Co-Authorship Network Analysis in Accounting Discipline

Summary at a glance

This study attempts to explore co-authorship structures in the accounting discipline by social network analysis**.** The findings indicate that the proportion of multi-author papers has increased over time while the trend away from sole-authorship has continued. The network indicators and visualizations reflect that accounting research manifests a small world property.

Abstract

The purpose of this study is to explore co-authorship structures in the accounting discipline by social network analysis. For this purpose, we hand-collected the authorship data of 10,863 papers published in 22 accounting journals listed on the Web of Science for the period 2000–2016. The findings indicate that the proportion of multi-author papers has increased over time while the trend away from sole-authorship has continued. The network indicators and visualizations reflect that accounting research manifests a small world property. Despite the large network size, a high number of ties among nodes, the size of giant components and a high clustering coefficient all support this inference. We hope that emphasis on collaboration metrics motivates and encourages researchers to engage with other scholars both local and abroad. Furthermore, the development of research networks in the analysis period indicates that the trend is aligning towards more collaboration; thus, being part of a team or team-making is key to integration with other scholars.

Keywords authorship, co-authorship, network, accounting

1. Introduction

Academics publish scholarly work for their own benefit in the form of promotion, tenure, increased pay, professional growth, and personal satisfaction (Englebrecht et al. 2008b). Furthermore, in many academic institutions salary increases and promotions are granted based upon the performance of a faculty member, which is generally measured by the number of articles he or she publishes in scholarly journals (Bonner et al. 2006). Academics face mounting pressure from university management to increase their research efforts in addition to their teaching and administrative duties (Tucker et al. 2016). Therefore, most faculty members are likely to expand their research productivity to respond to pressures from university management and achieve promotion, tenure, and academic reputation. Scholarly journals, among other channels, play a fundamental role in the dissemination of academic work (Merigó and Yang

2017). Therefore, past accounting literature was systematically analysed from several perspectives such as topicality (Prather-Kinsey and Rueschhoff 2004; Oler et al. 2010; Oler et al. 2016), research productivity of institutions and authors (Henry and Burch 1974; Heck and Bremser 1986; Chung et al. 1992; Carmona et al. 1999; Hasselback et al. 2003; Chan et al. 2005; Chan et al. 2006; Chan et al. 2007; Englebrecht et al. 2008a; Gaunt 2014), accounting journal rankings (Ballas and Theoharakis 2003; Beattie and Goodacre 2006; Bonner et al. 2006; Cook et al. 2010; Chan et al. 2012) and so on. One focus of the prior literature was identification of authorship patterns and the extent of collaboration.

Contrary to the natural sciences, in social sciences co-authorship of four or more people is not common, as proven by previous studies (Nathan et al. 1998; Acedo et al. 2006). Indeed, scholarly papers written by more than one author were rare in management sciences and accounting during the first half of the twentieth century, however, the situation changed significantly in the second half of the century (Acedo et al. 2006). Past studies also implied that multi-authorship was on the rise in accounting and other business disciplines (Anderson 2002; Prather-Kinsey and Rueschhoff 2004; Acedo et al. 2006; Englebrecht et al.2008b; Chan et al. 2009; Cantor et al. 2010; Fülbier and Weller 2011; Gaunt 2014; Koseoglu 2016; Andrikopoulos and Kostaris 2017; Lohmann and Eulerich 2017). The analysis of co-authorship networks in the accounting field has become important in order to understand the progress in developing collaborations among researchers. Accordingly, the topic of co-authorship within accounting and non-accounting business journals has generated considerable interest amongst academics (Englebrecht et al. 2008b). Although there is an increasing trend towards co-authorship in accounting research, there is still a scarcity of co-authorship analyses in this field (Fleischman and Schuele 2009). Therefore the objective of this paper is to explore authorship and co-authorship patterns in 22 accounting journals over the period 2000 to 2016. In the exploration of co-authorship structures, we will follow a social network approach and track several metrics such as number of nodes, ties, clustering coefficient, degree centrality, betweenness centrality, density, average distance and so on. These metrics will lead us to examine whether the accounting discipline shows symptoms of the small-world network property or not. In other words, the metrics will indicate whether the network is cohesive and integrated or fragmented and scattered. Finally, prior studies conducted on a limited number of journals recommended expansion of their sample by incorporating a larger number of journals to examine whether broader networks confirm their findings and to be more reflective of the internationalization of the accounting discipline (Endenich and Trapp 2016; Andrikopoulos and Kostaris 2017).

With this study, we attempt to respond to the following three research questions: first, we investigate *who* are the prolific authors with respect to research productivity, degree centrality and betweenness centrality of the accounting discipline. Second, we examine *how* the co-authorship metrics are in accounting compared to other management and science disciplines. Third, we explore *whether* the research network in the accounting discipline indicates a small-world network property.

The remainder of this article is structured as follows: The next section reviews relevant literature on authorship and co-authorship patterns. The third section presents the data collection stage, journal and document type selection process. The fourth section first presents basic statistics followed by network attributes of the whole sample and individual metrics regarding scholars. Finally, concluding remarks with implications and limitations.

2. Literature Review

In recent years, it has become popular to investigate co-authorship patterns and institutional and regional contributions to academic journals in various management disciplines, including accounting. Indeed, authorship and co-authorship analyses date back to the 1980s in accounting research; however, the number of studies dealing with authorship and co-authorship patterns increased after the 2000s as presented in Table 1.

The co-authorship decision is crucial for academic researchers because it has the potential to impact the quality of a scholarly paper as well as how efficiently a researcher uses his or her human capital in converting research effort to academic output (Vafeas 2010). In prior studies, various benefits and reasons that might motivate accounting researchers to establish co-authorship were indicated. First, collaboration with other scholars enables a researcher to merge his or her limited capabilities and benefit from others' abilities (Li et al. 2015; Tucker et al. 2016). To illustrate, empirical studies were less likely to be authored by a single researcher than conceptual papers, which confirms that the methodological competence of co-authors encourages collaboration among researchers (Vafeas 2010; Lohmann and Eulerich 2017). Second, co-authorship increases the impact of academic papers since most of these papers are co-authored by researchers with a similar level of prominence regarding the number and quality of their publications (Acedo et al. 2006). Greater research impact enhances the reputation of an academic scholar, and therefore provides opportunities for larger research budgets from sponsors (Li et al. 2013). Furthermore, co-authorship leads to higher research productivity because it is less time consuming to co-author an article than to sole author a comparable article (Cantor et al. 2010; Englebrecht et al. 2008a; Fleischman and Schuele 2009; Rutledge and Karim 2009; Tucker et al. 2016; Lohmann and Eulerich 2017). In addition, improved

