal of Design Research | 1.39 | 8 |
| 9 | International Journal of Design | 5.06 | 27 | Applied Ergonomics | 0.38 | 3 | The Design Journal | 1.01 | 4 |
| 10 | Ergonomics | 4.75 | 26 | Journal of Engineering Design | 0.37 | 2 | Journal of Design History | 0.51 | 2 |
| 11 | Journal of Design History | 4.24 | 20 | Ergonomics | 0.32 | 2 | Design and Culture | 0.51 | 4 |
| 12 | Journal of Design Research | 3.99 | 20 | Research in Engineering Design | 0.19 | 2 | Journal of Engineering Design | 0.44 | 3 |
| 13 | Human-Computer Interaction | 3.86 | 20 | Computer-Aided Design | 0.06 | 1 | Research in Engineering Design | 0.44 | 2 |
| 14 | Design and Culture | 2.28 | 14 | Human Factors | 0.05 | 1 | Computer-Aided Design | 0.13 | 1 |

*Human-Computer Interaction* ($M_{social} = 3.68$, $M_{humanities} = 3.00$, Mann–Whitney test, $U = 741.00$, $p < 0.000$; $M_{design} = 2.95$, $M_{social} = 3.68$, Mann–Whitney test, $U = 2377.00$, $p < 0.000$);

*Human Factors* ($M_{social} = 2.96$, $M_{humanities} = 5.0$, Mann–Whitney test, $U = 585.50$, $p < 0.000$; $M_{design} = 2.77$, $M_{social} = 2.96$, Mann–Whitney test, $U = 2227.00$, $p < 0.000$);

*Journal of Design History* ($M_{design} = 2.65$, $M_{humanities} = 3.66$, Mann–Whitney test, $U = 1497.50$, $p < 0.000$; $M_{social} = 2.0$, $M_{humanities} = 3.66$, Mann–Whitney test, $U = 382.50$, $p < 0.000$);

*Journal of Engineering Design* ($M_{design} = 3.0$, $M_{humanities} = 2.0$, Mann–Whitney test, $U = 2620.00$, $p < 0.000$; $M_{design} = 3.0$, $M_{social} = 3.66$, Mann–Whitney test, $U = 2661.50$, $p < 0.001$);

*Research in Engineering Design* ($M_{design} = 3.27$, $M_{humanities} = 4.5$, Mann–Whitney test, $U = 2693.50$, $p < 0.000$; $M_{design} = 3.27$, $M_{social} = 2.5$, Mann–Whitney test, $U = 2602.00$, $p < 0.000$).

Also Table 6 suggests that there are considerable differences according to academic background. The three ergonomics-related journals are highly ranked by those with a social and behavioral background (*Human Factors*, *Applied Ergonomics* and *Ergonomics* are in the top-4) while those with a humanities background judge the quality of arts-inspired design journals highly, with *Journal of Design History* and *Design and Culture* placed in the top-3 position. Those with a design-related academic background place three general design journals in the top-3, with *Design Issues* shifting from the second to the third position, and *Journal of Engineering Design* from the 7th to the 2nd place, compared to Table 3, which presents the results without differentiation in academic background. While *Design Studies* and *Design Issues* are not in the top 2 compared to Table 2, they are still placed in the top-6 when differentiating according to academic background.

# 4 Conclusions

As is true for other academic fields, scientific career advancement in industrial design is strongly related to publication achievements. To measure and reward such achievements, universities and other research funding bodies often examine the prestige of the publishing journal rather than the intrinsic quality of the article itself. This is regrettable, but makes insight into the perceived quality or image of design journals of paramount importance. The primary objectives of this study were to identify a set of core journals relevant to industrial design research and to establish quality rankings of those design journals. To this end, we sent a worldwide online survey to editors and editorial boards

members of journals publishing regularly on design research. Based on the answers from 316 respondents, our findings are as follows.

*Design Studies* and *Design Issues* are perceived to be the best journals publishing articles related to the industrial design field. Overall, these two journals are considered by the vast majority of our sample as top tier, irrespective of the quality measure used (Popularity or Index), the respondents' geographic location and whether the respondents are affiliated or not with the journal. These two journals can be described as general design journals, publishing articles in design across the different design sub-disciplines. Our complete list of the top-14 journals (a list consisting of journals that were chosen in the top-5 by at least 15% of the sample) contains eight specialized journals that focus on a specific sub-field of design. Apparently, both general and specialized design journals are highly valued by design scholars.

