Appendix 3: New models and metrics for assessing an individual researcher's achievement (2007-2017)

First author	Year	Journal name	Level	Metric or Model	Name	Basis	Description
Anderson	2008	Scientometrics	Researcher	Metric	Tapered h-index	h-index	It accounts for the tapered distribution of citations.
Aragon	2013	Nature Scientific Reports	Both	Metric	Scientist impact (Φ)	Author contributions and citation counts	Instead of the total number of citations, the proposed measure Φ (Scientist Impact) aims at discerning the genuine number of people (specifically lead authors) the paper (or first author) has had an impact upon by removing self-citation. In other words, Φ aims at measuring the paper's reach.
Assimakis	2010	Scientometrics	Researcher	Metric	The Golden Productivity Index	Author contribution and publication count	A rank dependent index that measures the productivity of an individual researcher by evaluating the number of papers as well as the rank of co-authorship. It emphasizes the first author's contribution.
Bai	2016	PLOS One	Researcher	Metric	COIRank algorithm	Network analysis	Quantifies scientific impact by reproducing the accumulated COI relationship in the scientific community. COIRank focuses on improving PageRank though setting a weight for PageRank algorithm and promotes the performance in identifying influential articles. It therefore accounts for self-citation and citation by others at the same institution.
Belikov	2015	f1000 Research	Researcher	Metric	L-index	h-index and author contribution	Accounts for co-author contribution by designating citations to each individual author according to their order on a paper. It also considers the age of publications, favoring newer ones. However, if a scientist has made a significant scientific breakthrough and ceases publications, his or her L-index will remain high regardless. It ranges from 0.0-9.9.
Bini	2008	Electronic Transactions on Numerical Analysis	Both	Metric	Information not available	Citation count	Proposes to integrate models for evaluating papers, authors, and journals based on citations, co-authorship and publications. After the one-class model for ranking scientific publications, they introduced the two-class model which ranks papers and authors, and the three-class model for ranking papers, authors, and journals.

Bloching	2013	South African Journal of Science	Article	Metric	TAPSIF-temporally averaged paper-specific impact factor	Citation count and IF	Calculated from a paper's average number of citations per year (including the publication year) combined with bonus cites for the publishing journal's prestige–which is taken as the journal impact factor from the publication year. Annual TAPSIF values of all the papers by an author can be combined to measure the overall scientific relevance of that author (temporally averaged author-specific impact factor TAASIF).
Bollen	2016	Scientometrics	Researcher	Model	Equal Allocation Model	Peer-review	A novel model in which each researcher is allocated funding and is required to donate a proportion of that funding to other researchers--hence uses crowd wisdom to fund scientists.
Caminiti	2015	BMC Health Services Research	Researcher	Metric	Information not available	Citation count	This work in progress suggests a mixture of 12 easily retrievable indicators (bibliometric and citation parameters, as well as "hidden" activities such as teaching, mentoring etc). The weighting system was constructed considering the hypothesized effort for all indicators. The chosen indicators and attributed scores still remain to be validated. Modified from Wooton, Health Res Policy Syst. 2013;11:2; Smith, Br Med J. 2001;323(7312):528–8.; and Mezrich J Am Coll Radiol. 2007;4(7):471–8.
Castelnuovo	2010	Clinical Practice & Epidemiology in Mental Health	Researcher	Metric	Single Researcher Impact Factor	IF	This metric takes into account publications (journal articles, books, oral and poster presentations in scientific meetings); products (e.g., software, CD-ROM, videos, databases); and activities (reported scientific activities such as scientific positions or positions in conferences organization, participation in journal editorial boards, activities on human resources education, and participation in international funding projects). Minimum and maximum values are assigned to each task for national and international impact.
Claro	2011	Scientometrics	Researcher	Metric	The x-index	IF and author contribution	Aims to enable cross-disciplinary comparison and uses indicators of both quality and quantity, taking into account the number of publications a researcher has published, and then calculating a publication score for each. This considers number of authors on the paper and the journal's 5-year impact factor; it is also normalized by the journals in which the author tends to publish (rather than top-down classification of a field). Also uses a co-authorship share coefficient. Therefore, aims to determine relative contribution to a paper and normalize by field. While requiring only modest data extraction and processing efforts, it is not based on individual article citations but that of the journal (JIF), which can have limitations.