communication technologies provide researchers the opportunity to find more compatible co-authors from different cities, countries or regions regardless of geographical barriers (Englebrecht et al. 2008b). Another reason that may motivate academics to establish co-authorships are academic institutions that measure individual academic performance by publication in peer-reviewed journals with little distinction between whether those articles are published by a sole author or with a co-author (Gaunt 2014). Therefore, academics can achieve the same benefit irrespective of the percentage of their contribution to an article (Nathan et al. 1998; Gaunt 2014). Further motivations cited behind increasing collaborations in scholarly publications are enhancing the quality of research output (Englebrecht et al. 2008b; Fleischman and Schuele 2009; Tucker et al. 2016), intense competition among accounting academics over limited space in top journals (Hasselback et al. 2003; Swanson 2004; Englebrecht et al. 2008b), benefiting a junior colleague (Fleischman and Schuele 2009), generating interdisciplinary perspective (Fleischman and Schuele 2009), and building a more diverse portfolio of scholarly works (Lohmann and Eulerich 2017).

In addition to the benefits of establishing co-authorship, some papers investigated the pitfalls of co-authoring. For example, Nathan et al. (1998) surveyed accounting faculty members about their most recent co-authoring experience. Faculty members were overwhelmingly positive about their recent experiences and reported very few co-authoring problems. Respondents declared the leading cause of failed joint projects as weak results or poor design, which was surprisingly unrelated to co-authorship relations. However, Nathan et al. (1998) also documented that co-authors' failure to keep their promises and poor coordination of scheduling were other factors which caused failed co-authorships. Furthermore, Fleischman and Schuele (2009) drew attention to the pitfalls of co-authorship, and considered several factors before accepting anyone into a collaboration, such as the character of the co-author, timely contribution or responsiveness of the co-author, and ethical considerations. And, all collaborations may not result in a successful outcome or publication. The survey of Fleischman and Schuele (2009) demonstrated that 40.4% of respondents experienced a failed co-authorship. Among the most cited reasons were some sort of disagreement among co-authors, lack of time or commitment to the project, quality issues, inadequate skills of the co-authors, incidence of unethical behaviour, illness and language difficulties of co-authors.

Despite its pitfalls, recent analyses indicate an increasing trend of co-authorship, probably due to certain benefits. For instance, Anderson (2002) analysed the first ten volumes of *Accounting, Business and Financial History* from 1990 to 2000. He determined that while sole authorship was dominant throughout the research period, there had been an upward movement

in co-authorship in recent years. By investigating international accounting research within US and non-US based academic journals across the period 1981 to 2000, Prather-Kinsey and Rueschhoff (2004) detected a substantial increase in both foreign and domestic joint authorships, while single domestic author rates were on the decline. Furthermore, Chan et al. (2009) found that the percentage of co-authored articles in accounting research increased from 58.5% in 1991 to 72.3% in 2005 in 24 academic accounting journals. Gaunt (2014) also observed a clear trend from single to dual authorship in the 1990s; however, since 2000 there has been a shift from both single and dual authorship to three or sometimes four authors. A recent study by Andrikopoulos and Kostaris (2017) similarly detected a substantial increase in co-authorship rates within major accounting journals over the period 1985 to 2014. Fleischman and Schuele (2009) investigated co-authorship trends in accounting history research in three accounting history journals, and consistently found the collaboration rate on the rise in all three journals.

Past authorship and co-authorship studies vary in scope; some focused on single journals (Williams 1985; Heck and Bremser 1986; Anderson 2002; Gaunt 2014; Lohmann and Eulerich 2017), some on top journals (Swanson 2004; Chan et al. 2006; Englebrecht et al. 2008a; Fleischman and Schuele 2009; Oler et al. 2010; Fogarty and Jonas 2013; Endenich Trapp 2016; Oler et al. 2016; Andrikopoulos and Kostaris 2017; Merigó and Yang 2017), others on a broader scope of journals (Prather-Kinsey and Rueschhoff 1999; Prather-Kinsey and Rueschhoff 2004; Fülbier and Weller 2011; Chan et al. 2012). We have not confined this study to only top accounting journals or premier journals. We broadened its scope to a larger set of journals to identify whether the authorship or co-authorship structures indicate similar or distinct patterns. By doing so, the paper strives to both advance understanding about the research profile of the accounting discipline and define the role of accounting journals in the dissemination and diversity of accounting research.

Some prior studies on authorship and co-authorship focused on specific countries such as the USA (Williams 1985) and Germany (Fülbier and Weller 2011). Other works focused on specific regions such as Europe (Carmona et al. 1999; Chan et al. 2006) or Asia-Pacific (Chan et al. 2005). These studies contribute to the regional development of accounting research by drawing attention to outstanding authors and institutions. However, in this paper we extend the findings of these prior studies by investigating co-authorship networks from a global perspective without restricting our sample to a specific country or region.

Although there is an abundance of studies assessing the historical roots of accounting literature, the evolution of collaboration, particularly authorship and co-authorship, has been

previously addressed by very few researchers (e.g. Englebrecht et al. 2008b; Andrikopoulos and Kostaris 2017; Lohmann and Eulerich 2017). This article attempts to extend this branch of research by considering a wider sample of academic accounting journals, using up-to-date data, and focusing on collaboration metrics. By doing so, we will clarify the co-authorship structure of the accounting discipline, such as whether it is fragmented and scattered or cohesive and integrated. Furthermore, preliminary studies adopted a simplistic approach utilizing frequency analysis, whereas the latest research focuses on social network analysis using new tools, software and visualizing bibliographic coupling of authors. By following this approach, we identify the most prolific authors, main actors in the network, most prominent brokers (i.e. intermediaries), the giant component of collaboration in networks and so on. Finally, by tracking the collaboration metrics we identify whether a research network in accounting mirrors a small world property or not. Watts and Strogatz (1998) introduced the 'small-world network' concept for the first time and it has been the subject of many studies since then (Barabâsi et al. 2002; Wang and Chen 2003; Björneborn 2004; Goyal et al. 2006; Yin et al. 2006; Koseoglu 2016; Andrikopoulos and Kostaris 2017). Small-world network implies fewer ties between clusters and shorter paths between actors in different clusters, a high level of local clustering (one's collaborators are also collaborators with each other), a small number of steps to pass through between clusters and more cohesive clusters (Kronegger et al. 2012).

