A Quantitative Analysis of MIS Faculty Compensation

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2004
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Making

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Information Systems

IS-5 Model Testing in IS Research
Saturday, Nov. 20, 10:00-11:30 am Wellesley, 3rd Floor
Session Facilitators: Prashant Palvia (University of North Carolina - Greensboro)

Improving the Performance of Branch and Bound Clustering Algorithm
Research Abstract
Chun Hung Cheng (Chinese University of Hong Kong)

The original cluster identification approach is the optimal approach to cluster a 0-1 matrix that is perfectly separable. However, it cannot decompose partially separable matrices. Previous efforts made use of a branch and bound framework to help cluster identification algorithms decompose these partially separable matrices. Although the branch and bound scheme is effective, these existing algorithms may still produce undesirable clustering solutions. We discuss limitations of prior models.

Testing an Extended Model of IT Acceptance in the Chinese Culture

Refereed Research Paper
En-Mao (University of Wisconsin-Milwaukee), Prashant Palvia (University of North Carolina - Greensboro)

With globalization, it is important to understand IT adoption in other cultures. To enrich the understanding of IT acceptance, we extended a U.S.-based research model to a different culture, China. Data collected via a cross-sectional survey of e-mail users in 30 Chinese organizations was used to validate the model.

Extreme Programming (XP) Practices Under Review: The Case for Test Driven Development

Refereed Research Paper
Thomas Cohn (Managed Health Care Associates), Ravi Paul (East Carolina University)

Extreme Programming (XP) is an agile software development methodology that was created to deal with rapidly changing requirements. This article reports on the results of a study in progress to evaluate and validate the effectiveness of a core XP principle called Test Driven Development (TDD). We also present a set of test development best practices gleaned from this project.

Partial Least Squares Validation of a Formative Structural Equation Model of Information Quality
Research Abstract
Matthew W. Bovee (University of Vermont)

Using partial least squares analysis and survey data from health care provider claims processing this research validates a formative model of information quality that addresses theoretical and conceptual problems with prior models. Results support the model for both information consumers and suppliers, and suggest well-accepted constructs are context or domain-specific.

IS-6 IS Education and Academia Issues
Saturday, Nov. 20, 10:00-11:30 am Suffolk, 3rd Floor
Session Facilitators: Jon Blue (Virginia Commonwealth University)

A Quantitative Analysis of MIS Faculty Compensation

Refereed Research Paper
Thomas J. Tribunella (Rochester Institute of Technology), Pam M. Neely (Rochester Institute of Technology)

This study examines data collected from the Association for Information Systems 2003 and 2004 MIS Salary Surveys. The relationship between compensation and its possible determinants such as faculty research
A QUANTITATIVE ANALYSIS OF MIS FACULTY COMPENSATION

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ABSTRACT

This study examines data collected from the Association for Information Systems 2003 and 2004 MIS Salary Surveys. The relationships between compensation and its possible determinants such as faculty research productivity and school teaching load are analyzed. We find that compensation is significantly correlated with faculty profiles as well as school profiles.

Keywords: Management Information Systems, Compensation

INTRODUCTION

This study examines compensation, rank and publication data collected from individuals who completed the 2003-2004 and 2004-2005 MIS salary surveys at the Association for Information Systems (AIS) Web site [1]. The relationships among rank, compensation and research productivity gleaned from this data could supply valuable insight during promotion, tenure and compensation decisions. In addition, information related to institutional attributes such as accreditation, location and teaching load are also included in the analysis. The results of this study could benefit administrators as well as professors that teach and research in the area of MIS.

LITERATURE REVIEW AND CONTRIBUTIONS OF THIS STUDY

Research related to the determinants of MIS faculty salaries is lacking. However, outside the field of MIS, a number of articles address the area of faculty compensation and productivity. Determinants of faculty salaries [3] and rank [7] as well as the value of journal articles published [12] and citations [5] have been the subject of analysis. For example, Swidler and Goldreuer [10] reported that a professor’s first published article in a top finance journal has a net present value between $19,493 and $33,754. In another example, Diamond [5] concluded that the marginal compensation value of a citation ranges between $50 and $1,300. Delorme, Hill, and Wood [4] took this line of research one step further by conducting a study to analyze quantitative methods of determining faculty salaries. In addition, the earnings and promotion of female faculty has been studied [6].

Much research has been published related to compensation in major academic fields such as finance [10], accounting information systems [11] and economics [13], [9]. Factors which are difficult to control such as congeniality, teaching quality, service to the institution, and journal quality will enter the promotion and compensation process and complicate the analysis [12]. However, some studies have included teaching performance in their analysis [8], [14]. It is unclear whether the factors discussed in these articles are relevant for predicting salaries for
newly minted PhD's or for those individuals who are changing academic institutions. Tuckman and Leahey [12] reported that publications provide diminishing returns and this may explain why many senior faculty members experience a reduction in their research productivity. Furthermore, knowledge of an individual's past publication record is an unreliable predictor of future productivity [15].