Cordero-Villafafila	2015	Revista de Psiquiatría y Salud Mental (English Edition)	Both	Metric	RC Algorithim	IF	The first English-language publication of this metric, it quantitatively evaluates the personal impact factor of the scientific production of isolated researchers. It also an individual form (RCγ) and group form (RCγG), and is able to assess personal impact of individual publications, 2 or a group of them. It also provides a procedure to classify research centers of different types based on the impact (FRCγG) made by their results amongst researchers of the same field. One of the limitations of the RC algorithm is, precisely, its dependence on said bibliographic databases, which have a strong pre-eminence of studies published in English.
Crespo	2015	PLOS One	Other	Metric	Exchange Rate	Citation count	This is an average-based indicator that is used to explore differential citation rates between disciplines by using it as a normalization factor. It is not suitable for assessing individual researchers but provides insight into comparison across disciplines.
De Witte	2010	Scientometrics	Researcher	Metric	RES-score - Research Evaluation Score	Data Envelopmen t Analysis	Authors present a methodology to aggregate multidimensional research output, using a tailored version of the non-parametric Data Envelopment Analysis model. This they claim is a more accurate representation of a research performance.
Delgadillo	2016	Family & Consumer Sciences Research Journal	Both	Metric	HLA-index	h-index	This index, actually originally published in a book by Harzing (2011), normalizes the h-index to take into account career stage and discipline.
Dodson	2012	Biochemical and Biophysical Research Communications	Researcher	Metric	SP-index	IF	This metric is said to quantify the scientific production of researchers, representing the product of the annual citation number by the accumulated impact factors of the journals in which the papers are published, divided by the annual number of published papers.
Duffy	2008	Journal of Counseling Psychology	Both	Metric	IRPI - Integrated Research Productivity Index	Citation count	This metric statistically combines an individual's author-weighted publications (AWS), average times cited by other publications (MC), and years since first publication (Y) into a comprehensive score, calculated as (AWS x MC)/Y. It thereby accounts for differences in career length.
Ebadi	2016	Scientometrics	Researcher	Model	iSEER	Machine learning	An intelligent machine learning framework for scientific evaluation of researchers (iSEER) considers various "influencing factors of different types" (e.g., funding, collaboration pattern, performance such as quantity and impact of papers, efficiency). It can be used as a complementary tool to overcome limitations in peer-review.

Ekpo	2016	Journal of Medical Imaging and Radiation Sciences	Researcher	Metric	TotalImpact	Author contribution, publication count and citation count	For each of the authors, the total number of publications in peer-reviewed journals (P), total number of citations (C), international collaboration metrics, number of citations per publication (CPP), h-index, and i10-index are extracted (using SciVal). This metric assessed whether authors were leading the research or coauthoring by judging their position in the list of authors for each article. Authors listed as first, second, or last (FSL) were classified as lead researchers, and those listed in-between as coauthors. Each author's total impact was then quantified by: TotalImpact=P×C×FSL.
Franceschini	2012	Scientometrics	Both	Metric	Information not available	Citation counts and h-index	A study specific measurement that includes the number of publications/patents and their citations and also quantifies average number of co-authors relating to publications/patents of one researcher (an indicator of tendency for co-authorship). It also uses the minimum and maximum years: the oldest publication/patent and the year relating to their latest one. This provide an indication of the temporal extension of the publishing or patenting activity of a researcher. They also use the most-cited is publication/patent of a researcher, representing the “jewel in the crown” in terms of impact/diffusion. These metrics are also scalable to teams though, where the h-spectrum is h-values to a group of researchers (including average and medium), and the h-group is the h-index of the union of publications patents associated with publications/patents.
Franceschini	2012	Scientometrics	Researcher	Metric	The Success-Index	Citation counts, NSP-index by Komulski (2011)	This metric is based on Komulski's (2011) NSP (number of successful papers) index, with the exception that for each publication the comparison term is sometimes replaced by a more appropriate indicator of propensity to cite, determined on the basis of a representative sample of publications. While it is more complicated than the original, it is insensitive to differential propensity to cite and therefore suitable for comparisons between authors of different fields.