[Insert Table 1 here]

3. Database, Journal and Document Type Selection

We followed three steps to determine the research sample for this study, including database selection, journal selection, and document type selection. The Social Sciences Citation Index (SSCI), accessible online through the Web of Science (WoS), contains enough data necessary for bibliometric analysis, is subscribed to by most academic institutions and has become the most used database by academics to set the scope of bibliometric studies (Zupic and Čater 2015). Accordingly, a significant number of papers used the SSCI (WoS) in accounting and other business disciplines for bibliometric research (e.g. Acedo et al. 2006; Kumar and Jan 2013; Gaunt 2014; Koseoglu 2016; Merigó and Yang 2017). Thus, we also selected the SSCI database to constitute our research sample.

In prior studies, while some authors focused on only one journal (e.g. Williams 1985; Heck and Bremser 1986; Anderson 2002; Gaunt 2014), other authors determined their research sample based upon subjectively selected journals. For example, Carmona et al. (1999) preferred to name their 13-journal sample as 'top journals', Oler et al. (2010) considered six journals as

'top', Fogarty and Jonas (2013) referred to three journals as 'top', Merigó and Yang (2017) named four journals as 'top', Englebrecht et al. (2008b) called 12 journals 'premier', Jones and Roberts (2005) selected 12 journals as 'leading', and Endenich and Trapp (2016) considered 15 journals as 'leading'. We did not want to confine our study's scope to these journals, although they are almost unanimously regarded as quality, high impact journals, to reflect a broader picture of authorship and co-authorship in the accounting field. Besides, given that top journals have limited space and repetitive authors (Fogarty and Jonas 2013; Oler et al. 2016), they are insufficient in reflecting an overall picture of the discipline. To serve the purpose of expanding the gateway to publication by bringing a wider set of journals to the attention of researchers, we used all the journals indexed in the SSCI without focusing on any specific group as top journals, premier journals or leading journals. Thus, our final research sample comprised a set of 22 journals as indicated in Table 2.

Documents such as journals, articles, books, theses, and congress proceedings are data sources used for bibliometric analysis (Koseoglu 2016). As most prior studies have done, we selected the regular articles that underwent the review process (Prather-Kinsey and Rueschhoff 1999; Englebrecht et al. 2008b; Fleischman and Schuele 2009; Andrikopoulos and Kostaris 2017), and excluded book reviews, discussions, notes, comments, editorials, and so on. Due to a considerable number of accounting journals (i.e. *Accounting Horizons*, *International Journal of Accounting Information Systems*, *Journal of Accounting Research*, *Spanish Journal of Finance and Accounting*, *The Accounting Review*) becoming accessible online after 1999, we considered the period beyond 2000 for the analysis. Furthermore, since the majority of prior co-authorship studies focused on pre-2000s and determined that co-authorship was rare but on the rise in accounting research (e.g. Carmona et al. 1999; Prather-Kinsey and Rueschhoff 1999; Anderson 2002; Hasselback et al. 2003; Prather-Kinsey and Rueschhoff 2004; Jones and Roberts 2005; Chan et al. 2006; Vafeas 2010), the analysis of the period after 2000 is important to understand whether there is still a rising trend in co-authorship and also to identify the indicators of collaboration. Overall, the sample of this research included 10,863 papers published in 22 journals from 2000 through to the end of 2016.

[Insert Table 2 here]

3.1. Data Collection

We collected data on co-authorship by examining each article published in the journals within the sample over the research period. The names of the authors of articles were entered into a Microsoft Excel spreadsheet to detect and eliminate spelling errors. For instance, some authors might use their full name at times and choose to refer to themselves with only initials and

surnames at others (Kumar and Jan 2013). We checked and manually cleaned data to aggregate author names under one spelling.

3.2. Analysis

We performed network visualizations and analyses of authorship and co-authorship by using network analyses programs, including Pajek, Ucinet 6, NetDraw, and VOSviewer. To determine trends and significant changes on co-authorship patterns over a 16-year period, we divided the data to three consecutive intervals as 2000–2005, 2006–2010, and 2011–2016.

4. Results

4.1. Number of Articles by Year

The graph of the number of papers published over the analysis period is provided in Figure 1. It is noteworthy that an upward trend is observable during the past seventeen years, which implies that the available space for researchers has widened to provide more opportunities to publish in the accounting discipline. This is promising, particularly for junior scholars, who must overcome the challenging publication environment in the accounting discipline, relative to other business fields (Oler et al. 2016). Moreover, the total number of articles published reached its peak in 2015 with 792. Slight declines in some years compared to others might be explained by the publication of special issues in some journals, but this requires a check. To gain more insight, the next subsection presents how the supply side of publishing has evolved with respect to each journal.

[Insert Figure 1 here]

4.2. Number of Articles by Journal

In addition to previous analyses regarding the overall development of the supply side of accounting publication, we provide more specific data in Figure 2. *The Accounting Review* has published the highest number of articles compared to the other twenty-one accounting journals, despite being unanimously considered the top accounting journal in prior studies (Carmona et al. 1999; Oler et al. 2010; Englebrecht et al. 2008; Fogarty and Jonas 2013; Merigó and Yang 2017). This graph might help researchers determine their target journals for upcoming papers.

[Insert Figure 2 here]

4.3. Authorship/Co-authorship Structure

One issue that has drawn the attention of researchers in prior studies is the authorship structures of journals. Thus, we investigated these structures in the 22 accounting journals within the study sample. Overall, we observed an increase in multi-authored papers and a decline in those by single authors over the analysis period; thus, accounting scholars are exploring ways to cooperate with one another (Table 3). In total, multi-authorship is occurring most frequently in

two-authored papers (35.71%), followed by three-authored ones (30.95%) (Table 3). However, the trend is shifting from two-person authorship to three- and more-person authorship. These results reveal a shift in the post-2000 period compared to the pre-2000 period; while single- and two-authored papers were dominant in the former period (Lukka and Kasenen 1996), two- and three-authored papers gained momentum in the latter period. The authorship structure of 22 accounting journals shows little difference than the 5 leading accounting journals in this respect, as observed on Table 3.

[Insert Table 3 here]

Further analyses revealed some clues regarding the types of collaborations in multi-authorship, such as local, cross-institution or cross-country authorships (Table 4). It is evident that researchers tend to collaborate less with their counterparts in the same institution but more with their colleagues from different institutions in the same country and from different countries. Particularly, the substantial increase in cross-country co-authorships indicates the prevalence of knowledge transfer across countries. Several factors might play a role in this promising trend such as communication technologies, conferences and workshops, challenging review processes which require more expertise, the improving quality of publications and others.

