

# **External Reviewers' Influence on Citations of Articles Published in Pedagogical Business Journals: Holding Acceptance Rate Constant**

**Arshad Alam**  
**Prairie View A&M University**

**Reginald L. Bell**  
**Prairie View A&M University**

*An analysis of covariance with a 4 x 3 factorial design was used to compare the citation means of 560 articles published in 28 pedagogy journals. The independent variables were four business fields: accounting, economics and finance, general management, and marketing; three levels of external reviewers were used as the other independent variable. The dependent variable was the number of citations of articles. We found that the means differed on the main effects of four levels of business fields and three levels of external reviewers when acceptance rate was a covariate. The number of citations increase as the number of reviewers increases from one to two.*

## **INTRODUCTION**

In recent decades, there has been a proliferation of journals in all business fields. This is both a reflection of the amount of research being conducted as also of the pressure on members of the academia to publish for tenure requirement. Moreover, business schools are continually striving to find adequate ways to maintain their accreditation with the Association for the Advancement of Collegiate Schools of Business (AACSB) by justifying faculty qualifications. Scholarly Academic qualified faculty must publish intellectual contributions pertinent to the mission of the school. In AACSB accredited business schools which have teaching missions as their primary focus there is increased pressure on the faculty to publish a portion of their research in pedagogical journals. This has in recent decades contributed to a growth in the number of pedagogical publications in different business fields.

There is a good amount of literature that shows bias in the selection of articles business journals publish and that hierarchies exist based on Carnegie classifications of institutions within top journals in various fields (Bell & Chong, 2010; Chong & Bell, 2012; Oswald, 2008). Expert opinions are an important indicator of how a business journal is perceived and ranked (Mingers & Harzig, 2007). Stochastic models have shown the inevitable obsolescence and decline in the citation rate of an article over time (Mingers & Burrell, 2006). The key driver of articles' citations can be the management journal itself (Mingers & Xu, 2010).

Submissions to good quality journals are always peer reviewed or refereed since peer review is expected to serve as a quality check (Gorman, 2008). In other words it must be evaluated by an editor/an editorial panel or reviewed by a group of peers considered to be knowledgeable about the subject matter.

Weaknesses in the peer review system have been highlighted by many. External review may not be appropriate in cases for example where the study deals with something new for the reviewer may lack the necessary expertise (Armstrong, 1997). Furthermore, there may be a bias in editorial decision making which Miller (2006, p. 426) describes as “Dissensus.” When there is disagreement among the reviewers evaluating a paper the editor will adjudge the negative review as being more valid than a positive review, and this behavior might be at the center of the peer review problem. This is why the peer review process warrants further scrutiny in an attempt to balance tensions among authors, editors and referees (Bedeian, 2004). It causes delay in an article’s publication and potentially injects bias in the selection process.

Reviewers do not necessarily agree with one another (Cicchetti, 1991), and many of them spend less than adequate time and do not do quality reviews (Armstrong, 1997). Peters and Ceci (1982) conducted a fraud study. They submitted 12 already published articles, nine of which were papers they sent to the same highly regarded journals which had previously published that same paper. The papers, however, included fictitious names and affiliations. The paper were rejected by eight editors on the basis of negative reviews from 16 of 18 reviewers (p. 188). Despite the drawback of the review system the review system is an integral part of the acceptance process in all established journals and is in the interest of all parties- journals, reviewers and authors (Phaman, 2014). Authors generally find the reviewers’ suggestions to be reasonable (MacNealy, Speck & Clements, 1994) and it tends to improve quality through feedback; additionally, the competition to ensure acceptance by the reviewers motivates authors to produce their best work (Shatz, 1996).

As always in any research, the quality of articles published is of much greater importance than the number of articles published on any subject. Article quality is however, a nebulous and a debatable issue and for which no metric has been developed. Neither the journal in which it is published automatically guarantees quality nor does the quality of an article automatically ensures quality of a journal (Chow et al, 2007, Smith 2004). An article’s citations is an accepted measure of that article’s influence on the field since citations made by others is indicative of its influence on scholars in the field (Podsakoff et al 2005). In his famous February 5, 1676 letter to Robert Hooke, Isaac Newton made famous the words, “if I have seen further it is by standing on the shoulders of Giants”. Citations also enable authors to acknowledge the contributions of others to their own scholarship (Van Noorden, 2010). While “celebrity” authors appear to influence the number of citations of articles published by top journals (Bell, 2013; Fei, Chong, & Bell, 2015; Fei & Bell, 2013) it would be absurd to argue that a paper cited 5,000 times over a 10-year period is not having an influence on the field. To the contrary, it would be more appropriate to argue that a paper with 5000 citations is groundbreaking, perhaps seminal to a field.

