

Two Decades of Research on Early Career Faculties (ECFs): A Bibliometric Analysis of Trends Across Regions

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ABSTRACT

Early Career Faculties (ECFs) are an important demographic of university faculty population shaping the future of the institution and higher education, despite the challenges they face as new academics. Analysis of scholarly output on ECFs offers useful data to inform and aid both national policy formulations and institutional planning decisions especially in ECFs'

support and development. Peer-reviewed high impact journals and academic databases provide highly valid and reliable sources of data and information on ECFs. This study examines the trend of ECFs research over two decades comparing scholarly output and research impact across global regions, in Web of Science and Scopus Elsevier. The bibliometric analysis highlights key topics of research and publications related to ECFs and identify the regions and countries most actively research on the topic. The trend

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of research on ECFs has been found to increase exponentially beginning the 1990s worldwide, mostly from western institutions (76%). Publications after the year 2012 focused more on issues related to ECFs' preparation towards life in academia, their motivation, and challenges, the support structure for ECFs and strategies to adapt to life as faculty members. Such bibliometric analysis findings can be a useful reference for policy formulation within national or regional systems of higher education, and institutional strategic planning.

Keywords: Academics, bibliometric analysis, early-career faculty, higher education, trends

INTRODUCTION

Since academic careers in higher education are increasingly fraught with challenges and pressures, it is important for countries and higher education institutions to focus on data and information about Early Career Faculty (ECF) who make up the bulk of new hires. Because global ranking regimes such as the QS World Top University and the Times Higher Education Survey pit universities against one another for top spots, universities must compete to maintain or improve their rankings. In addition, the explosion in the number of higher education institutions worldwide in the past five years, coupled with a volatile global economy, require universities in the 21st century not only to compete for students, research grants, and funding, but also for the knowledge-worker talents that drive knowledge creation and dissemination, viz., namely faculty members.

According to Bayer and Dutton (1977), the career of a faculty member can be categorized into four stages based on working experience: (1) fledglings (fewer than 5 years); (2) maturing academics (5 to 10 years); (3) established academics (11 to 25 years); and (4) patriarchs (more than 25 years). More recently, other terminologies used to describe academics in their initial career stages include early career faculties (ECFs), early career researchers (ECRs), new lecturers, novice academics, assistant professors, and emerging scholars (Bleckman et al., 2016; Leech et al., 2011). Notwithstanding such variation in terminologies, most of these terms describe newly recruited academic faculty members, often with freshly minted doctorates, who are now expected to perform a full range of academic roles, predominantly teaching, research, supervision, and administrative or leadership service to the university.

ECFs arguably represent a very important demographic of the university faculty population, and it is no exaggeration to state that ECFs are generally the future of academia and specifically of individual institutions. ECFs provide a bridge between graduate students who are to become faculty members, as well as between industry practitioners who subsequently enter academia. Because the majority of ECFs are relatively young and just freshly started in the academic profession, they also offer the longest period of service till retirement, policy and strategic decisions related to faculty recruitment, faculty development, or other faculty-related long-term plans

necessarily require data and information about ECFs.

Analysis of scholarly output on ECFs offers a wealth of useful data that can inform and assist both in national policy formulations and institutional planning decisions. Such data can also help universities develop and support young faculty members to enable them to remain in active service over a long period of time and contribute to the university's goals and strategic planning decisions. Given the stringent quality standards of peer-reviewed high-impact journals and academic databases, such repositories of academic research can provide policymakers and strategic planners with highly valid and reliable data and information, unrivalled in quantity and quality, about ECFs. The discussion herein, an analysis of research and publication data indexed in comprehensive academic databases (i.e. bibliometric analysis), is intended to be a useful tool for examining trends in research on ECFs.

Early Career Faculties (ECFs)

Yusop and Kamarulzaman (2016) found that ECFs experienced two main stages of challenge: (i) personal challenges, and (ii) institutional challenges. An example of a personal challenge is finding a balance between family needs and work commitment. ECFs are also concerned about institutional challenges related to teaching and learning, research and publication. Other challenges also include difficulties in maintaining a work-life balance, struggling for tenureship, unclear expectations, lacking

mentorship, and funding and academic sustainability (Austin & Rice, 1998; Bazeley, 2003; Diniz-Filho et al., 2016). These challenges can hinder them from advancing in their professional development along with decelerating their progress towards becoming effective academics.