[Insert Table 4 here]

4.4. Authorship Productivity

Although some prior studies rank prolific authors in the accounting discipline, they were narrower in scope and confined to a few top journals (Andrikopoulos and Konstantinos 2017), or confined to a specific country (Hasselback et al. 2003). Thus, we attempt to examine the situation across a broader range of journals. Indeed, our results have revealed a different prolific authors structure than previous ones (Hasselback et al. 2003; Andrikopoulos and Konstantinos 2017). Over the sample period Lee D. Parker was the most productive author, followed by Yves Gendron, Shivaram Rajgopal, Dan S. Dhaliwal, and Martin Walker. It is noteworthy that these prolific authors consistently publish articles across the analysis periods, showing their commitment and dedication to research. Table 5 ranks authors who have published at least 10 papers in each period.

[Insert Table 5 here]

4.5. Authorship Network Analysis

Table 6 indicates co-authorship network indicators. We particularly highlight indicators commonly considered significant in prior studies. The nodes are the number of actors in a

network, and the ties measure the connections among actors (Andrikopoulos and Kostaris 2017). The number of unique authors in this study is 9,318 of which 8,700 nodes and 31,836 ties appear over the whole analysis period. Over the sub-periods, we observed an increase in nodes and ties as well. This indicates that the number of actors (collaborating authors with at least one co-author) has increased over the years. The degree of a node is defined as the total number of its connections; thus, the higher the degree, the more important the node is in a network (Wang and Chen 2003), which eventually leads to a tighter network. The average degree is 3.557 between 2000 and 2016 and is on the rise over the sub-periods. Thus, the collaboration among accounting researchers is sparse, although it is increasingly becoming more intensive. Clustering coefficient is another important indicator of network analysis which assesses the likelihood that two of a scientist's collaborators have themselves co-authored a paper (Erfanmanesh et al. 2012). Considering the overall clustering coefficient of 0.676, and the clustering coefficients higher than 0.70 for all three sub-periods, the accounting research network is highly clustered. Hence, any two authors have a high probability of co-authorship if they have collaborated with a third author. Network density ranging from 0 to 1 at maximum is the proportion of actual links in a network to maximum possible links (Racherla and Hu 2010; Gallardo-Gallardo et al. 2017), which means the probability of a tie formation (Andrikopoulos and Kostaris 2017). The low and steady density rate (0.001) of the co-authorship network in all sub-periods indicates that only 0.1% of all possible links are present in all periods. Indeed, it is not surprising to have low density and does not mean decreasing research collaboration, particularly in a large network size (i.e. in our case) as density is inversely related to network size (Gallardo-Gallardo et al., 2017). The co-authorship network of authors in the scientometrics field is composed of one large component (known as the main, giant or core component) which fills a large portion of the graph, and many small components that fill the rest (Newman 2001; Abbasi et al. 2011).

Although the number of components increase over the periods (i.e. 546 between 2000–2005, 623 between 2006–2010, and 718 between 2011–2016), the giant component of the network occupies 69.61% of the overall size of the network, which comprises 6056 authors. Average distance is an indicator of collaboration maturity among authors (Ye et al. 2013; Koseoglu 2016) and degree of connectedness of authors (Andrikopoulos and Kostaris 2017). The increasingly declining average distance (i.e. 12.051 in 2000–2005, 9.998 in 2006–2010, and 8.651 in 2011–2016) shows that a randomly chosen author needs to pass through fewer steps to collaborate with another author. On average, an author has 7.12 steps to reach another author. Degree centrality reflects how central an actor is to the network (Gossart and Özman

2008), and assesses how many collaborators a researcher engages with in the network (Koseoglu 2016; Andrikopoulos and Kostaris 2017). It is the proportion of the number of an actor's links to the maximum possible number of links (Erfanmanesh et al. 2012). It increased from 0.003 in the first sub-period to 0.005 in the second sub-period followed by 0.006 in the third sub-period.

4.6. Small World Property of Research Network in Accounting

The small-world network concept was first introduced by Watts and Strogatz (1998) and has received much attention since then from science and the social sciences (Barabâsi et al. 2002; Wang and Chen 2003; Björneborn 2004; Goyal et al. 2006; Yin et al. 2006; Koseoglu 2016; Andrikopoulos and Kostaris 2017). In authorship networks, it implies a high level of local clustering (one's collaborators are also collaborators with each other), a small number of steps to pass through between clusters, more cohesive clusters, fewer ties between clusters and short paths between actors in different clusters (Kronegger et al. 2012). In our study the increasing average degree, high clustering coefficients, size of giant components, declining average distance, and high clustering coefficient are symptoms of a small-world network for the collaboration of authors in accounting (Watts and Strogatz 1998; Wang and Chen 2003; Goyal et al. 2006; Andrikopoulos and Kostaris 2017). Thus our study, which samples 22 journals, confirms the finding of the recent study (i.e. based on 5 journals) which asserts that collaboration in accounting research exhibits small world properties (Andrikopoulos and Kostaris 2017). According to Wang and Chen (2003), it is not uncommon to observe small-world phenomenon in real life networks. The small-world property, which entails a high degree of integration within a research community. enables the exchange of ideas among community members (Andrikopoulos and Kostaris 2017), and faster diffusion of ideas (Björneborn 2004).

[Insert Table 6 here]

4.7. Comparison with Other Studies' Findings

As well as presenting our study's results, we compared it with the findings of prior studies in accounting, management and science so we could clarify the position of the co-authorship network in accounting. Compared to another recent study in accounting, which was conducted on a smaller set of accounting journals (i.e. leading journals), there are slight differences between the two studies. A larger set of journals (i.e. our study) relative to a smaller one (Andrikopoulos and Kostaris 2017) enables researchers to collaborate with a higher number of colleagues (i.e. average degree), helps the collaborators of a specific author cooperate amongst themselves (i.e. clustering coefficient), results in larger giant component size, but causes

authors to travel longer distances to cooperate with others. When compared with management and science studies (i.e. physics and biomedical), accounting studies have a larger giant component size than the former, but smaller than the latter. In addition, the social sciences tend to collaborate with fewer authors than those in the sciences (i.e. physics and biomedical).