Recently, Google Scholar has started to indicate an article’s most recent citations, the author’s h-index. There is now broad support from the academic community for the h-index—an h-index of 5 means an author has 5 articles cited at least 5 times each; Google Scholar is an earnest alternative to other types of indexes that measures a journal’s impact (Delgado-López-Cózar & Cabezas-Clavijo, 2013; Harzing, & Van Der Wal, 2009). Google Scholar is now a good source of data for academic institutions to rely on when compiling information on faculty productivity (Harzing, 2015; Harzing, & Van Der Wal, 2008; Harzing, & Van Der Wal, 2009).

If the number of citations are being used as a proxy for the quality of a published article and its contribution to a field of study then it is worthwhile to explore the relationship that may exist between citations and other measures of a journal’s acceptance process. Various factors have been identified by Seglen (1997) as positively impacting citations that include:

- *articles in the English language;*
- *generalist areas rather than specific applied disciplines;*
- *review articles rather than original research;*
- *cutting edge articles with a short lifespan;*
- *longer rather than shorter articles;*
- *and articles regarding established rather than emerging disciplines.*

Other studies have also identified factors affecting citations and though there are commonalities among them they tend to differ depending on the field of study. Importantly, the probability of being cited may depend on factors, many of which may be difficult to incorporate in a study. It may depend, for example, on a 'halo' effect which suggests that well recognized authors are more likely to be cited because of their name recognition than other less well known authors (Bell, 2013; Peters & Raan, 1994) and mediocre research receives much more attention when published in top journals (Starbuck, 2005); the perceived quality of journal *per se* in which an article is published may also have a bearing on the likelihood of it being cited. Being difficult to measure with any precision it is difficult to incorporate such factors in a study. Furthermore, the inclusion of factors which cannot be measured with precision is likely to lead to misidentification of the individual effect of well-defined factors such as External Reviews or Acceptance Rate, considering that most of the factors in citation studies are interrelated (Peters & Raan, 1994). Such factors are hence not included in this study.

The motivation of the study stems from the fact that, while there exists no theory of the editorial process, editors would surely like to maximize the impact of the articles published in their journals (Laband & Piette, 1994) and identification of factors affecting impact would clearly be relevant. Testing the empirical data (the actual citations of articles across pedagogic business journals) is a better measure than the prevailing circular arguments which dominate the reasoning of many who assert that a top journal is a proxy for the quality of an article because it is published in that top journal, or vice versa (Chow, Haddad, Singh & Wu, 2007; Smith, 2004). Macdonald and Kam (2008, p. 596) described the circular reasoning in journal (article) quality arguments the following way:

*Once a journal is on one list of quality journals, it is fairly likely to appear on other lists of quality journals. It is a quality journal because it is on a list of quality journals. Conversely, journals not on the lists are likely to remain excluded...One characteristic of quality journals in Management Studies is that authors from top business schools publish in them, but then, which are top business schools is often determined by publication in quality journals.*

### **Research Purpose**

Specifically, this study analyzes data from business journals with a teaching focus, from different disciplines, to analyze the nature of relationships that may exist between citations and other variables of interest such as External Reviews and Acceptance Rate, and to determine whether these relationships vary by discipline. The study was restricted to journals dedicated to pedagogy. Consequently, many of the factors identified by others, such as generalist versus applied disciplines, are not relevant for our study.

While there have been numerous citation studies in the last two decades thanks to availability of data, to the best of our knowledge there have been none so far devoted exclusively to pedagogical business journals. We must emphasize here that our study was not motivated to determine the quality of journal *per se* based on the number of citations of articles published in it but rather to see whether the process by which journals decide to accept or reject an article submitted for publication has any relationship on that article's citation rate and whether these relationships differ by fields of study.

### **DATA SOURCES AND DESCRIPTIVE STATISTICS**

A total of 28 publications were considered for analysis. Data was collected on nature of review i.e. review code (blind peer, double blind peer or editorial), field (accounting, economics, management and marketing), Acceptance Rate (as self-reported by journals), number of External Reviews (one, two and three or more reviewers) and the number of citations (Google data) for the period 1989 to 2010. The publication period was categorized in three categories: published in 1989 or before, 1990 to 1999 and 2000 and later. Table 1 provides a list of the publications with relevant citation statistics. Figure 1 provides the list of journals and mean of citations by business field.