Intense work and work-life interference can lead to exhaustion, stress, overload, anxiety, insecurity, and shame (Ryan-Flood & Gill, 2010). ECFs regularly find their work frustrating, unrewarding, and intolerably difficult because of inadequate support, increasing their risk of becoming casualties of the profession. ECFs may also feel less confident about their capability and more inclined to quit academe (Barlow & Antoniou, 2007), and studies have shown that in the medical field particularly, younger faculty members are at greater risk of leaving academia (Corrice et al., 2011; Pololi et al., 2012). With all these challenges, ECFs are acutely aware of the dire need to find targeted career support during their first years in academia (Ferguson & Wheat, 2015).

Related concerns about academic staff attrition rate and the need to retain ECFs may be a major reason that many institutions expend resources to establish faculty-support development initiatives, enabling ECFs to undergo professional learning and development through formal and informal interactions at the workplace (Eraut, 2007). Such initiatives may include mentoring and induction programmes as well as the adoption of Lave and Wenger's (1991) Communities of Practice (CoP)

model to provide support for ECFs. While mentoring helps ECFs transition into academic positions, there is little evidence of structured mentoring activities in academia (Zellers et al., 2008). Quinlan (1999) suggested that informal mentoring seemed to be the prevalent approach in most higher education institutions, and Turner et al. (2016) argued for the need for careful framing of mentoring relationships in terms of professional development and teaching enhancement to ensure positive relationships between mentor and mentee. As a result, some universities have initiated induction programmes for their emerging scholars to provide support and assist them in understanding their new roles in academia. For example, Malaysia's top-ranked University of Malaya supports ECFs through its Emerging Academics Learning and Development programme, otherwise known as the EmeraLd programme. EmeraLd provides early career learning and development in core competencies required of an academic career: teaching and learning (including blended and e-learning), researcher development, student supervision, along with leadership development and promotion of well-being (Academic Enhancement and Leadership Development, 2016). The EmeraLd programme includes a welcome briefing meet-up that serves as a foundation for peer-mentorship and inter-faculty networking. Similarly, the Faculty Learning Community (FLC) model was initiated decades ago at Miami University, USA, to provide support for their ECFs (Cox & Richlin, 2004), and a range of other

mentorship and ECF development models can be found in many universities around the world.

The above discussion represents only a qualitative sampling of existing research on ECFs, and a larger scope of analysis of the wider body of academic work on ECFs might point to other pressing issues concerning ECFs, knowledge of which would benefit universities, higher education policymakers, and authorities in their planning and decisions regarding academic faculty. In particular, a bibliometric analysis of scholarly output and research impact of ECFs-related literature would offer a useful tool for such analysis.

Bibliometric analysis is a quantitative method of analyzing publication rates, citations, impact factors, and other bibliographic data with the goal of unearthing publication trends and relationships. Bibliometric analysis is useful for examining research and publication output in particular disciplines or measuring the extent of scholarly attention given to a particular topic, e.g., ECF. In the field of higher education studies, bibliometric analysis is an emergent method for examining researcher profiles and careers (Besselaar & Sandström, 2015; Nane et al., 2017) as well as citation patterns (Azer, 2015; Calma & Davies, 2017; Martin-Martin et al., 2017). There still remains, however, the lack of a comprehensive international bibliometric analysis of ECF research and publication to highlight key issues of concern regarding ECFs and, as discussed earlier, such data could be useful for stakeholders and strategic planners who deal with faculty talent in higher education.

This study examines the trend of ECF research over the last two decades, comparing scholarly output and research impact across the globe captured in two major global academic databases, viz., Thomson Reuters (presently Clarivate Analytics) Web of Science (WoS) and Scopus Elsevier, both offering a wealth of knowledge that can serve as input for strategic direction, not only for academic/scientific researchers but also for government institutions and corporations (e.g. Elsevier, n.d.).

This paper explores longitudinal trends of research and publication on ECFs, and subsequently highlights key topics related to ECFs as well as identifying and offering conclusions and recommendations about the regions and countries most actively engaged in research and publishing data regarding ECFs.

METHODS

Phase I: Identification of Keywords

To identify keywords similar to “Early Career Faculty (ECF)”, the first phase of this study was a qualitative survey of academicians, followed by a moderation meeting of the paper’s authors to finalize the keyword list and check it against existing publications.