[Insert Table 7 here]

4.8. Visualization Maps

In addition to Table 6 and comments in the preceding sections, we visualized the co-authorship structure of the accounting research network. Figure 3 presents the scale-free network and supports our assertion that the accounting discipline shows small world network properties since the nodes become tightly connected and not fragmented and scattered. Figure 4 depicts the giant component as well as the smaller components; the size of the main component is getting larger and occupies an increasingly wider space compared to other components. In the largest-density visualization map, red fill indicates peaks in density in terms of bibliographic coupling strength; yellow, green and blue signifies gradually lower density (Nelhans and Lorentzen 2016). As in Figure 5, the largest red nuclei are located around Shivaram Rajgopal, Wayne B. Thomas and Christian Leuz between 2006–2010, Jeong-Bon Kim, Inder K. Khurana, Linda A. Myers, Wai Fong Chua and Hun-Tong Tan between 2011–2016, and Shivaram Rajgopal and Ole-Kristian Hope during the entire period, illustrating that they have the highest degree of collaboration. As relative label size denotes, Ferdinand A. Gul, Martin Walker, James Guthrie, Yves Gendron, Ken V. Peasnell and Lee D. Parker are among the other outstanding authors. In Figure 6, while the links between the authors show a co-authorship network, the relative size of circles (i.e. nodes) assigned to each author represent the number of links. For space consideration, we have not included the first sub-period. The visual map indicates the evolution of a network towards a more cohesive and tighter structure. Though the picture includes many authors' names, some prominent authors are clearly recognizable such as Shivaram Rajgopal, Martin Walker, Ken T. Trotman, Yves Gendron, James Guthrie, Michael John Jones, Hun-Tong Tan, Russell J. Craig, Jan Mouritsen, Philip R. Brown, Lee D. Parker, Linda A. Myers, Jeong-Bon Kim, Dean Neu, Wayne B. Thomas, and so on. In all maps, in comparison to the preceding periods the network appears denser in the latter periods, which indicates that collaboration is becoming more extensive and involving more authors.

[Insert Figure 3 here]

[Insert Figure 4 here]

[Insert Figure 5 here]

[Insert Figure 6 here]

4.9. Network Attributes of Individual Authors

In this section we will provide the rankings of authors in terms of degree centrality and betweenness centrality, as these two indicators are commonly used to assess the centrality of authors in a co-authorship network. While degree centrality measures the number of researchers an author engages with, betweenness centrality demonstrates the capacity of an author to connect other authors inside the network, like a broker (Acedo et al. 2006; Koseoglu 2016). Table 8 presents the ranking of authors who have a degree centrality of nine or more over the sub-periods and the whole period between 2000 and 2016. For example, prominent authors Dan S. Dhaliwal (54), Shivaram Rajgopal (39), Terry Shevli (36), and Theodore E. Christensen (36). This finding partially overlaps with the findings of Andrikopoulos and Kostaris (2017) based on the five top journals; Dan S. Dhaliwal is at the top in that ranking as well, with Terry Shevlin, Wayne R. Landsman, Mary E. Barth, S. Kothari, Rajiv D. Banker, Lisa Koonce and Ken T. Trotman. Thus, these authors are active collaborators irrespective of journals selected. Furthermore, our wider journal selection provides additional insights regarding active collaborators in accounting research.

With respect to betweenness centrality (Table 9), Christopher Humphrey, Asad Kausar, Dan S. Dhaliwal, Matthew L. Pinnuck are in the top four, which are different than the top four authors in degree centrality, except Dan S. Dhaliwal. This indicates that Dan S. Dhaliwal is the most influential author in establishing links with other authors as well as acting as a main hub between authors. Though Shivaram Rajgopal, Terry Shevlin, and Theodore E. Christensen are not among the top intermediaries, they are on the list of high rankers in terms of betweenness centrality. Thus, degree centrality and betweenness centrality, confirm each other in some ways.

[Insert Table 8 here]

[Insert Table 9 here]

5. Conclusions

This study presented recent authorship and co-authorship patterns in accounting research by examining the co-authorship network in 22 accounting journals between 2000 and 2016. The research sample of this study included all the accounting journals indexed in the SSCI (WoS), a database which has a good academic reputation, without discriminating among journals as top, premier or leading. Therefore, as most prior studies are based on a limited set of journals and draw conclusions from traditional frequency analysis, our study provides deeper insights and reveals important facts about collaborations within the discipline via bibliometric analysis.

Our study also offers new evidence regarding the productivity and network attributes of individual researchers.

In recent years, the number of published papers in the field of accounting has increased substantially which implies greater publishing opportunities for accounting academics. The proportion of multi-author papers has increased over time while the trend away from sole-authorship has continued. The network indicators and visualizations reflect that accounting research manifests a small-world property. Despite the large network size, a high number of ties among nodes, size of the giant component and high clustering coefficient, all support this inference.

We believe that our study, based on extensive hand-collected unique data, provides valuable implications for the accounting discipline, individual researchers, and collaboration. Firstly, a significant increase in cross-country collaborations rather than local co-operations might enable the exchange of different ideas and allow unique perspectives to flourish. Secondly, documenting individual researcher indicators such as productivity, degree centrality, and betweenness centrality might inspire junior researchers' interest and guide them down the path to success. Thirdly, emphasis on collaboration metrics motivates and encourages researchers to engage with other scholars both local and abroad. Fourthly, the density score is an indication of a small number of links among authors relative to the possible number of links. In this respect, the accounting discipline has more to do in future years. Fifthly, the development of research networks in the sub-periods indicates that the trend is aligning towards more collaboration; thus, being part of a team or team-making is key to integration with other scholars. Furthermore, our findings might be useful for journal editors by providing evidence on collaboration patterns in accounting research. For instance, editors might foster strategies to enhance collaboration in the accounting field.

This study has several limitations; it is bound by the time frame between 2000 and 2016. Since the data is hand-collected, it bears inherent limitations. Our study also does not consider institutional and regional affiliations of authors, the weighted research productivity of authors, and research impact (i.e. citations) of published papers. Future studies might be designed to complement ours by considering these limitations.