Even though much research has been published related to compensation in some academic fields, little attention has been given to the area of MIS. Conspicuously absent from the literature are in-depth studies of MIS faculty compensation and its relationship to determinants such as research productivity and university attributes. Since this is the first study of the determinants of MIS professor compensation it will help administrators, such as department chairs and deans, allocate scarce resources to faculty. It will aid decision processes related to evaluating MIS faculty member salaries by reporting market based determinants. In addition, it may supply information to faculty to help them prioritize their time and manage their careers. Finally, the results may make a contribution to finding a compensation model that is generalizable to other academic fields.

METHODS

The survey was designed and is maintained by Dennis Galletta at the University of Pennsylvania for the Association for Information Systems (AIS). Participants could submit data anonymously or non-anonymously at the AIS Web site. The survey was accompanied by a privacy statement which stated that participant identities will not be revealed. Non-anonymous data was encouraged because some administrators will discount the validity of anonymous data. The respondents were asked to provide compensation information, experience, publications and faculty rank. Respondents were also asked to supply school and demographic information. In this study, compensation is measured in terms of cash salary. Accordingly, employee benefits, taxes, union contracts, grants, consulting, extra service, and other variables were not included in the compensation amount.

The sample represents the results of the 2003-2004 and 2004-2005 salary surveys at the Association for Information Systems Web site [1]. This survey was administered online and only new faculty members or faculty members who changed jobs in the 2003-2005 academic years participated in the study. The respondents self selected to participate in the survey. Therefore, a possible weakness of this study is self selection bias. Those who chose to participate in the survey may not be representative of the population which we wish to make inferences. In addition, the respondents may have given false or misleading information. To mitigate this problem we compared the survey average salary with the average salary reported by the AACSB (Association to Advance Collegiate Schools of Business) [2]. In addition, the reliability of the AIS data is increased since 45% of the respondents revealed their identities.

RESULTS, DESCRIPTIVE STATISTICS AND REGRESSION MODELS

We collected data from 65 faculty members who had participated in the survey. The respondents represented the diversity of the population in many respects. Descriptive statistics of schools and respondents are displayed below in Table 1.
After the data was collected, it was coded, entered into SPSS (statistical software package) and analyzed. Table 1 shows us that 95% of the respondents were from nationally or internationally accredited schools (such as AACSB accreditation). Ninety-four percent of the respondents were from the United States and six percent of the professors are from non-US institutions.

As seen in Table 1, 84% of the respondents have earned a Ph. D. or were ABD (All But Dissertation) in a doctoral program. Eighty-two percent of the respondents were either new assistant professors or assistant professors who were switching jobs. Five percent of the faculty held the rank of Associate Professor and five percent were Full Professors. Approximately 59%
of the respondents were inexperienced faculty with three years or less of full time teaching experience. Our sample produced an average overall MIS faculty salary of $91,790 which is slightly higher than the AACSB average of $88,325 for new hires [2].

Many factors included in the survey were suspected to have impacts on faculty compensation. A bivariate correlation test was conducted between the compensation and all possible factors collected by the survey. Table 2 shows factors that have significant Pearson's correlations with faculty compensation. Among these factors, we see that school characteristics such as summer support, research budget, moving support, course load, tenure requirements, and location correlate significantly to compensation. In addition, professor profile factors which include degrees, publications, rank, and teaching experience also are correlated with compensation.

### TABLE 2

<table>
<thead>
<tr>
<th>Factor Description</th>
<th>0.01 Level</th>
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<th>0.01 Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years Teaching</td>
<td>0.401</td>
<td>Moving Support</td>
<td>0.386</td>
</tr>
<tr>
<td>Top Tier Journal Publications</td>
<td>0.539</td>
<td>Course Load</td>
<td>-0.485</td>
</tr>
<tr>
<td>Other Refereed Articles</td>
<td>0.556</td>
<td>Position</td>
<td>0.610</td>
</tr>
<tr>
<td>Total Articles</td>
<td>0.540</td>
<td>USA or Foreign</td>
<td>0.518</td>
</tr>
<tr>
<td>Summer Support Per Year</td>
<td>0.534</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years of Summer Support</td>
<td>0.616</td>
<td>PhD: Yes or No</td>
<td>0.271</td>
</tr>
<tr>
<td>Research Budget</td>
<td>0.378</td>
<td>Tenure Requirements</td>
<td>0.300</td>
</tr>
</tbody>
</table>