Using a non-probability convenience sampling method, the authors distributed a Google Form questionnaire to a group of 60 experts, Directors and Deputy Directors of teaching and learning centres of 20 public universities, responsible for planning and managing training for academics in their own universities. The questionnaire was

distributed via email, social media, and instant messaging services (e.g., WhatsApp). The survey questionnaire form briefly introduced the study, informing respondents that the survey’s aim was to identify relevant keywords or alternative terms applied to ECFs. The questionnaire comprised two questions. The first listed nine keywords or alternative terms for ECF, and respondents were asked to select one or more of these keywords they would use if they were conducting an academic search for the term “Early Career Faculty”. The second open-ended question asked respondents for other keyword suggestions. Fifty-two experts responded (an 86.7% return rate), and 35 provided additional keyword suggestions. Figure 1 shows the list of keywords resulting from the survey.

As indicated in Figure 1, while “Early Career Academics”, “New Lecturers”, and “Early Career Faculty” were the most popular terms selected as keywords for ECF, other keywords also received a substantial number of votes. In addition to selecting preferred keywords from the original list of terms, respondents also suggested the new ECF keyword terms shown in Table 1.

After a moderation meeting, the authors of this paper agreed that the keywords shown in Table 2 would be used as search terms to compile bibliometric records of ECFs-related publications from Web of Science Core Collection (WoS) and Elsevier Scopus (Table 2). Finally, all possible variations of the keyword sets were converted into search queries. For example, “university lecturers” was transformed into “universit* lecturer*” to increase the number of search engine hits.

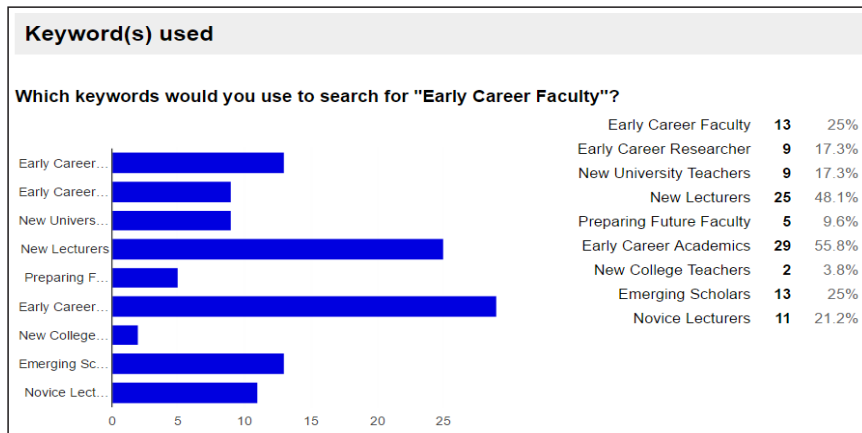


Figure 1. Diagram of results from the online survey

Table 1
Alternative keywords for Early Career Faculty (ECF)

Suggestion	Frequency
Young lecturers	5
Young academics	3
New academics	5
New faculty	1
Assistant professor	1
Novice academicians	1
Early potential educators	1
Fledglings	1
Young scholars	1
Young researchers	1
Emerging faculty scholars	1

Table 2
Keywords used to search WoS and Scopus for ECF-related records

Keywords		
New college instructor*	Universit* lecturer*	New* academic
New college professor*	New lecturer*	Novice academic*
New college lecturer*	Prepar* future facult*	New academic*
New college* teacher*	Novice lecturer*	Young lecturer*
New college* facult*	Emerg* scholar*	New* academic*
Young college teacher*	Novice faculty*	Novice academic*
Early career faculty	New faculty*	New academic* staff*
Early career researcher*	College instructor*	Young scholar*
Early career academic*	Young* academic*	Young researcher*
Universit* teacher*	Young lecturer*	Young academician*

Phase II: Data Collection Procedure

In the second phase of this study, based on the finalized and validated keywords identified in the first phase, data related to relevant publications were extracted from two well-known academic databases, viz., the WoS and Scopus. Data collection took place in February 2017 from access points at the University of Malaya, a research university in Malaysia that subscribes to both the WoS and Scopus databases. A total of 826 documents were retrieved from WoS, with 1071 retrieved from Scopus for

the same search queries, resulting in a total number of 1897 records from the two main databases. Figure 2 is a flow chart of the retrieval process.