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Table 1. Summary of prior literature on authorship and co-authorship patterns in accounting research area

	Time span	Number of Journals	Journal selection
Williams (1985)	1978-1982	The Accounting Review	Authors' selection
Heck and Bremser (1986)	1926-1985	The Accounting Review	Authors' selection
Carmona et al. (1999)	1992-1997	13 accounting journals	Authors' selection
Prather-Kinsey and Rueschhoff (1999)	1980-1996	30 US Journals and Accounting Organizations and Society (AOS)	Refereed U.S.-based academic accounting journals and a U.K. journal, AOS
Anderson (2002)	1990-2000	Accounting, Business and Financial History	Authors' selection
Hasselback et al., 2003	1967-2001	40 accounting and non-accounting journals	Based on past studies
Prather-Kinsey and Rueschhoff (2004)	1981-2000	41 US and non-US based accounting journals	Based on past studies
Chan et al. (2006)	1991-2002	19 accounting journals	Authors' selection
Englebrecht et al. (2008b)	1979-2004	12 accounting and non-accounting journals	Based on past studies
Chan et al. (2009)	1991-2005	24 accounting journals	Based on past studies
Fleischman and Schuele (2009)	1985-2007	Accounting, Business & Financial History; Accounting History; and the Accounting Historians Journal and matched set of three non-history accounting journals.	Authors' selection
Vafeas (2010)	1992-1996	25 accounting and finance journals	Based on past studies
Fülbier and Weller (2011)	1950-2005	22 accounting and non-accounting journals	VHB-Jourqual
Chan et al. (2012)	2006-2010	43 accounting journals	Australian Business Dean's Council
Fogarty and Jonas (2013)	1989-2008	The Accounting Review, Journal of Accounting Research, Journal of Accounting and Economics	Authors' selection
Gaunt (2014)	1979-2012	Accounting and Finance	Authors' selection
Endenich and Trapp (2016)	1992-2011	15 accounting journals	Authors' selection
Andrikopoulos and Kostaris (2017)	1985-2014	The Accounting Review, Accounting, Organizations and Society, the Journal of Accounting and Economics, the Journal of Accounting Research, and Contemporary Accounting Research	Authors' selection
Lohmann and Eulerich (2017)	1926-2014	The Accounting Review	Authors' selection
Merigó and Yang (2017)	All times up to 2012	Initial selection is based on 20 journals; subsequent analyses are based on the following four journals: Journal of Accounting and Economics, Journal of Accounting Research, The Accounting Review, Accounting, Organizations and Society	Web of Science

Table 2. The journals within sample

Journal Title
Abacus-A Journal of Accounting Finance and Business Studies
Accounting and Business Research
Accounting and Finance
Accounting Auditing & Accountability Journal
Accounting Horizons
Accounting Organizations and Society
Asia-Pacific Journal of Accounting & Economics
Australian Accounting Review
British Accounting Review
Contemporary Accounting Research
Critical Perspectives on Accounting
European Accounting Review
International Journal of Accounting Information Systems
Journal of Accounting & Economics
Journal of Accounting and Public Policy
Journal of Accounting Research
Journal of Business Finance & Accounting
Journal of International Financial Management & Accounting
Management Accounting Research
Review of Accounting Studies
Spanish Journal of Finance and Accounting
The Accounting Review

Table 3. Authorship structure over periods

	2000-2005	2006-2010	2011-2016	Overall	Andrikopoulos and Konstantinos (2017)
One author	32.87	26.74	20.14	25.82	29.48
Two authors	38.94	36.74	32.67	35.71	36.34
Three authors	24.30	30.25	36.19	30.95	33.94
Four authors	3.51	5.66	9.90	6.77	
Five and more	0.38	0.62	1.10	0.75	--

Table 4. Collaboration across institutions and countries

	2000-2005	2006-2010	2011-2016	Overall
Single author from single institution and country	32.90	26.71	20.16	25.82
Two or more authors from one institution and from one country	20.63	19.48	17.53	19.02
Two or more authors from at least two different institutions from one country	31.73	33.38	34.89	33.52
Two or more authors from two or more institutions and two or more countries	14.74	20.43	27.41	21.64
Total	100.00	100.00	100.00	100.00

Table 5. Author productivity (unweighted)

Productive authors							
2000-2005		2006-2010		2011-2016		2000-2016	
Anil Arya	12	**Lee D. Parker**	**14**	**Lee D. Parker**	**22**	**Lee D. Parker**	**48**
Lee D. Parker	**12**	Stephen P. Walker	12	**Yves Gendron**	**18**	**Yves Gendron**	**36**
Stephen P. Walker	12	Wayne B. Thomas	12	**Dan S. Dhaliwal**	**16**	**Shivaram Rajgopal**	**33**
Jan Mouritsen	11	Christian Leuz	11	Jeong-Bon Kim	16	**Dan S. Dhaliwal**	**32**
John Richard Edwards	11	Hun-Tong Tan	11	**Martin Walker**	**14**	**Martin Walker**	**32**
Robert G. Walker	11	**Martin Walker**	**11**	Linda A. Myers	13	James Guthrie	31
Tony Tinker	11	Ole-Kristian Hope	11	Michael S. Drake	13	Wayne B. Thomas	31
Brendan O'dwyer	10	Dean Neu	10	**Shivaram Rajgopal**	**13**	Ole-Kristian Hope	30
Charles Richard Baker	10	James Guthrie	10	Terry Shevlin	13	Stephen P. Walker	30
Christopher Humphrey	10	Michael John Jones	10	Ole-Kristian Hope	12	Mary E. Barth	29
Dean Neu	10	Roger Simnett	10	Steve G. Sutton	12	Brendan O'dwyer	27
Inder K. Khurana	10	**Shivaram Rajgopal**	**10**	Walter Robert Knechel	12	Michael John Jones	26
Irvine Lapsley	10	Wai Fong Chua	10	Warwick Funnell	12	Terry Shevlin	26
James Guthrie	10	**Yves Gendron**	**10**	X. Frank Zhang	12	Dean Neu	25
Jennifer Francis	10						
Mary E. Barth	10						
Michael A. Firth	10						
Michael John Jones	10						
Rob Gray	10						
Shivaram Rajgopal	**10**						

Table 6. Network indicators

Network attributes	2000-2005	2006-2010	2011-2016	2000-2016
Average degree	2.423	2.659	3.082	3.557
Degree centralization	0.003	0.005	0.006	0.006
Density	0.001	0.001	0.001	0
Components	546	623	718	836
Average distance	12.051	9.998	8.651	7.120
Overall clustering coefficient	0.704	0.742	0.739	0.676
Size of the largest component	1165	1706	3079	6056
% of the size of the largest component	38.398	46.003	56.309	69.609
Nodes	3034	3708	5468	8700
Ties	7520	10020	17130	31836

Table 7. Comparison of our findings with prior management and science studies

Network attributes	Accounting (Our study)	Accounting (Andrikopoulos and Kostaris, 2017)	Strategic Management (Koseoglu, 2016)	Tourism and hospitality (Ye et al., 2013)	Management and Organization (Acedo et al., 2006)	Physics (Newman, 2001)	Biomedical (Newman, 2001)
Average degree	3.557	3.195	–	–	2.43	9.7	18.1
Degree centralization	0.006	–	–	–	0.0041	–	–
Density (probability of tie formation)	0	0.0009	0.002	–	0.0002	–	–
Components	836	–	–	–	2662	–	–
Average distance	7.120	6.274	5.05	7.20		–	–
Overall clustering coefficient	0.676	0.626	0.13	0.748	0.681	0.430	0.066
Size of the largest component	6056	2475	296	1376	4625	44337	1395693
% of the size of the largest component	69.609	68.579	69.0	59.30	45.45	85.4	92.6
Nodes	8700	–	–	–	10176	52909	1520251