Frittelli	2016	Journal of the Association for Information Science and Technology	Researcher	Metric	SRM - Scientific Research Measures	h-index and calculus	Proposes a novel class of measures (SRM) based on calculus principles that rank a scientist's research performance by taking into account the whole citation curve of a researcher (their performance curve - number of citations of each publication, in decreasing order of citations). The performance cures can be chosen flexibly (e.g., to reflect seniority, characteristics of a field). They extend this idea by proposing Dual SRMs, which are based on theories of risk-measures. It better distinguishes researchers with the same citation curve.
Gao	2016	PLOS One	Both	Metric	PR-index - PageRank Index	Network analysis and h-index	This metric uses PageRank score calculation combined with h-index calculation to measure author impact. It considers publication and citation quantity but also takes a publication's citation network into consideration. This means the index will rank majority authors higher by applying PageRank based on the publication citation relationship (distinguishing higher quality citations from lower ones).
Han	2013	Institute of Strategic Studies Islamabad	Both	Metric	New Evaluation Index	Network analysis	The new evaluation index takes into account direct and indirect references, direct and indirect citations, and citation network.
Holliday	2010	International Journal of General Medicine	Article	Model	Modified Delphi technique of peer-review	Peer-review	This paper reports using the modified Delphi process to appraise and rank research applications, with experts rating each application's scientific merit, originality, the adequacy of the study design to achieve the research goals, and whether the potential impact of the study would warrant its funding. While its ease of administration, reproducibility, and accessibility makes this a useful adjunct to the traditional processes of grant selection, it does not directly assess individual researcher's but their work.
Hutchins	2016	PLOS Biology	Both	Metric	iCite	Citation count	This is used for individual articles and normalizes their citation score by adding in co-citation metrics.
Ibrahim	2015	New Library World	Both	Metric	Hx	h-index and author contribution	This metric is a hybridization of two indicators based on the individual h-index (weighted by the average number of co-authors for each paper) and h-index contemporary weighted by qualitative factors (conferences and journal in which a researcher participated or published). It accounts for the period of citations and number of authors on a paper, is applicable at all levels and for any discipline of research, takes conferences into consideration, and is thought to reduce unscientific practices such as integration of authors who have not genuinely contributed.

Ioannidis	2016	PLOS Biology	Researcher	Metric	Composite	Citation count, h-index and author contribution	A study-specific composite metric based: on total number of citations in, for example, 2013 (NC), total number of citations received in 2013 to papers for which the researcher is single author (NS), total number of citations received in 2013 to papers for which the author is single or first author (NSF), total number of citations received in 2013 to papers for which the researcher is single, first, or last author (NSFL). Added to these are the h-index and modified h-index. The indicators are standardized (NC, H, Hm, NS, NSF, NSFL), giving each a standardized value from 0 to 1, where 1 is given to the researcher with the highest raw value for the respective indicator. The six standardized indicators are then summed to generate the composite index C. Well-tested and validated using factor analysis, which yielded two factors: bulk impact (NC and H), author order and co-authorship-adjusted impact (Hm, NS, NSF, and NSFL).
Iyendar	2009	Academic Medicine	Researcher	Model	RD - Research Density and Individual Impact Factor	IF	RD measures the ability to obtain grants at a point in time, while IFF reflects the quality of research. The adopted methodology compares the impact factor of an investigator's articles with those of the top journals within their own field. Each investigator identified the top three journals in his or her field. The average impact factor of these three journals was used as the benchmark for that investigator. Each faculty member was then asked to calculate his or her own individual impact factor (IIF) for two consecutive years, using 75% of their benchmark as target. This benchmark was selected after reviewing results of comparisons of investigators' IIFs with their self-defined benchmarks at several multiples (50%, 75%, and 100%). We used 75% of the self-defined benchmark as the target, because it is unlikely for every paper to be published in the best journal in the field, and yet 75% reflects the reasonably high standard of the research quality that MSSM strives for. The data were collated and the IIF of each faculty member was computed as the ratio of his or her impact factor to 75% of his or her self-defined benchmark, expressed as a percentage.
Jeang	2008	Retrovirology	Researcher	Metric	Mentoring Index	h-index	Argues that good mentoring should be a significant consideration of one's contribution to science. It focuses on using the h-index of previous trainees in evaluating established researchers. It is thought this index could encourage the development of long-lasting mentoring relationships.