Data Screening

All 1897 records were screened before further analysis. In the first screening step, all records from WoS and Scopus were integrated into one Excel sheet, with duplicated records removed from the list. After duplicates had been removed, a total of 1439 records remained for analysis.

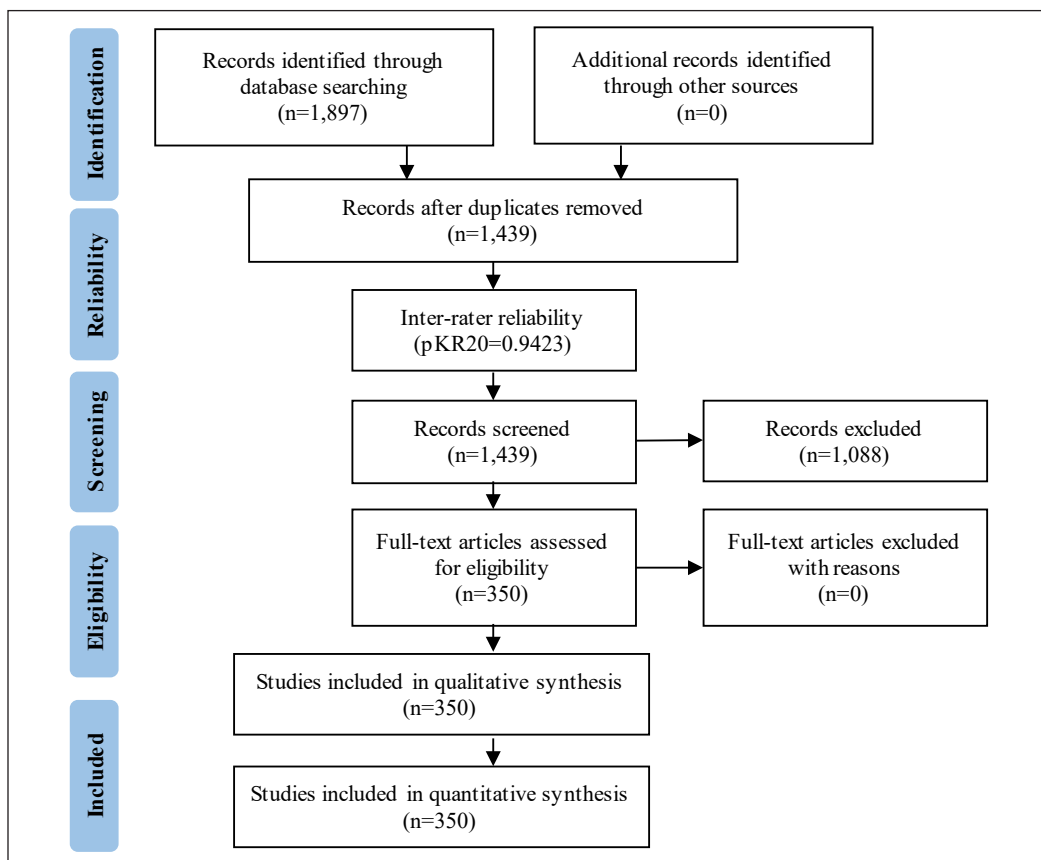


Figure 2. A flow diagram of the study methodology

Inclusion and Exclusion Criteria

To qualify as a record to be included in the bibliometric analysis, a document had to satisfy all the following criteria: 1) be listed in either WoS and/or Scopus databases; 2) include an abstract and full text; 3) be a research study conducted within the context of higher education.

Inter-rater Reliability

Ten articles were randomly selected and distributed to all nine authors of this paper, and each scrutinized the title and abstract of each article to determine its eligibility based on the inclusion and exclusion criteria detailed above. An article to be included in the bibliometric analysis would be marked with 1, while an article to be excluded would be marked with 0.

A scale or test is considered reliable to the extent that repeated measurements made under constant conditions produce the same

result (Moser & Kalton, 2017). Inter-rater reliability evaluation in which data were independently coded and compared for the agreement was performed. Subsequently, all records were compiled and the Kuder-Richardson Coefficient of Reliability (K-R 20), a test checking for internal consistency of measurements with dichotomous choices, was used to check for inter-rater reliability. The result, presented in Table 3, was 0.9423 (> 0.8), representing nearly complete agreement, indicating that all nine researchers were in strong agreement regarding the determination as to whether a document should be included or excluded from the analysis, so no further refining of criteria or coder training was needed.