Table 8. Degree centrality by period

2000-2005		2006-2010		2011-2016		2000-2016	
Rajiv D. Banker	13	**Shivaram Rajgopal**	**23**	**Dan S. Dhaliwal**	**35**	**Dan S. Dhaliwal**	**54**
Dan S. Dhaliwal	**12**	Rihab Khalifa	18	Jeong-Bon Kim	26	**Shivaram Rajgopal**	**39**
Theodore E. Christensen	**12**	Teemu Malmi	17	**Terry Shevlin**	**25**	**Terry Shevlin**	**36**
Eli Bartov	12	John Burns	17	David A. Wood	21	**Theodore E. Christensen**	**36**
David M. Power	12	Wayne B. Thomas	16	Gerald J. Lobo	21	Ole-Kristian Hope	31
S.P. Kothari	12	Paolo Quattrone	16	Edward Lee	20	K. Raghunandan	31
Roger Simnett	12	Markus Granlund	16	Martin Walker	20	Wayne R. Landsman	30
Tony Tinker	12	**Theodore E. Christensen**	**16**	Thomas C. Omer	19	Martin Walker	29
K. Raghunandan	12	Roger Simnett	16	Ferdinand A. Gul	19	Jeong-Bon Kim	29
Paul F. Williams	12	Peter M. Clarkson	16	Wayne R. Landsman	18	Wayne B. Thomas	28
Shivaram Rajgopal	**11**	Fabrizio Panozzo	16	Walter Robert Knechel	18	Walter Robert Knechel	28
Jan Mouritsen	11	Allan Hansen	16	Ole-Kristian Hope	17	Ferdinand A. Gul	28
Mary E. Barth	11	Andrea Mennicken	16	Wayne B. Thomas	17	Mary E. Barth	27
Steven F. Cahan	11	Ole-Kristian Hope	15	Linda A. Myers	17	S.P. Kothari	27
Donald J. Stokes	11	Thomas Ahrens	15	**Shivaram Rajgopal**	**17**	Oliver Zhen Li	26
Steven Filling	11	Christopher S. Chapman	15	Sarah Elizabeth Mcvay	17	David A. Wood	26
Stephen L. Taylor	10	Wayne R. Landsman	14	Nathan Y. Sharp	17	Rajiv D. Banker	26
Inder K. Khurana	10	Tobias Scheytt	14	X. Frank Zhang	17	Roger Simnett	26
Michael A. Firth	10	Michael Habersam	14	Ken T. Trotman	17	Steven F. Cahan	26
Arnold M. Wright	10	Martin Piber	14	Xiumin Martin	16	Gerald J. Lobo	25
Peter D. Easton	10	Anette Mikes	14	Oliver Zhen Li	16	Kathy R. Petroni	25
Graeme L. Harrison	10	Albrecht Becker	14	Karla M. Johnstone	16	Yves Gendron	25
Rob Gray	10	**Dan S. Dhaliwal**	**13**	Qiang Cheng	15	Baruch Lev	25
Jonathan C. Glover	9	Florin P. Vasvari	13	Michael S. Drake	15	Ken T. Trotman	25
Dana R. Hermanson	9	Abhijit Barua	13	Steve G. Sutton	15	James Guthrie	24
Mohan Venkatachalam	9	Steven Young	13	Yves Gendron	15	Peter M. Clarkson	24
Mark Tippett	9	Phil Hancock	13	**Theodore E. Christensen**	**15**	Lisa Koonce	24
Vicky Arnold	9	Tony Van Zijl	13	Gordon D. Richardson	15	David R. Gallagher	24
Michael Welker	9	David Hillier	12	Michael G. Williamson	15	Christopher Humphrey	24
Jeffrey D. Gramlich	9	Philip R. Brown	12	Chan Li	15	Gopal V. Krishnan	24
Jayne M. Godfrey	9	Peter F. Pope	12	David R. Gallagher	15	Linda A. Myers	23
Charles M.C. Lee	9	K. Raghunandan	12	Bradley N. Potter	15	Edward Lee	23
Scott A. Richardson	9	Ross L. Watts	12	Lisa Koonce	15	Thomas C. Omer	23
John Richard Edwards	9	Gopal V. Krishnan	12	Elizabeth A. Gordon	15	Sarah Elizabeth Mcvay	23
Wayne R. Landsman	9	Scott A. Richardson	11	Ann Tarca	14	Ranjani Krishnan	23
James E. Hunton	9	Daniel A. Cohen	11	Karen L. Sedatole	14	Robert W. Faff	23
Alex Frino	9	Carlos Larrinaga-González	11	Teri Lombardi Yohn	14	Ann Tarca	22
Ervin L. Black	9	Martin Walker	11	George Serafeim	14	Gordon D. Richardson	22
Ranjani Krishnan	9	Frank D. Hodge	11	K. Raghunandan	14	Arnold M. Wright	22
James Guthrie	9	Joseph P. Weber	11	Thomas Jeanjean	14	Irvine Lapsley	22
Margaret A. Abernethy	9	Mary E. Barth	11	Clara Xiaoling Chen	14	Michael E. Bradbury	22
Baruch Lev	9	Joshua Livnat	11	Ken V. Peasnell	14	Vernon J. Richardson	22
Manuel Larrán Jorge	9	Chris Carter	11	Feng Chen	14	Stephen G. Ryan	22
C. Edward Arrington	9	Michael E. Bradbury	11	Hal D. White	13	Teemu Malmi	22
		James Guthrie	11	Florin P. Vasvari	13	John Burns	22
		Robert W. Scapens	11	Jere R. Francis	13	Steve G. Sutton	21
		Linda A. Myers	11	Mary E. Barth	13	Joseph P. Weber	21
		Steven F. Cahan	11	Hua-Wei Huang	13	John H. Evans Iii	21
		Mathew Tsamenyi	11	Jeffrey W. Hales	13	Teri Lombardi Yohn	21
		Shyam Sunder	11	Nadia Albu	13	Florin P. Vasvari	21
		Karim Jamal	11	Catalin Nicolae Albu	13	Alex Frino	21
		George J. Benston	11	John H. Evans Iii	13		
		Baruch Lev	11	Lynn L. Rees	13		
				Jennifer Wu Tucker	13		