**TABLE 1**  
**LIST OF PEDAGOGY JOURNALS AND CITATIONS RANKED BY MEANS**  
**WITH STANDARD DEVIATIONS**

Journal Title	Citations			
	Mean	N	Std. Deviation	% of Total Sum
Academy of Management Learning & Education	374.450	20	422.3069	24.0%
Economics of Education Review	352.300	20	137.3433	22.6%
Issues in Accounting Education	201.450	20	632.9288	12.9%
Journal of Management Education	136.400	20	77.3750	8.8%
Journal of Marketing Education	110.150	20	17.9569	7.1%
Journal of Accounting Education	93.550	20	39.9124	6.0%
Journal of Marketing for Higher Education	53.050	20	26.3348	3.4%
Journal of Economic Education, The	47.800	20	22.8924	3.1%
Marketing Education Review	31.800	20	15.8500	2.0%
Accounting Education: an international journal	30.600	20	9.2872	2.0%
Journal of Hospitality & Tourism Education	19.300	20	17.5202	1.2%
Journal of Financial Education	16.750	20	12.8468	1.1%
Journal of Leadership Education	12.000	20	11.2156	0.8%
Advances in Accounting Education	11.100	20	4.3878	0.7%
Academy of Educational Leadership Journal	10.500	20	4.4069	0.7%
Journal of Entrepreneurship Education	9.900	20	9.7165	0.6%
Journal of Strategic Management Education	7.750	20	11.5707	0.5%
Global Perspectives on Accounting Education	7.250	20	7.4189	0.5%
Journal of Business Ethics Education	6.400	20	6.3528	0.4%
Journal of Legal Studies Education	6.400	20	9.5057	0.4%
Journal for Advancement of Marketing Education	3.550	20	3.2683	0.2%
Australasian Journal of Economics Education	3.500	20	4.6848	0.2%
Journal of Economics and Finance Education	3.250	20	4.4233	0.2%
Journal of Economics and Economic Education Research	2.500	20	5.2666	0.2%
Advances in Financial Education	1.950	20	2.0384	0.1%
International Journal of Pluralism and Economics Education	1.900	20	3.1103	0.1%
Journal of Human Resources Education	1.250	20	3.5522	0.1%
Operations Management Education Review	1.100	20	3.1271	0.1%
Total	55.639	560	173.7875	100.0%

**FIGURE 1  
PEDAGOGY JOURNALS IN BUSINESS FIELDS WITH MEANS**

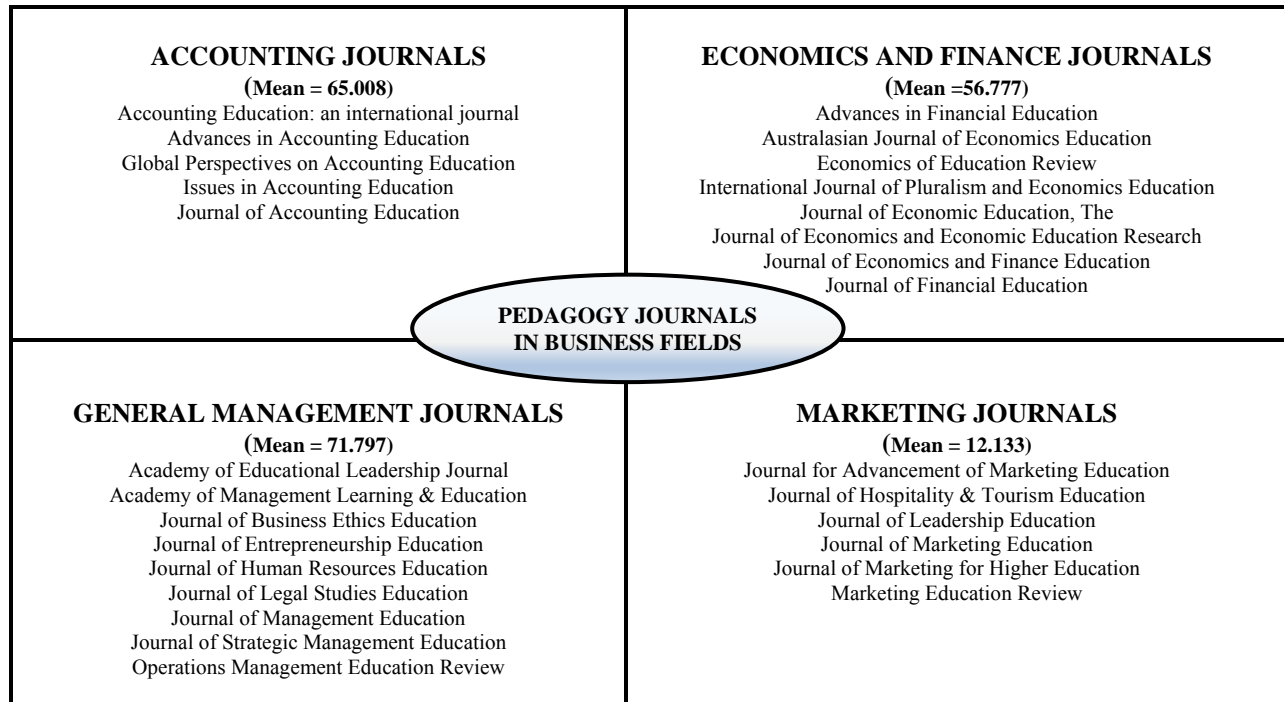


Table 2 provides frequency data relating to type of review policy, number of external reviewers and the respective fields of study.