Eligibility

Subsequently, all 1,439 articles (with title and abstract) were randomly distributed to the nine authors for screening under the

Table 3
Results of the degree of agreement between experts (Kuder-Richardson Coefficient of Reliability (K-R 20) test)

	Researcher 1	Researcher 2	Researcher 3	Researcher 4	Researcher 5	Researcher 6	Researcher 7	Researcher 8	Researcher 9
Article 1	0	0	0	0	0	0	0	0	0
Article 2	1	1	1	1	1	1	1	1	1
Article 3	0	0	1	1	0	0	1	0	0
Article 4	0	0	1	1	0	0	1	0	0
Article 5	1	1	1	1	1	0	1	1	1
Article 6	0	0	0	0	0	0	0	0	0
Article 7	0	0	0	0	0	0	0	0	0
Article 8	1	1	1	1	1	1	1	1	1
Article 9	1	0	1	1	1	0	1	0	0
Article 10	1	1	1	1	0	1	1	1	0

same inclusion and exclusion criteria used for the inter-rater reliability check. It was found that a majority of the documents, because they did not meet all four eligibility criteria, had to be excluded, resulting in 350 articles found to be relevant to ECF and eligible for bibliometric analysis.

DATA ANALYSES

The Trend of Publication for Both WOS and Scopus Databases During 1993 to 2017

The terms used to describe ECFs differed across regions. American-based journals tended to use the term ‘faculty’ for academic staff, and this designation had an impact on the metrics employed by the data search. In other parts of the world, especially in British and its commonwealth-based institutions, the term ‘faculty’ mostly refers to the collection of several schools within the university context, with the term ‘academics’ or ‘lecturer’ more prevalent in articles originating from this region.

Since work on ECFs emerged only in 1993, there were fewer than 10 ECF-generated publications between 1993 and 2010 in both databases, and some years

produced no ECF-related publications at all. Following 2010, however, the number of ECF-related publications in both databases began to rise, with the trend of publication in WoS reflecting a significant increment after 2012 (Figure 3), with the total number of related publications reaching 35 in 2016. In the Scopus database, the number decreased after 2012.

The overall trend is clear and indicates that since 2010, research and publications on issues affecting ECFs are increasing. Further analysis of the themes of publications post-2012 reflected a focus on issues such as preparation towards life in academia, motivation and challenges, support structures for ECR, and strategies to adapt to life as a faculty member. The increase in ECF-related publication is comparable between WoS and Scopus ($R^2 = 0.73$ & 0.82 , respectively), with the volume of work higher in Scopus because of the inherent nature of the databases.

Types of Document

Frequency analysis results related to the type of publication shows that the highest frequency for both databases belonged

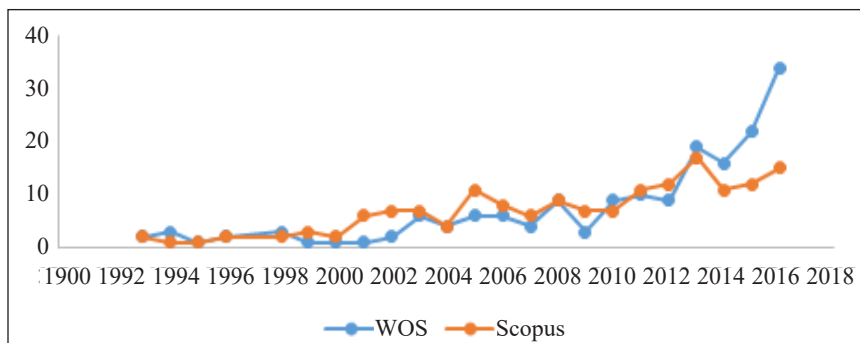


Figure 3. The trend of publication for both WoS and Scopus databases

to “articles” in both WoS (N=127) and Scopus (N=106), followed by proceedings papers, as seen in Figure 4. The frequency of review articles in Scopus (N=7) database was greater than that for WoS (N=1), with nearly 80% of the ECF-related work appearing in journal articles, conference papers, editorials, and reviews. It should be noted, however, that the search was limited to materials cataloged online.