Krapivin	2009	Complex Sciences	Both	Metric	PaperRank and PR-hirsch	Network analysis and h-index	Based on PageRank, which has been very successful in ranking web pages, essentially considering the reputation of the web page referring to a given page, and the outgoing link density (i.e., pages P linked by pages L where L has few outgoing links are considered more important than pages P cited by pages L where L has many outgoing links). PaperRank (PR) applies page rank to papers by considering papers as web pages and citations as links, and hence trying to consider not only citations when ranking papers, but also taking into account the rank of the citing paper and the density of outgoing citations from the citing paper. The PR-Hirsch is a modification of the H-index based on the same PageRank approach. PR and PR-Hirsch are complementary to citation-based metrics, capable of capturing information present in the whole citation network, namely the "weight" (the reputation or authority) of a citing paper.
Kreines	2016	Journal of Computer and Systems Sciences International	Article	Model	Information not available	Citation count and IF	Proposes a model for assessing quality in the content of individual articles using computational analysis with bibliometric and scientometric data (number of citations and the journal's IF).
Lando	2014	PLOS One	Article	Metric	-index	h-index	This index considers the most elite papers and rewards papers of high impact and based on the form of the citation distribution. It is thought to outperform the h-index in terms of accuracy and sensitivity to the form of the citation distribution, while being strongly correlated with other important h-type indices. It rewards the more regular and reliable researchers.
Liang	2015	IEEE International Conference on Smart City/SocialCom/ SustainCom	Both	Model	Temporal tracking model		The temporal research evolution model takes into account individual output, researcher profile and experiences

Lippi	2017	Annals of Translational Medicine	Researcher	Metric	SIF-Scientist Impact Factor	IF	This metric is calculated as all citations of articles published in the two years following the publication year of the articles, divided by the overall number of articles published in that year. For example, the SIF for the year 2017 would be obtained by dividing all citations in the years 2015–2016 to articles published in the year 2014, divided by the overall number of articles published in the year 2014. The total number of recent citations is normalized according to the number of recently published articles, limiting the bias emerging from publishing a large number of scarcely cited articles; and the output measure reliably reflects the recent scientific impact of the scientist, so complementing an overall career indicator, such as the h-index.
Markpin	2008	Scientometrics	Other	Metric	ACIF - Article-Count Impact Factor	IF	This is proposed as a journal-level metric that is calculated as the total number of articles cited in the current year divided by the number of articles published in 1st and 2nd year. Note that is based on the number of articles that were cited, rather than the times cited of the cited articles. However, it could be used for individual researchers.
Matsas	2012	Brazilian Journal of Physics	Both	Metric	NIF - Normalized Impact Factor	IF	Introduces a normalized impact factor that looks at the researchers influence on their scientific community by assessing the degree to which they have been influenced by their community. Looks each of an author's publications, the number of co-authors, references in the article and citations it has received. From the way it is calculated: "in a closed community of identical individuals (i.e., who publish, reference and are cited by each other at the same rate), all members have NIF = 1." Leaders in a field are then those with a NIF greater than or equal to 1 i.e., they influence their peers at least as much as they are influenced by them.
Maunder	2007	La Revue Canadienne de Psychiatrie	Article	Metric	Citation Ratio	Citation count	This metric is designed to overcome systematic differences amongst niche fields by comparing the impact of a particular paper to the average impact of a paper in its journal. A ratio above 1 indicates relatively greater success.
Mazloumian	2011	PLOS One	Article	Metric	Boost Factor	Citation count	This metric calculates when a particular research gains scientific authority, that is, they publish some groundbreaking work that then leads to an upswing in citations of their earlier papers. It is able to model the trend of the "rich get richer", a cascade of citations and is too improve the "signal-to-noise" ratio in citation rates by detecting sudden changes in citations.