**TABLE 2  
TYPE OF REVIEW POLICY, NUMBER OF EXTERNAL REVIEWERS AND THE  
RESPECTIVE FIELDS OF STUDY**

		Frequency	Percent	Cumulative Percent
Review Policy	Blind	480	85.7	85.7
	Blind Peer	20	3.6	89.3
	Double Blind Peer	60	10.7	100.0
	Total	560	100.0	
External Reviewers	One	80	14.3	14.3
	Two	260	46.4	60.7
	Three or More	220	39.3	100.0
	Total	560	100.0	
Field	Accounting	100	17.9	17.9
	Economics and Finance	160	28.6	46.4
	Management	200	35.7	82.1
	Marketing	100	17.9	100.0
	Total	560	100.0	

## HYPOTHESES AND DATA ANALYSIS

The cross tab analysis of External Reviews and Field (Table 3) indicates a significant difference between the count and expected count values which suggests a lack of independence between the two variables.

**TABLE 3**  
**EXTERNAL REVIEWERS \* FIELD CROSS-TABULATION**

			Fields				Total
			Accounting	Finance & Economics	Management	Marketing	
External Reviewers	One	Count	0	40	20	20	80
		Expected Count	14.3	22.9	28.6	14.3	80.0
		% within External Reviewers	0.0%	50.0%	25.0%	25.0%	100.0%
		% of Total	0.0%	7.1%	3.6%	3.6%	14.3%
	Two	Count	60	80	80	40	260
		Expected Count	46.4	74.3	92.9	46.4	260.0
		% within External Reviewers	23.1%	30.8%	30.8%	15.4%	100.0%
		% of Total	10.7%	14.3%	14.3%	7.1%	46.4%
	Three or More	Count	40	40	100	40	220
		Expected Count	39.3	62.9	78.6	39.3	220.0
		% within External Reviewers	18.2%	18.2%	45.5%	18.2%	100.0%
		% of Total	7.1%	7.1%	17.9%	7.1%	39.3%
Total		Count	100	160	200	100	560
		Expected Count	100.0	160.0	200.0	100.0	560.0
		% within External Reviewers	17.9%	28.6%	35.7%	17.9%	100.0%
		% of Total	17.9%	28.6%	35.7%	17.9%	100.0%

To test for the independence of External Reviews and Field we propose the following hypothesis.

*H<sub>1</sub>: External Reviews and Field are not independent.*

The appropriate test to examine for significant association between two categorical variables from a single population is the Chi Square test. Applying the Chi Square test for independence to the data resulted in a p-value of 0.0 (Table 4) which indicates that the number of External Reviews is not independent of the field or discipline i.e. the two variables are related. The relative frequency differs mostly between finance and economics (expected count 22.9, observed count 40) and management journals (expected count 78.6, observed count 100).

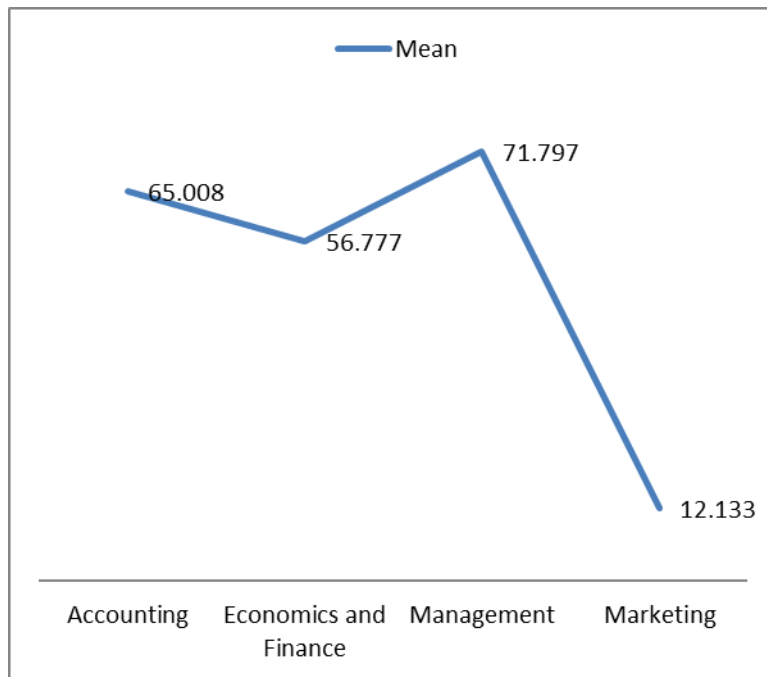
**TABLE 4  
CHI-SQUARE TESTS**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	53.259 <sup>a</sup>	6	0.000
Likelihood Ratio	65.778	6	0.000
Linear-by-Linear Association	0.098	1	0.755
N of Valid Cases	560		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.29.