Geographical Distribution for Publication

Geographical distribution of publications has become an interesting indicator of

the research productivity of individual countries, regions, or institutions, and the results related to geographical distribution of contributions in this field (Figure 5) indicates that the highest number of ECF-related publications originate from the USA (43%), followed by European countries (33%). The contribution of Asian countries was only 14%, while South American countries accounted for only 1% of the ECF-related research. This regional distribution of ECF-related research is indicative of general publication trends in most fields and disciplines.

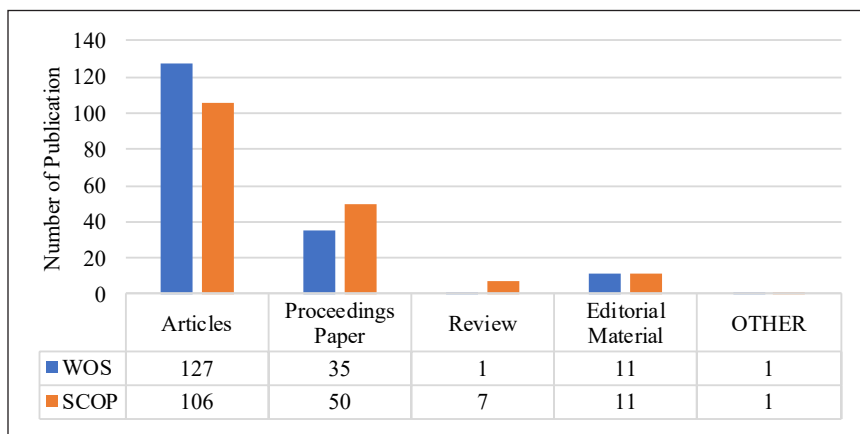


Figure 4. Type of document

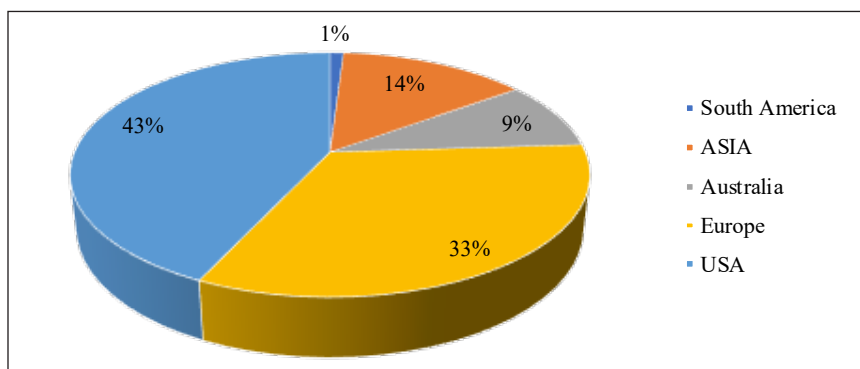


Figure 5. Geographical distribution of publication for both WOS and Scopus databases from 1993 to 2017

Top Ten Publications

A total of 20 authors contributed to the ten most-cited articles (Table 4), with the most frequently cited article, published in 1998 in the Scopus database, received 73 citations. According to the results for

articles published between 1998 and 2008, five frequently cited papers were found in WoS, and the other five were from the Scopus database, with eight out of the ten top publications published in educational journals.

Table 4

Top ten publications based on the total number of citations for both WOS and Scopus databases from 1993 to 2017

No	Author	Title	Year	Journal	Database	Citation
1	Boyle, P., Boice, B.	Systematic mentoring for new faculty teachers and graduate teaching assistants	1998	Innovative Higher Education	SCOPUS	73
2	Archer, L.	Younger academics' constructions of 'authenticity', 'success' and professional identity	2008	Studies in Higher Education	WOS	65
3	Schrodt, P., Cawyer, C. S., Sanders, R.	An examination of academic mentoring behaviours and new faculty members' satisfaction with socialization and tenure and promotion processes	2003	Communication Education	SCOPUS	46
4	Laudel, G; Glaser, J	From apprentice to a colleague: the metamorphosis of early career researchers	2008	Higher Education	WOS	35
5	Sorcinelli, M. D.	Effective approaches to new faculty-development	1994	Journal of Counselling and Development	WOS	34
6	Schenkein, H. A., Best, A. M.	Factors considered by new faculty in their decision to choose careers in academic dentistry	2001	Journal of Dental Education	SCOPUS	33
7	Brown, H. N.	Mentoring new faculty	1999	Nurse Educator	SCOPUS	26
8	Lewallen, L. P., Crane, P. B., Letvak, S., Jones, E., Hu, J.	An innovative strategy to enhance new faculty success	2003	Nursing Education Perspectives	SCOPUS	25
9	Warhurst, R. P.	Cigars on the flight-deck': new lecturers' participatory learning within workplace communities of practice	2008	Studies in Higher Education	WOS	25
10	Siler, B.B., Kleiner, C.	Novice faculty: encountering expectations in academia	2001	Journal of Nursing Education	WOS	25