We find our respondents did not appear to favor more or less those journals in which they are on the editorial board and/or journals in which they have published. Geographic location of the respondents and in particular the geographic location of the editorial team (editors, associate editors, editorial assistants) of a journal seems to influence journal preferences. Another important determinant of journal preference is academic background. Those respondents with an academic background in humanities seem to prefer arts-related design journals, those with a background in social and behavioral sciences seem to prefer ergonomics-related journals, while those with a design-related background seem to prefer in particular general design journals.

The multidisciplinary focus of design – with scholars coming from very diverse backgrounds – and the divergent research interests of design scholars makes a common understanding of high quality industrial design journals particularly difficult. Our sampling frame consisted of editorial board members and editors of journals that regularly publish papers on industrial design research. To construct this sampling frame we thus needed to select first the journals that publish regularly on industrial design research. To this end, we set some boundaries: we did not, for example, include architecture journals, nor did we include basic journals focusing on, for example, technical or social sciences in general rather than on industrial design. If we had set different boundaries, our results may have been different. For example, if we had defined our field of interest in somewhat broader terms, using terms such as innovation and new product development, our research would most probably have resulted in a list of journals similar to the one used by Linton and Thongpapanl (2004) in their citation analysis, with *Journal of Product Innovation Management* (included in our initial list of journals, see Appendix) in one of the top positions. And, if we had narrowed our view to, for example, ergonomics and human factors, our results would most probably have generated

a list similar to the citation analysis of Dul and Karwowski (2004), with the three ergonomics-focussed journals of our list in the top-3 positions.

With research and publication remaining a critical factor in promotion and tenure decisions, the results of the study could be a valuable guide to both the evaluators and those evaluated in decisions involving design faculty. Stiff (1998: 59) noted that it is hard for design researchers to question "conventional wisdom" about the need to publish considering that design is still in the process of becoming fully recognized as a legitimate scientific discipline, but that "[d]esign is too young a subject to be prematurely confined to places and patterns of publication". In this context it is interesting to note that even national funding institutions appear to recognize more and more the need to use different performance metrics for design research such as prototypes as evidence of the outcome of industrial design research rather than publications (see e.g. a recent report from the Royal Netherlands Academy of Arts and Sciences KNAW, 2010). However, valuing prototypes on academic merits seems as hard or may be even harder than valuing the quality of academic publications. Future research may provide more insight into how to evaluate the quality of prototypes.

Future research is also needed to examine whether design scholars, in the end, prefer to publish their research in design-specific journals or journals more directly linked to their educational background (for example, journals in psychology, anthropology, management or marketing) and why they have this preference. Our research results suggest that, to assess journal quality, and thus possible journal outlets, design scholars seem to value direct reputational analysis over indirect measures such as impact factor that are important in other fields. This may, of course, also be due to the fact that design is a young discipline with respect to journals and publishing patterns. Furthermore, most journals in the design field have relatively low impact – indeed, few are covered in SCI, SSCI, or even AHCI or in Scopus, and most journals in the field therefore have no measured impact factor. Future research may examine more in-depth whether impact factors indeed only have a limited influence on design scholars' publication strategies as suggested by our results.

Finally, our research is based on the opinions of design scholars and is thus subjective in nature. It would be interesting to do follow-up citation analyses to check whether citation-based rankings correspond with the perceptions the researchers themselves have about the quality of the design journals. Such studies will, however, be rather difficult since many of the relevant industrial design journals are not listed in the science or social science indices of Thomson Reuters nor in Scopus and citations are thus difficult to track. Still, citation analyses studies may be interesting to undertake in future research, in particular to establish which are leading design research schools and leading design researchers. Another worthwhile avenue might be to explore and contrast the

views of the practitioners in the design field, who were deliberately excluded from the current study.

## Acknowledgments

We express our gratitude to Janneke Blijlevens, Marielle Creusen, Agnes Tan, Bill Trikojus, and Marina Candi for their support in data gathering or data analysis. We also thank the two anonymous reviewers of *Design Studies* for their suggestions to improve this paper. All errors are the responsibility of the authors.