Finance and economics journals account for 50% of the four fields using only one reviewer, as opposed to management journals which accounts for 45.5% of the four business fields that use three or more reviewers in the review process. What is more, notice in Figure 2, that the mean citations for management journals (71.797) is larger than the mean citations for finance and economics journals (56.777). This is an important indication that the number of reviewers in the review process merits further investigation.

**FIGURE 2  
MEAN CITATIONS FOR PEDAGOGY  
ARTICLES BY BUSINESS FIELD**



We next propose that Period and Field are not independent.

*H<sub>2</sub>: Period and Field are not independent.*

Results of the cross tab analysis (Table 5) and of the Chi Square test (Table 6) once again confirms the hypothesis and we conclude that the variables are related. The Pearson Chi Square test is significant,

with p-value of 0. The relative frequency differs mostly between accounting journal (expected count 23.6, observed count 37), finance and economics journals (expected count 37.7, observed count 45) and management journals (expected count 152.9, observed count 172). Therefore, accounting journals account for 28%, econ and finance journals account for 34.1% of articles published 1999 and before, respectively, among the four business fields. On the other hand, management journals account for 40.2% of the articles published 2000 or after, among all four business fields. This is an indication that the accounting and finance journals are older than management journals, and that these fields have had a pedagogic journals longer than the management field.

**TABLE 5**  
**PERIOD \* FIELD CROSS-TABULATION**

			Field				Total
			Accounting	Finance & Economics	Management	Marketing	
Period	1999 and Before	Count	37	45	28	22	132
		Expected Count	23.6	37.7	47.1	23.6	132.0
		% within Period	28.0%	34.1%	21.2%	16.7%	100.0%
		% of Total	6.6%	8.0%	5.0%	3.9%	23.6%
	2000 and After	Count	63	115	172	78	428
		Expected Count	76.4	122.3	152.9	76.4	428.0
		% within Period	14.7%	26.9%	40.2%	18.2%	100.0%
		% of Total	11.3%	20.5%	30.7%	13.9%	76.4%
Total	Count	100	160	200	100	560	
	Expected Count	100.0	160.0	200.0	100.0	560.0	
	% within Period	17.9%	28.6%	35.7%	17.9%	100.0%	
	% of Total	17.9%	28.6%	35.7%	17.9%	100.0%	

**TABLE 6**  
**CHI-SQUARE TESTS**

	Value	df	Asymp. Sig (2-sided)
Pearson Chi-Square	22.159 <sup>a</sup>	3	0.000
Likelihood Ratio	22.340	3	0.000
Linear-by-Linear Association	13.105	1	0.000
N of Valid Cases	560		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 23.57.			

A priori, we believe Acceptance Rate is linked to the quality of the published articles. The Acceptance Rate of a journal is suggestive of how stringent is the review process of the journal. A lower Acceptance Rate, indicating a rigorous quality check, is likely to lead to better quality articles which in turn would result in higher citations. We thus propose the following hypothesis.

*H<sub>3</sub>: Acceptance Rate and number of citations are negatively related.*

Tables 7 and 8 present the results of the ANOVA analysis which indicates that Acceptance Rate indeed has a negative effect on number of citations and is significant at 1 % level.



**TABLE 7**  
**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	917877.877	1	917877.877	32.081	0.000 <sup>b</sup>
	Residual	15965097.259	558	28611.285		
	Total	16882975.136	559			
a. Dependent Variable: Citations						
b. Predictors: (Constant), Acceptance Rate						

**TABLE 8**  
**COEFFICIENTS<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	141.248	16.719		8.448	0.000
	Acceptance Rate	-337.612	59.607	-.233	-5.664	0.000
a. Dependent Variable: Citations						

Data on number of citations by Field is reported in the Table 9 below followed by the non-significant Levene's test ( $> .05$ ) for homogeneity of variances (Table 10).