The top five most-cited publications discussed mentoring and institutional support for ECFs across a variety of geographic regions, and the geographical distribution of ECF-related work indicates that discussion on the issues affecting ECFs is universal.

Visualizing Subjects Across Databases

Figure 6 provides an overview of the frequency of different subjects and keywords across the 170 WoS subject categories. In general, closeness in the location of two subject categories reflects the strength with which they are related to one another, while the size of a subject category reflects the number of publications on the subject. The colour ranges from blue to red to indicate time of publication of the subject category, with blue representing earlier publication and red representing a more recent publication. As shown in Figure 6, earlier-published work on ECF in the WoS

database tend to be closely related to issues concerning faculty”, “faculty member”, “program”, and “career”, while in more recent publications, the ECF publications in WoS were more actively related to “early-career academic”, as indicated by “ECA” and “ECAS”.

Figure 7 shows resources in the Scopus database more actively related to “Faculty”, “New faculty”, “program” and “career” for early publications, and “Early career researcher”, “Young researcher” and “Education career” for more recent publications. This finding also revealed that publications in WoS were more focused than Scopus on ECFs.

Publications after the year 2012 focused more on issues related to ECFs preparation towards life in academia, their motivation, and challenges, the support structure for ECFs and strategies to adapt to life as faculty members.

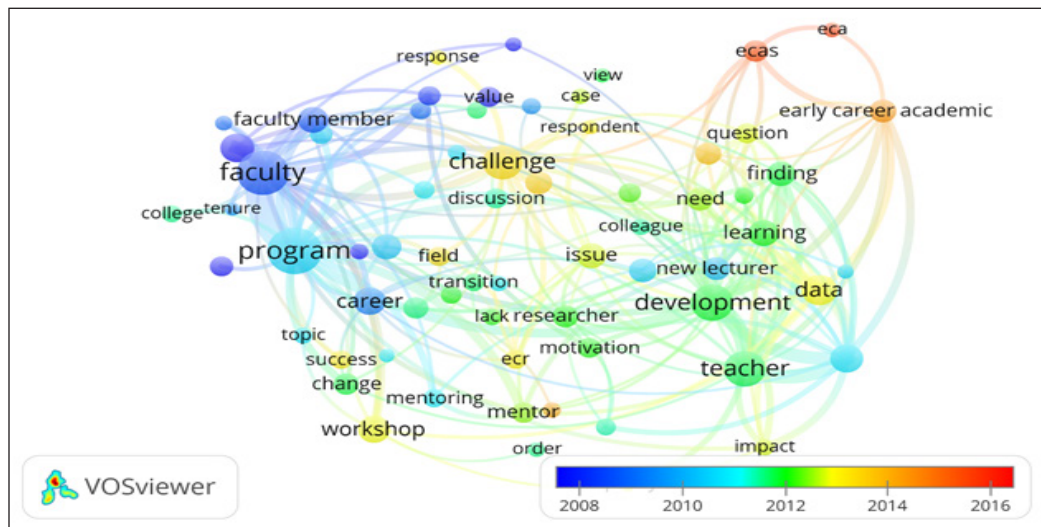


Figure 6. Visualization Map of articles during 1995 – 2017, bibliographic coupling, ECF in WoS

vast Asian region accounting for only 14% of ECF-related research and publication, compared to 33% and 43% from Europe and the USA, respectively; the top 10 most-cited publications originated from western countries. Because cultural factors may differ, review outcomes reported in western countries, essentially generic in nature, may not be applicable to the Asian continent, even though it dominates with respect to knowledge-related trends and can offer concluding insights on this topic as a whole. In other words, potential policies derived from the literature established for ECFs in higher learning institutions must take into account local context and require thorough needs and literature analyses in its support. This highlights the need to encourage publications on ECF-related issues among higher education institutions in other regions, including Asia and South America.