## Appendix
## List of journals

We asked respondents to select five journals that they considered being a top tier journal based on the journals' academic contribution to the industrial design discipline. We furthermore asked respondents to select from the alphabetically ordered list below but emphasized that they could add their own journals in spaces supplied at the bottom of the list. Furthermore, we emphasized that the respondents should select only journals with which they are personally familiar.

| | |
|---|---|
| 1. Applied Ergonomics | 21. International Journal of Product Development |
| 2. Creativity and Innovation Management | 22. International Journal of Sustainable Design |
| 3. CoDesign | 23. International Journal of Technology and Design Education |
| 4. Computer-Aided Design | 24. International Journal on Interactive Design and Manufacturing |
| 5. Design and Culture | 25. Journal of Design History |
| 6. Design Issues | 26. Journal of Design Research |
| 7. Design Management Journal | 27. Journal of Engineering Design |
| 8. Design Philosophy Papers | 28. Journal of Interior Design |
| 9. Design Research Quarterly | 29. Journal of Material Culture |
| 10. Design Studies | 30. Journal of Mechanical Design |
| 11. Digital Creativity | 31. Journal of Product Innovation Management |
| 12. Ergonomics | 32. Journal on Multimodal User Interfaces |
| 13. Ergonomics in Design | 33. Materials & Design |
| 14. Empirical Studies of the Arts | 34. Personal and Ubiquitous Computing |
| 15. Human-Computer Interaction | 35. Research in Engineering Design |
| 16. Human Factors | 36. The Design Journal |
| 17. Information Design Journal | 37. The Journal of Sustainable Product Design |
| 18. Interacting with Computers | 38. The Senses & Society |
| 19. International Journal of Art & Design Education | 39. Visible Language |
| 20. International Journal of Design | 40. Visual Communication |

## Notes

1. For examples of perception-based studies, see Lowe and Locke (2005), Brinn et al. (1996), and Brinn et al. (1998) on accounting and finance journals; Albrecht et al. (2010) on business ethics journals; Mylonopoulos and Theoharakis (2001) on Information Systems journals; Theoharakis and Hirst (2002) on marketing journals; Axarloglou and Theoharakis (2003) on economics journals; Rousseau (2008) on environmental and resource economics journals; Caligiuri (1999) on journals in international human resource management.

2. Brinn et al. (1996) suggest that these affiliated respondents are perhaps more knowledgeable in terms of academic quality than their less heavily involved counterparts.
3. However, in the study of Rousseau (2008) no statistically significant difference was found between evaluations of European researchers and the rest of the world.
4. In this study, Friedman led a team of researchers from Swinburne University of Technology and RMIT University in an internet-based survey. Rather than using predetermined journal lists, the study required respondents to freely recall their top design journals. Friedman et al. (2008) sent survey invitations to 1) the members and fellows of the Design Research Society (ca. 500), 2) the email bulletin of Design Studies Forum (ca. 400), 3) the Anthropology in Design research discussion forum (ca. 1500), 4) the JISCMAIL-based PhD-Design list (ca. 1400), 5) a broad selection of journal editors and editorial board members from a wide range of journals (ca. 200), and 6) members of the Australian Deans of the Built Environment and Design (ca. 17). The study yielded 240 completed survey forms that listed 173 different journal titles. The number of times a journal was listed by the various scholars was used to establish journal rankings.
5. Mylonopoulos and Theoharakis (2001) on IS journals had a response rate of 35.45% ($n = 979$); Rousseau (2008) on journals in the field of environmental and resource economics had a response rate of 29.7% ($n = 150$); Lowe and Locke (2005) on accounting journals had a response rate of 16% ($n = 149$); Donohue and Fox on journals in the field of decision and management sciences had a usable response rate of 14.3% ($n = 243$); Theoharakis and Hirst (2002) on marketing journals had a usable response rate of 37.6% ($n = 372$); and Axarloglou and Theoharakis (2003) on economics journals had a usable response rate of 20.2% ($n = 2103$).

## References


Albrecht, C., Thompson, J. A., Hoopes, J. L., & Rodrigo, P. (2010). Business ethics journal rankings as perceived by business ethics scholars. *Journal of Business Ethics*. Published online: 09 January 2010.

Axarloglou, K., & Theoharakis, V. (2003). Diversity in economics: an analysis of journal quality perceptions. *Journal of the European Economic Association, 1*(6), 1402–1423.

Barman, S., Tersine, R. J., & Buckley, M. R. (1991). An empirical assessment of the perceived relevance and quality of POM-related journals by academics. *Journal of Operations Management, 10*(2), 194–211.

Blevis, E., Lim, Y. K., & Stolterman, E. (2006). Regarding software as a material of design. In *Proceedings of Wonderground 2006*. Lisbon, Portugal: Design Research Society.

Brinn, T., Jones, M. J., & Pendlebury, M. (1996). UK accountants' perceptions of research journal quality. *Accounting and Business Research, 26*(3), 265–278.