Milone	2016	American Journal of Orthopedics	Article	Metric	Information not available	Publication count	A study specific measurement simply calculated by taking the mean of first and last authored publications.
Mooji	2014	Scientometrics	Both	Model	Information not available	Peer-review, altmetrics, citation count	This paper proposes a comprehensive and new framework for assessing research quality assessment which utilizes intrinsic (i.e., the internal quality of a publication) and extrinsic indicators (i.e., citation counts, web-based influence). It uses peer-review ratings for the former and bibliometric and altmetric data at the individual article and author levels for the latter. One limit includes that the assessment of extrinsic factors is still biased in terms of multi-author papers. This framework builds in a quality check on peer-review.
Moreira	2015	PLOS One	Researcher	Metric	μ	Information not available	Suggests accumulated citations from an author's aggregated publications follow an asymptotic number, and then use a lognormal model. Creates μ as a scale of expected citability of a researcher's publication. It is able to be used at all career stages and indicates more of quality over quantity.
Morel	2009	PLOS Neglected Tropic Diseases	Researcher	Metric	Information not available	Network Analysis	Co-citation networks generated using SNA of publications, to identify groups and individuals with high collaboration rates.
Niederkrotenthaler	2011	BMC Public Health	Article	Model	Information not available	Information not available	A tool designed to measure the societal impact of research publications. It consists of three quantitative dimensions: (1) the aim of a publication, (2) the efforts of the authors to translate their research results, and, if translation was accomplished, (3) (a) the size of the area where translation was accomplished (regional, national or international), (b) its status (preliminary versus permanent) and (c) the target group of the translation (individuals, subgroup of population, total population).
Nosek	2010	Personality and Social Psychology Bulletin	Researcher	Metric	Ics-Individual researcher career-stage impact	Citation count	Produces career-stage metric of scientific impact based on citation counts. Its development was based on extensive data collection to produce a regression of expected growth of impact over time. It, therefore, reflects the distance from one's expected impact at a given career stage.
Pagani	2015	Scientometrics	Article	Metric	Methodi Ordinatio	IF	Based on IF, number of citations and year of publication in a normalized, weighted mathematical equation. It is a potential way to define scientific relevance.

Pan	2014	Science Reports	Researcher	Metric	Author Impact Factor (AIF)		Defined as the AIF of an author A in year t is the average number of citations given by papers published in year t to papers published by A in a period of Δt years before year t. Uses a time window of years for calculation.
Patel	2013	Journal of the Royal Society of Medicine	Researcher	Model	sRM - statistical Regression Model	Citation count	Used to estimate the number of high visibility (based on citation count) publications of each researcher.
Pepe	2012	PLOS One	Researcher	Metric	TORI - Total Research Impact	Citation count	Includes non-self-citations accrued by the researcher, number of authors on cited paper, and number of bibliographic references to generate the cumulative output of a scholar by summing the impact of every external citation accrued in his/her career. This removes biases associated with citation counts.
Petersen	2013	Journal of Informetrics	Researcher	Metric	Z	h-index	Z is aimed at correcting the h-index's penalty (which in some cases neglects 75% of an author's body of work) by including the total number of citations for their work in the metric.
Põder	2017	Trames-Journal of the Humanities and Social Sciences	Researcher	Metric	(Current or predicted) impact rate of researcher	Citation count	Based on the citations per year squared, this metric provides a means of assessing acceleration/impact and is based on time series data. This is more sensitive to productivity overtime and can go down unlike the h-index.
Prathap	2014	Scientometrics	Researcher	Metric	Z-index	h-index	Purporting to include quality, quantity and consistency, it accounts for the high-end of research performance, while compensating for the skewness of citation-publication distributions.
Radicchi	2008	Proceedings of the National Academy of Sciences of the United States of America	Article	Metric	Relative Indicator - cf	Citation count	The relative indicator is used to deal with the fact that different fields have different citation patterns and allows for comparisons of the success of articles in different fields.
Ribas	2015	Proceedings of the 24th International Conference on World Wide Web	Both	Metric	P-score	Citation count	It associates a reputation with publication venues based on the publication patterns of reference groups, composed by researchers, in a given area of knowledge. Although the choice of reference groups can be made by using available citation data, the P-score metric itself does not depend on citation data. It uses just publication records of researchers and research groups; that is, the papers and the venues where they published in.