It is important to note that dissemination of ECF-based findings from these other regions may be published in non-WoS or non-Scopus indexed databases, so this study may have underestimated the overall number of publications. Acknowledging this fact, the authors propose that localised research on ECFs that may have been published as non-indexed conference proceedings or on local dissemination platforms be documented, compiled, or written as review papers to be published in the mainstream database. This would create better access to those findings and provide direct input to policy-making with respect to addressing ECF issues.

The results of this study require interpretation within the constraints of several possible limitations. Looking at the WoS and Scopus databases, since the literature documented and reported are dated only from 1993, the overall number may have been underestimated not just because they were locally published and not captured in the databases. Keywords used to identify and categorize publications for analysis also may not comprehensively cover all possible keywords that describe ECFs, and publications using different terms to describe ECFs may have been unintentionally omitted. Given that survey respondents and co-researchers are from the same country and institution, it is possible that ECF terms used in other regions and educational settings may have been unintentionally omitted. However, it is felt that the international and cross-institutional exposure and linkages (worldwide), as well as the educational background of the co-researchers (US, UK, Australia, and the Middle East), are broad enough to mitigate this effect.

The impact of a publication is currently represented through its number of citations, and cooperation based on co-authorship may be useful in identifying and reflecting upon the potential of cross-region influences, making the publication outcome more normalized by region. While complementing bibliometric analysis in the future might show a clearer impact, it may be more accurate to gather the influence of such publications in other non-indexed publications such as institutional guidelines

or national policies and disseminations on other platforms.

Furthermore, it is also highly likely that faculty and ECF-related data are not reported anywhere and remain unanalysed and uncaptured. University personnel or human resource (HR) departments where faculty job applications and career progressions are processed would be cases in point. In addition to salary, hiring, resignation, and termination records, personnel/HR departments may also have in their possession records that document faculty training and development, movement within schools, vacation-day records, conference participation, research leaves, and sabbaticals. Faculty complaints and grievances may also be found in personnel HR files, and some universities may even keep faculty-related medical physiological and psychological records.

In addition to personnel/HR departments, in many universities faculty, professional development centres (PDCs) maintain records related to faculty training and development, and it is likely that ECFs make up a large fraction of faculty who attend training and higher education (HE) postgraduate certification programs at these professional development centres. Within these unreported and possibly unanalysed records reside large quantities of potential data for widening our current knowledge about ECFs. Universities and other stakeholders seeking to gain a more thorough understanding of ECF may in future studies do well to incorporate bibliometric analyses with big data analytics based on non-published records.

Bibliometric analysis of ECF-related publications combined with big data analyses could be useful for informing the bigger picture. ECF-related research and publication can provide descriptions, analyses, critiques, predictions, and suggestions pertaining to ECFs, and the increasing trend of ECF-related publication reflects a healthy concern toward the betterment of young faculty members worldwide. Attention to ECF-related bibliometric analyses and future big data analyses could be highly useful for all stakeholders concerned with nurturing ECF-related talent to make the most of the educational investment they represent. At the very least, bibliometric analyses such as those featured in this paper can offer useful information for better selection, training, mentoring, and support of ECFs.

Notwithstanding the dissemination of ECF-related data and analysis through non-academic platforms and unreported data residing in non-scholarly systems, it is fair to conclude from the publication data in WoS and Scopus that countries and institutions producing scholarly ECF-related outputs are possibly more advanced in their awareness of ECFs trends and issues. While the authors of this study cannot extrapolate the thought that research on ECFs is necessarily related to national policy or organizational practices that support ECFs, its assumption has enough validity to warrant consideration. Momentarily putting aside the uses that such countries and institutions may make of such knowledge, one can argue that higher-education ministries/agencies and

higher-education institutions lacking in ECF-related data within their own spheres of influence could turn to the existing data from other systems and institutions to aid in policy formulation and decision-making. External data also offer a reasonable starting point for discussion of possible issues for investigation and variables for examination as they begin collecting their own ECF-related data.

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