After inspecting the bivariate relationship of each factor and the faculty compensation, a function listed as Equation 1 was developed. Equation 1 includes the multivariate contribution of these factors towards faculty compensation and is used to analyze the joint impacts of these factors. Those variables were entered into a multivariate regression model following the step-wise sequence. Furthermore, the model residuals were analyzed to examine the fitness of the model.

\[ Y = \sum_{i=1}^{m} \beta_{S_i} X_{S_i} + \sum_{j=1}^{n} \beta_{P_j} X_{P_j} \]  

(1)

Where:

- \( Y \) = Faculty compensation
- \( X_{S_i} \)'s = School factors
- \( X_{P_j} \)'s = Professor profile factors

While many factors are tested for entering the model, only factors with significant (p < .05) impacts are included. The linear regression model that was considered a best-fit in representing Equation 1 was found via least square estimation. The resulting multiple regression model is displayed below as Equation 2.

\[ Y = \beta_0 + \beta_{S_1} X_{S_1} + \beta_{S_2} X_{S_2} + \beta_{S_3} X_{S_3} + \beta_{P_1} X_{P_1} + \beta_{P_2} X_{P_2} \]  

(2)
Where:

\( X_{s1} \) = Course load per year in course sections
\( X_{s2} \) = Summer support per year in dollars
\( X_{s3} \) = Research budget per year in dollars
\( X_{p1} \) = 1, if the respondent is an Instructor; 2, if the respondent is an assistant professor; 3, if the respondent is an associate professor; 4, if the respondent is a full professor or department chair
\( X_{p2} \) = Number of journal articles published by the respondent

From the regression results summarized in Table 3, we first see that five factors are significant in explaining the variation in faculty compensation. An examination of school-related factors reveals that course teaching load has a negative impact on the faculty compensation by approximately $2,374 per course section. The reason could be that teaching schools, where higher teaching loads are required, pay lower compensation than the research schools where lower teaching loads are the norm. Accordingly, schools that offer higher summer support and research support offer higher salaries.

### TABLE 3

Regression Factors Explaining Variance in Compensation

<table>
<thead>
<tr>
<th>Regression Model Factor</th>
<th>Description of Factor</th>
<th>Estimated Coefficient</th>
<th>Standard Error</th>
<th>t-test</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \beta_0 )</td>
<td>Constant</td>
<td>69,478</td>
<td>7,484</td>
<td>9.283</td>
<td>.000</td>
</tr>
<tr>
<td>( \beta_{s1} )</td>
<td>Course Load</td>
<td>-2,374</td>
<td>376</td>
<td>-6.317</td>
<td>.000</td>
</tr>
<tr>
<td>( \beta_{s2} )</td>
<td>Summer Support Per Year</td>
<td>.647</td>
<td>.162</td>
<td>3.981</td>
<td>.001</td>
</tr>
<tr>
<td>( \beta_{s3} )</td>
<td>Research Budget</td>
<td>2,104</td>
<td>.663</td>
<td>3.175</td>
<td>.004</td>
</tr>
<tr>
<td>( \beta_{p1} )</td>
<td>Position</td>
<td>10,546</td>
<td>3507</td>
<td>3.007</td>
<td>.006</td>
</tr>
<tr>
<td>( \beta_{p2} )</td>
<td>Total Articles</td>
<td>686</td>
<td>267</td>
<td>2.571</td>
<td>.017</td>
</tr>
</tbody>
</table>

Besides the three factors from schools, the remaining significant factors are from professors' profiles. Professors' scholarly outputs play an important role in determining their compensation. According to the regression results, each published journal article increases the author's annual compensation by $686 per year. Although this may seem to be a relatively small increment, the accumulated sum over a professor's life-time career can be substantial. Swidler and Goldreuter [10] have applied this concept in the field of finance by estimating the total net present value of an article in terms of professor compensation. Professors with all ranks are present in our data and we found that rank plays a significant role in the determination of salary. Finally, the overall model produces an r-square of .899 and an adjusted r-square of .886 which is significant at the .0001 level. Therefore, the model accounts for 88.6% of the variation in MIS faculty compensation. These results are limited to new faculty members or faculty members who recently changed jobs.
CONCLUSION

With the AACSB promoting clearer personnel policies we should search for better ways to quantify and measure the productivity of professors. This model could be used to make recommendations to university administrators regarding how to compensate MIS faculty. It can augment vague qualitative inputs with a quantitative model for salary determination and promotion. It also provides guidance to MIS faculty regarding career management and how to increase salary. Faculty should understand their value so they can negotiate a realistic compensation package. Rational and efficient faculty compensation can be an important variable for attracting qualified individuals to academic professions.

REFERENCES