**TABLE 9**  
**CITATIONS BY FIELD**

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean
		Lower Bound				
Accounting		100	68.790	287.4550	28.7455	11.753
Economics and Finance		160	53.744	124.0124	9.8040	34.381
Management		200	56.615	174.4700	12.3369	32.287
Marketing		100	43.570	41.0900	4.1090	35.417
Total		560	55.639	173.7875	7.3439	41.214
Model	Fixed Effects			174.0873	7.3565	41.189
	Random Effects				7.3565 <sup>a</sup>	32.228 <sup>a</sup>
a. Warning: Between-component variance is negative. It was replaced by 0.0 in computing this random effects measure.						

**TABLE 10**  
**TEST OF HOMOGENEITY OF VARIANCES**

Levene Statistic	df1	df2	Sig.
2.116	3	556	0.097

The groups are independent based on the non-significant Levene's test, p-value of 0.097. Do the number of citations differ among fields? Considering that the study is limited to pedagogical journals of different field, we do not expect to see a significant difference in the number of citations by field. We therefore propose the following hypothesis.

*H<sub>4</sub>: Number of citations do not differ by field.*

The ANOVA results (Table 11) indicates the differences between groups i.e. the different fields is not significant, p-value of 0.783. Post Hoc test results corroborate the ANOVA findings where none of the group differences are significant. However, when we control for Acceptance Rate as a covariate then both Field and Acceptance Rate turn out to be significant at the 5 % level (Table 12). The result that citations differ by Field (discipline) once we control for other influencing variables would suggest that comparisons of citations across Fields for purposes of evaluation of intellectual contribution of authors is inappropriate.

**TABLE 11**  
**ANOVA**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	32626.187	3	10875.396	0.359	0.783
Within Groups	16850348.949	556	30306.383		
Total	16882975.136	559			

**TABLE 12**  
**TESTS OF BETWEEN-SUBJECTS EFFECTS**

Dependent Variable: Citations						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1141765.004 <sup>a</sup>	4	285441.251	10.064	0.000	0.068
Intercept	2242443.913	1	2242443.913	79.064	0.000	0.125
Acceptance Rate	1109138.817	1	1109138.817	39.106	0.000	0.066
Field	223887.127	3	74629.042	2.631	0.049	0.014
Error	15741210.131	555	28362.541			
Total	18616584.000	560				
Corrected Total	16882975.136	559				

a. R Squared = .068 (Adjusted R Squared = .061)

Next, we control for the covariate Acceptance Rate and estimate the marginal means which are reported in Table 13.

**TABLE 13**  
**ESTIMATES**

Dependent Variable: Citations				
Field	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Accounting	65.008 <sup>a</sup>	16.852	31.907	98.110
Economics & Finance	56.777 <sup>a</sup>	13.323	30.608	82.947
Management	71.797 <sup>a</sup>	12.153	47.925	95.670
Marketing	12.133 <sup>a</sup>	17.575	-22.390	46.655

a. Covariates appearing in the model are evaluated at the following values: Acceptance Rate = .2536.

Further, pairwise comparisons of the mean differences indicate that differences in Fields: marketing field differs from all the fields, but none of the other field differ from each other (Table 14). The F result of the Univariate test also confirms this (Table 15). Thus, differences exists only with reference to the Marketing discipline (Group 4); differences among the other groups, namely accounting, accounting & finance, and management are not significant.

**TABLE 14  
PAIRWISE COMPARISONS**

Dependent Variable: Citations						
(I) Field	(J) Field	Mean Difference (I-J)	Std. Error	Sig. <sup>b</sup>	95% Confidence Interval for Difference <sup>b</sup>	
					Lower Bound	Upper Bound
Accounting	Econ/finance	8.231	21.496	0.702	-33.992	50.455
	Management	-6.789	20.848	0.745	-47.739	34.161
	Marketing	52.876*	24.224	0.029	5.294	100.458
Economics & Finance	Accounting	-8.231	21.496	0.702	-50.455	33.992
	Management	-15.020	17.968	0.404	-50.314	20.274
	Marketing	44.645*	22.165	0.044	1.108	88.182
Management	Accounting	6.789	20.848	0.745	-34.161	47.739
	Econ/finance	15.020	17.968	0.404	-20.274	50.314
	Marketing	59.665*	21.932	0.007	16.585	102.745
Marketing	Accounting	-52.876*	24.224	0.029	-100.458	-5.294
	Econ/finance	-44.645*	22.165	0.044	-88.182	-1.108
	Management	-59.665*	21.932	0.007	-102.745	-16.585

Based on estimated marginal means  
 \*. The mean difference is significant at the .05 level.  
 b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

**TABLE 15  
UNIVARIATE TESTS**

Dependent Variable: Citations						
	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Contrast	223887.127	3	74629.042	2.631	0.049	0.014
Error	15741210.131	555	28362.541			

The F tests the effect of Field.  
 This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

We next examine whether the number of citations differ by the number of External Reviews. As mentioned in the previous section external reviewers add value to the quality of the article by providing critical feedback to the authors. In the selection of the articles, editors depend on the advice of the external reviewers (Coronel & Opthof, 1999). A priori we believe therefore that greater number of reviews would positively impact the quality of the published article and hence the number of citations. We propose therefore the following hypothesis.