Table 9. Betweenness centrality by period ($x10^2$)

2000-2005		2006-2010		2011-2016		2000-2016	
Charles Richard Baker	1370	Roger Simnett	3092	**Asad Kausar**	**5813**	**Christopher Humphrey**	**9877**
Eli Bartov	1098	Wayne R. Landsman	2151	Terry Shevlin	4620	**Asad Kausar**	**8368**
Mary E. Barth	906	Florin P. Vasvari	2089	**Christopher Humphrey**	**4517**	**Dan S. Dhaliwal**	**7611**
Rob Gray	865	Mandy M. Cheng	1654	Ferdinand A. Gul	3360	**Matthew L. Pinnuck**	**6033**
Tony Tinker	855	Peter F. Pope	1522	Nemit Shroff	3116	Bradley N. Potter	5485
Norman B. Macintosh	855	Shivaram Rajgopal	1488	**Dan S. Dhaliwal**	**2952**	Michael E. Bradbury	5245
Dwight M. Owsen	813	Arnold M. Wright	1443	Hal D. White	2570	Yves Gendron	4962
Steven Filling	798	Peter Booth	1429	Nathan Y. Sharp	2546	Peter F. Pope	4842
Jacob K. Thomas	768	Andrew C. Ferguson	1393	Gerald J. Lobo	2429	Steven F. Cahan	4841
Steven E. Salterio	726	Hai Lu	1365	Greg Clinch	2321	Wayne R. Landsman	4819
Inder K. Khurana	724	Steven Young	1356	Clara Xiaoling Chen	2234	Jayne M. Godfrey	4772
Mary Lea Mcanally	688	Teemu Malmi	1324	Arnold M. Wright	2125	Ann Tarca	4743
Myung-Sun Kim	674	Marco Trombetta	1302	Enrico Bracci	2098	Walter Robert Knechel	4402
Ken T. Trotman	670	Ann Vanstraelen	1214	Weili Ge	2061	Jere R. Francis	4386
Jennifer L. Kao	668	Mary E. Barth	1150	Lee D. Parker	2051	Ferdinand A. Gul	4384
Gordon D. Richardson	644	Philip R. Brown	1145	Warwick Funnell	2018	Steven Young	4262
Mohan Venkatachalam	639	Salvador Carmona	1144	Bradley N. Potter	2011	Jason Z. Xiao	4232
Chee W. Chow	637	Robert M. Bushman	1041	Kenneth A. Merchant	1963	Hai Lu	4052
Julia M. D'souza	606	Wayne B. Thomas	1006	Yves Gendron	1781	Martin Walker	4043
Douglas A. Shackelford	593	Katherine Schipper	902	Monica Neamtiu	1761	Roger Simnett	3888
Yves Gendron	578	Baruch Lev	869	Edward Lee	1759	Ann Vanstraelen	3754
Colin B. Ferguson	575	Keith Robson	850	Karla M. Johnstone	1708	James Guthrie	3733
Marlys Gascho Lipe	569	Catherine M. Shakespeare	837	David A. Wood	1680	Gordon D. Richardson	3712
Terry Shevlin	567	Michael Willenborg	826	Karen L. Sedatole	1629	Ole-Kristian Hope	3704
Michael Gibbins	563	Peter M. Clarkson	811	Jeong-Bon Kim	1596	David R. Gallagher	3700
Scott A. Richardson	558	Tony Van Zijl	793	Charl De Villiers	1594	K. Raghunandan	3579
Jayne M. Godfrey	539	Frank D. Hodge	754	Theodore J. Mock	1554	Terry Shevlin	3388
Donald P. Cram	515	Jennifer Francis	749	David Oldroyd	1550	Hal D. White	3310
William E. Shafer	511	David Otley	742	Chee Yeow Lim	1536	Teri Lombardi Yohn	3252
Michael Welker	503	Graeme W. Dean	728	Christopher D. Williams	1532	Stuart J. Mcleay	3231
Brian P. Shapiro	492	Leslie D. Hodder	727	Walter Robert Knechel	1504	Salvador Carmona	3205
Frank Finn	492	Rihab Khalifa	714	Wei Yu	1499	Lee D. Parker	3073
Jing Liu	479	Steven F. Cahan	696	William J. Mayew	1498	Theodore E. Christensen	3055
Allan Hodgson	478	Carlos Larrinaga-Gonzalez	672	Kartik Raman	1490	David Otley	3055
Robert P. Magee	471	Ryan Lafond	670	Thomas Jeanjean	1483	Mary E. Barth	3031
Robert W. Faff	469	Michael Bradbury	637	Martin Walker	1462	Karim Jamal	2995
Sri S. Sridhar	461	Teri Lombardi Yohn	628	Chan Li	1429	Colin B. Ferguson	2978
Daniel B. Thornton	456	Jayne M. Godfrey	627	Margaret H. Christ	1387	Gerald J. Lobo	2960
Baruch Lev	442	Joseph P. Weber	621	Paul Y. Dou	1352	Florin P. Vasvari	2954
Elizabeth K. Keating	440	Abhijit Barua	612	Michael John Jones	1340	Arnold M. Wright	2899
John H. Evans Iii	440	Sandra L. Van Der Laan	612	John C. Dumay	1309	David J. Cooper	2880
Lisa Koonce	432	K. Raghunandan	610	Lynn L. Rees	1307	Ken T. Trotman	2858
Brian W. Mayhew	427	**Christopher Humphrey**	**606**	Chu Yeong Lim	1302	Edward Lee	2853
John S. Hughes	426	Ole-Kristian Hope	606	Charles H. Cho	1300	Baruch Lev	2831
Alan Ramsay	420	Alan F. Coad	563	David R. Gallagher	1296	Greg Clinch	2773
Kathy R. Petroni	419	Michael E. Bradbury	560	Deryl Northcott	1287	Marco Trombetta	2759
David Aboody	417	Stephen P. Walker	556	Suresh Radhakrishnan	1270	Wayne B. Thomas	2728
Amy P. Hutton	416	John Cullen	539	Madhu Veeraraghavan	1238	Kenneth A. Merchant	2693
Wayne R. Landsman	413	Ping-Sheng Koh	538	Wayne R. Landsman	1231	Mahmoud Ezzamel	2685
Peter F. Pope	402	Chan Li	527	Yue May Zhang	1231	Shivaram Rajgopal	2672