Ricker	2009	Interciencia	Researcher	Model	Rule-based peer-review	Peer-review	Computer generated peer-review, which is positive as researchers get peer-review feedback. Can also measure evaluators select certain criteria of interest, important journals of interest based on field.
Ruane	2009	Scientometrics	Both	Metric	h1-index	h-index	A measure of supervision quality, it gives the supervisor h1 index calculated by the h-indexes of their PhD students.
Sahoo	2017	Omega	Researcher	Model	Composite indicator	h-index, IF, citation counts	Calculated based on the relative weight of the six indicators of journal tier, total citations, author h-index, number of papers, impact factor, and journal h-index.
Saxena	2013	Journal of Pharmacology Pharmacotherapeutics	Researcher	Metric	ORPI - Original Research Publication Index	Citation count	Indicates originality, productivity, and visibility, by including total number of original articles, citations, accounting for self-citations, and the total number of citable articles (i.e., including reviews and case reports). Also accounts for author order and career length.
Sibbald	2015	Journal of the Medical Library Association	Both	Model	Modified approach to citation analysis	Citation count	Includes grey literature in the citation analysis search process and involves quantitative and qualitative methods of analysis to gain a better understanding of how a research paper was used. However, this is more expensive and time consuming than traditional metrics.
Sittig	2015	MEDINFO 2015: eHealth-enabled Health	Researcher	Model	The Biomedical Informatics Researchers ranking website	Information not available	This new system was developed to overcome previous scientific productivity ranking strategies. However, it is limited to biomedical informatics.
Sorenson	2011	Journal of Parkinson's Disease	Both	Metric	"Broad impact" citations	Citation count	Citations from those outside the field are used as a measure of broader impact.
Surla	2017	The Electronic Library	Researcher	Metric	Research Impact Factor	IF	Allows a measure of scientific influence of a researcher in their relative scientific area.
Szymanski	2012	Information Sciences	Both	Metric	CENTs - sCientific currENcy Tokens and the I-index	Citation count and h-index	An accumulation of "cents" based on the number of non-self-citations. This is also the premise behind the i-index, whereby papers a ranked according to CENTs rather than just all citations.

Tan	2016	The Annals of Applied Statistics	Article	Model	Information not available	Citation count	Proposes to use two established models in the creation of a third. The proposed model provides a structural understanding of the field variation in citation behavior and a measure of visibility for individual articles adjusted for citation probabilities within/between topics.
Vieira	2011	Scientometrics	Researcher	Metric	hnf-index	h-index	Considers the different cultures of citation of each field and the number of authors per publication, and hence can be used to measure researcher performance.
Wagner	2012	Research Evaluation	Researcher	Metric	I3 - Integrated impact indicator	Citation count	A framework for integrating citations and non-parametric statistics of percentiles, which allow highly cited papers to be weighted more than less-cited ones.
Waltman	2013		Article	Metric	HCP – Highly cited publications index	Citation count	A simple model in which the number of citations of a publication depends not only on the scientific impact of the publication but also on other 'random' factors. Does not account for productivity.
Wang	2013	Science	Article	Model	Mechanistic model for citation dynamics	Citation count	Authors demonstrate a predictable course for citations of single articles over time, purporting, therefore, to create more reliable predictive index of individual impact.
Williamson	2008	Family Medicine	Researcher	Metric	Information not available	Too broad to classify	Quantifies activities within three domains: teaching, service and research and scholarly activity. A time intensive- process that is suitable for promotion within institutions, but not grant funding or more macro-scale assessments.
Wootton	2013	Health Research Policy and Systems	Researcher	Metric	R - Simple indicator of researcher output		Formula is R=g+p+s and comprises grant income (g), publications (peer-reviewed and weighted by JIF; p) and numbers of PhD students supervised (no credit for submission after the due date of submission; s).
Yaminfirooz	2015	The Electronic Library	Both	Metric	mh-index	h-index	Use to identify differences in the impact of authors with the same h-index, and differences between the outputs of influential researchers working in a certain field and the ones publishing only a few papers during a year, can track the impact of highly cited papers.
Yang	2013	Journal of Informetrics	Researcher	Metric	A-index - Axiomatic approach	Citation count and author contribution	Allows for evaluation of individual researcher in the team context (i.e., co-authorship networks).

Zhang	2012	Scientometrics	Both	Model	Scientometric age pyramid	Information not available	Accounts for the different ages of academics, different fields, co-authorship patterns and analysis of journals. The pyramid represents the number of publications on one side and number of citations on the other side.
Zhou	2012	New Journal of Physics	Both	Metric	AP Algorithm	Citation count	Considers the prestige of the scientists citing the article but assumes equal contribution of each author to the paper.
Zhu	2015	arXiv	Researcher	Metric	The hip index - Influence-primed h-index	h-index	The hip-index weights citations by how many times a reference is mentioned, which is thought to make it a better indicator of researcher performance.
Zhuo	2008	Omega	Other	Metric	Z factor	IF	Uses both the number of publications and the impact factors of the journals in which they were published.
Zou	2016	Scientometrics	Researcher	Metric	S-ZP index	IF	Metric based on journal impact factor of publications and author order.
Zycxkowski	2010	Scientometrics	Both	Metric	C - Citation matrix	h-index	A scheme based on weighing the citation based on previous scientific achievements and authors citing the paper.