*H<sub>5</sub>: Number of External Reviews positively affects the number of citations.*

Tables 16 through 18 present the results of the analysis which indicate that the differences in citations based on the number of reviewers are significant.

**TABLE 16  
ESTIMATES**

Dependent Variable: Citations				
External Reviewers	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
One	9.775	19.335	-28.203	47.753
Two	56.146	10.725	35.080	77.212
Three or more	71.718	11.659	48.817	94.620

**TABLE 17  
PAIRWISE COMPARISONS**

Dependent Variable: Citations						
(I) External Reviewers	(J) External Reviewers	Mean Difference (I-J)	Std. Error	Sig. <sup>b</sup>	95% Confidence Interval for Difference <sup>b</sup>	
					Lower Bound	Upper Bound
One	Two	-46.371*	22.110	0.036	-89.800	-2.942
	Three or more	-61.943*	22.578	0.006	-106.292	-17.595
Two	One	46.371*	22.110	0.036	2.942	89.800
	Three or more	-15.572	15.842	0.326	-46.689	15.545
Three or more	One	61.943*	22.578	0.006	17.595	106.292
	Two	15.572	15.842	0.326	-15.545	46.689

Based on estimated marginal means  
 \*. The mean difference is significant at the .05 level.  
 b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

**TABLE 18  
UNIVARIATE TESTS**

Dependent Variable: Citations						
	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Contrast	225226.212	2	112613.106	3.766	0.024	0.013
Error	16657748.923	557	29906.192			

The F tests the effect of External Reviewers.  
 This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

Further, pairwise comparisons (Table 17) suggest that the difference between number of citations from one reviewer process and that from two and three or more reviewer processes is significant; the difference in citations between a two reviewer and three or more reviewer process is however, not significant for pedagogic business journals. It appears that two External Reviews serves as a threshold value. Having more than two External Reviews does not add to the number of citations but having less than two has a bearing on number of citations.

Carrying the analysis further we add Acceptance Rate as a covariate i.e., we wished to see if External Review is significant after removing the effect of Acceptance Rate. The results are given in Table 19. Number of External Reviews turns out to be significant when Acceptance Rate is used as covariate. This suggests that both these factors uniquely affect the citation rate.

**TABLE 19**  
**TESTS OF BETWEEN-SUBJECTS EFFECTS**

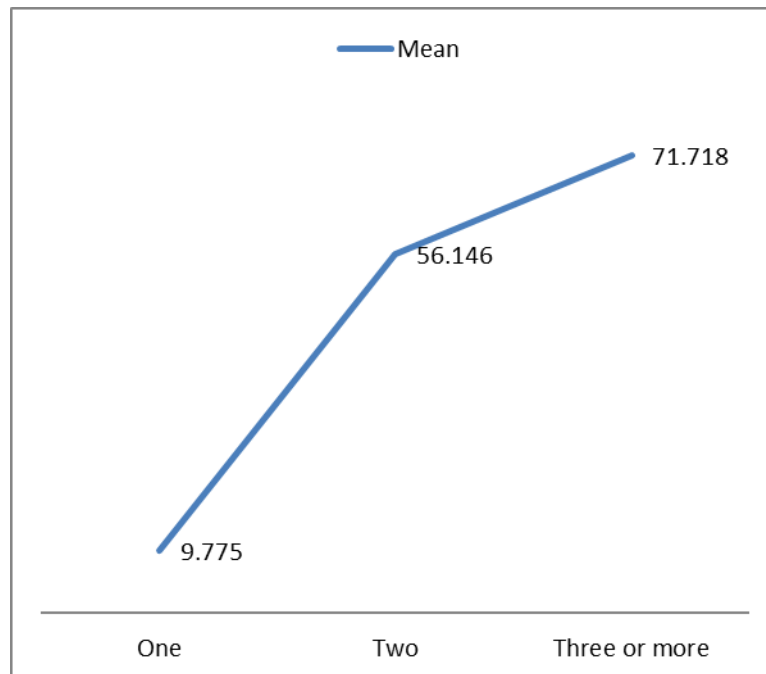
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Observed Power <sup>b</sup>
Corrected Model	1135458.380 <sup>a</sup>	3	378486.127	13.363	0.000	0.067	1.000
Intercept	1661798.535	1	1661798.535	58.673	0.000	0.095	1.000
Acceptance Rate	910232.168	1	910232.168	32.138	0.000	0.055	1.000
External Reviewers	217580.503	2	108790.251	3.841	0.022	0.014	.696
Error	15747516.756	556	28322.872				Observed Power <sup>b</sup>
Total	18616584.000	560					1.000
Corrected Total	16882975.136	559					