Brinn, T., Jones, M. J., & Pendlebury, M. (1998). UK academic accountants' perceptions of research and publication practices. *British Accounting Review, 30*(4), 313–330.

Caligiuri, P. M. (1999). The ranking of scholarly journals in international human resource management. *The International Journal of Human Resource Management, 10*(3), 515–519.

Chen, L.-L. (2007). International journal of design: a step forward. *International Journal of Design, 1*(1), 1–2.

Coe, R. K., & Weinstock, I. (1983). Evaluating the finance journals: the department chairperson's perspective. *The Journal of Financial Research, VI, 4*, 345–349.

Coe, R., & Weinstock, I. (1984). Evaluating the management journals: a second look. *Academy of Management Journal, 27*(3), 660–666.

Donohue, J. M., & Fox, J. B. (2000). A multi-method evaluation of journals in the decision and management sciences by US academics. *Omega, 28*, 17–36.

DuBois, F. L., & Reeb, D. (2000). Ranking the international business journals. *Journal of International Business Studies, 31*(4), 689–704.
Dul, J., & Karwowski, W. (2004). An assessment system for rating scientific journals in the field of ergonomics and human factors. *Applied Ergonomics, 35*, 301–310.
Friedman, K. (2003). Theory construction in design research: criteria, approaches, and methods. *Design Studies, 24*, 507–522.
Friedman, K., Barron, D., Ferlazzo, S., Ivanka, T., Melles, G., & Yuille, J. (2008). Design research journal ranking study: preliminary results. Accessible online: http://researchbank.swinburne.edu.au/vital/access/manager/Repository/swin:10413.
Gomez-Meija, I., & Balkin, D. B. (1992). Determinants of faculty pay: an agency theory perspective. *Academy of Management Journal, 35*, 921–955.
Hawkins, R. G., Ritter, L. S., & Walter, I. (1973). What economists think of their journals. *Journal of Political Economy* 1017–1032.
KNAW. (2010). *Kwaliteitsbeoordeling in de ontwerpende en construerende wetenschappen: een systematisch kader*. [*Quality judgement in disciplines that design and construct: A systemic framework*]. only available in Dutch; accessible online: Amsterdam: KNAW. http://www.knaw.nl/Content/Internet_KNAW/publicaties/pdf/20101065.pdf.
Lesko, J. (1997). Industrial design at carnegie institute of technology, 1934–1967. *Journal of Design History, 10*, 269–292.
Leydesdorff, L., & Bornmann, L. (2011). Integrated impact indicators compared with impact factors: an alternative research design with policy implications. *Journal of theAmerican Society for Information Science and Technology*. doi:10.1002/asi.21609.
Linton, J. D., & Thongpapanl, T. (2004). Ranking the technology innovation management journals. *Journal of Product Innovation Management, 21*, 123–139.
Lowe, A., & Locke, J. (2005). Perceptions of journal quality and research paradigm: results of a web-based survey of British accounting academics. *Accounting, Organizations and Society, 30*, 81–98.
Lowry, P., Romans, D. B., & Curtis, A. (2004). Global journal prestige and supporting disciplines: a scientometric study of information systems journals. *Journal of the Association for Information Systems, 5*, 29–77.
Luukhonen, T. (1992). Is scientists' behaviour reward-seeking? *Scientometrics, 24*(2), 297–319.
Mason, P. M., Steagall, J. W., & Fabritius, M. M. (1997). Economics journal rankings by type of school: perceptions versus citations. *Quarterly Journal of Business and Economics, 37*(1), 69–79.
Mylonopoulos, N., & Theoharakis, V. (2001). Global perceptions of IS Journals. *Communications of the ACM, 44*(9), 29–33.
Rousseau, S. (2008). Journal evaluation by environmental and resource economists: a survey. *Scientometrics, 77*(2), 223–233.
Starbuck, W. H. (2011). What the numbers mean. URL. http://pages.stern.nyu.edu/~wstarbuc/whatmean.html. Accessed 2011 September 3.
Stiff, P. (1998). Publishing Design Research; miscounting quality. *The Design Journal, 1*(3), 51–60.
Theoharakis, V., & Hirst, A. (2002). Perceptual differences of marketing journals: a worldwide perspective. *Marketing Letters, 13*(4), 389–402.
Wijnberg, N. M., & Gemser, G. (2000). Adding value to innovation: impressionism and the transformation of the selection system in visual arts. *Organization Science, 11*, 323–329.