a. R Squared = 0.067 (Adjusted R Squared = 0.062)

b. Computed using alpha = 0.05; Dependent Variable: Citations

Figure 3 presents the plot of the estimated Marginal Means of citations against the External Reviews with Acceptance Rate as a covariate. It is clearly evident that increasing the External Reviews from one to two clearly increases the number of citations while the increase in citations resulting from an increase of External Reviews from two to three is marginal and not significant (refer to aforementioned Table 17).

**FIGURE 3**  
**MEAN CITATIONS FOR PEDAGOGY**  
**ARTICLES BY EXTERNAL REVIEWERS**



## DISCUSSION

Citations *per se* do not represent the “truth embodied in an article or author” but is a measure of the ability of the article to influence the scholarship in the field (Johnson, 1997). There is a difference, however, between excellence and influence and the relationship between the two is uncertain (Beed & Beed, 1996). Further, it is plausible, that other authors may have cited an article only to criticize its arguments (Ayres & Vars, 2000). Citations can thus never be projected as an overall objective measure of quality. Nevertheless, to the extent that citation count is a measure of quality, it has become the most common proxy for quality.

The aim of the study was to determine if there were meaningful differences among the citations of published articles in pedagogical business journals. While numerous factors may have a bearing on the likelihood of an article being cited, this study was limited to analyzing the impact of a few factors, namely, the period of its publication, the Field or discipline of study, Acceptance Rate, and number of External Reviews.

To summarize, we found that number of External Reviews is not independent of the Field or discipline i.e., the discipline has a bearing on the number of External Reviews. In other words, some disciplines tend to employ more number of reviews. The number of citations, however, does not differ by Field when no other factors are taken into consideration. This is as expected and hypothesized since the study is limited to journals of pedagogy. We may make a conjecture here that this finding may not hold true if all journals, and not only pedagogical journals, are considered. Interestingly, when we control for Acceptance Rate as a covariate then both the Field (marketing differs from the other fields) and Acceptance Rate turn out to be significant at the 5 % level. The inference is clear-comparisons of citations across Fields are inappropriate.

Acceptance Rate by itself has an effect on number of citations and is significant at 1 % level. This is only to be accepted since a lower acceptance rate implies a more demanding approval process leading to higher quality of articles being published and a resultant increase in citations.

More important however, is the finding with respect to the number of external reviews which has practical implications for journal editors. As the pressure to publish increases, editors are faced with ever increasing submissions. Would adding more reviewers lead to better article quality and higher citations of published articles? Editors are however, also under time constraint and more reviews would likely delay the approval process. As hypothesized, number of External Reviews has a significant effect on citations when acceptance rate is held constant. However, pairwise comparisons suggest that more than two External Reviews does not add to the number of citations but having less than two has a bearing on number of citations. Review by two peers thus, seems to be sufficient to ensure ‘quality’ (as judged by citations) of published articles. It is clear therefore, that the pedagogic journals in all the business fields would prosper from a two-reviewer review process rather than using just one reviewer. In others words, “two heads are better than one.”

### Limitations

A possible limitation of the study is that an article’s citations may vary for a variety of reasons. Citation density, i.e., the average number of references cited per article, is likely to vary significantly across disciplines. Some disciplines by the very nature of their field lend themselves to more citations than others. Additionally, if the existing pool of articles is larger in a particular field it can also lead to more citations. Future researchers conducting similar studies may try to take this into account by normalizing the data as suggested by Garfield (1999). This may not be a serious limitation to our study however, since our dataset is restricted to pedagogical journals.

Another potential limitation is the implicit assumption of all studies trying to study the impact of External Reviews on citations is that the review is objective. But the review process can never be considered fully objective. In spite of the blind process, bias may be injected by a reviewer being able to identify the author (Laband & Piette, 1994). There may be other unintended biases (Stanley, 2007) and to that extent the validity of any findings are affected. Finally, it bears noting that no review process can

ensure quality. As pointed out by (Shugan, 2007) many great discoveries were initially rejected and the review process did not safeguard against faulty research being published.

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