Inequality in knowledge production: bibliometric profiles of universities

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As the benefits of a knowledge-based economy become increasingly apparent around the world, so too does the prominence of inequality in knowledge production. One notable form of this inequality is the categorical difference between publications produced in the Global North versus those in the Global South. Universities as one of the main knowledge infrastructures and their identity being under crisis especially for those in the periphery trying to break into international markets driving isomorphic advantage. In this paper, we propose a conceptual approach to observe the discrepancy between image and identity by comparing university publication outputs between international and national bibliometric databases, with a focus on the representation of different disciplines. This approach highlights pockets of innovation in the natural sciences, as well as the lack of integration into international knowledge production for the social sciences and humanities, which are common characteristics for universities in the periphery.

1. Introduction

Would you rather buy clothes with “design in Italy” and manufactured in developing countries or without such label? Does the same logic apply to knowledge production and as to say: Would it matter if leading author of the scientific paper is from Ivy League university and other co-authors or all authors are not? Which ones will you wear, which one will you read? Would you argue that one is always of better quality and the “rich get richer” and existing inequalities in production and dissemination of knowledge is fair?

When this kind of drawn distinctions systematically favour the particular group we witness a categorical inequality (Tilly 2007). Attesting to existing inequality in knowledge production, naming practices for paper titles differ in Global North and Global South. Authors in the periphery need to be marked with geographic labels in the title indicating their fundings being limited in scope whereas their colleagues in the Global North can have more generic titles that can attract wider audience (Castro Torres and Alburez-Gutierrez 2022). There is also some indication in the citations of inequality between countries in those categories (Gomez et al. 2022). Papers in Global South compared by distance in textual similarity receive less citations than to be expected for their counterparts in Global North. The inequality of knowledge dissemination is present in international databases (Martín-Martín et al. 2020; Visser et al. 2021). The representation of produced papers by universities in international databases reflect one identity, whereas national ones present a local role in knowledge production.

The development of knowledge-based economy became the new goal to the future prosperity of countries (Cader 2008; Muzaka 2019; Chorev and Ball 2022) Universities are one of the essential knowledge infrastructures experiencing even more pressure to compete with others not only on the local market but also be present and successful on international one. In these settings, universities in the Global South suffer identity crisis to the bigger extent as they are not the reference category, not in the realm of the expected universality (Albert and Whetten 1985; Hatch and Schultz 2002; Geschwind and Broström 2022). We argue that for universities in the periphery in the pursuit to establish international presence experience identity threat or destine to be labelled local and loose resources.

Organizational identity is flued and can change dramatically from the original one (Gioia et al. 2010; Hatch and Schultz 2002). Change in practices can lead identity crisis the natural outcome of which is either the demise or evolution for the organisation identity. Universities considered to be a pluralistic organisations with many stakeholders to answer to (Kraatz and Block 2008).
The discrepancy between the identity and image of universities is driven by many demands sometimes contradictory ones.

2. Data
Our two main data sources are the Russian Science Citation Index\(^1\) (RISC), which is a national citation database (Moskaleva, Pislyakov, Sterligov, Akoev, & Shabanova, 2018; Sīle et al., 2018) and Scopus, which is international citation database. Scopus is one of the most comprehensive archives of academic literature available to researchers (Castro Torres & Alburez-Gutierrez, 2022).

The WoS is skewed toward the natural sciences and the English language in terms of coverage. Scopus is considered to have better coverage of the social sciences and humanities compared to the WoS, but it is still not sufficiently representative in terms of national journals. Several countries have developed their own bibliometric databases. Many have argued that for evaluation, it is better to use national bibliometric databases (Kulczycki et al., 2018; Sīle et al., 2018) as what universities contribute to knowledge production through national fields and their presentation to the outside world could be vastly different.

Considering the international database, we choose Scopus as it has better coverage of social sciences and humanities compared to WoS. To see the coverage differences between national and international databases for Russian universities, we compared several publications between the RICS and Scopus. In 2017, 392 universities had at least one publication that was indexed in Scopus, which is around 60% of those presented in the RICS.

The Ministry of Education and Science of Russia suggested in 2005 an initiative to have a comprehensive bibliographic/citation database of Russian scholarly publishing. The RISC is integrated with a full-text platform: the Scientific Electronic Library (eLIBRARY.RU) (Moskaleva et al., 2018). One of the features of the RISC is its organisational profiles, where indicators are aggregated automatically based on the publications of organisations, which we used to acquire the bibliometric indicators for universities. There is an option to choose different subsets of publications such as all publications on the platforms of the eLIBRARY.RU, the RISC, the RISC core and the RSCI (Moskaleva et al., 2018). For our analysis, we used publications based on the RICS, which were automatically categorised according to the OECD areas presented in the organisational profile.

Initially, we had a sample size of 1,008 universities that have been registered as an organization in the RISC. In this paper, we focused on bibliometric indicators such as the number of publications by scientific fields which we collected for the 2017. According to this source, 769 universities were present in 2017, the target year of our analysis. After cross-referencing two datasets and excluding universities with zero publications, the final version of the sample included 649 universities for 2017. Universities without publications were mostly small private universities oriented toward only teaching in social sciences.

3. Conceptualisation
Conceptualisation of theoretical framework presented in figure 1. Identity “in claims” represents what the university was and is now. It is established and gained labels from which organisation could drift away over time. Identity “in action” is reflection of present and future of organisation. It drives the change of identity and give insight in the culture of organisations. The evolution of identity is the cycle between those identities and the dynamic force.

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\(^1\) https://www.elibrary.ru
Figure 1: Knowledge production and identity of universities.

In this scheme balance between representation of publications in international and national databases is achieved mainly by universities in the centre where universities on the periphery are underrepresented. The disciplinary structure and the discrepancy between the representation of certain fields could be an indicator for pockets of integration. In this scenario universities that oriented towards natural sciences struggle less to integrate into global knowledge production in the countries that are considered to in the periphery. Imbalance can lead to different images of university internationally and nationally, which can potentially lead to a change of identity or identity struggle.

4. Empirical results
Firstly, we present overall distribution of papers produced by universities. In the Figure 2 we present comparison of paper coverage by disciplines. The most drastic difference is for social sciences where only 5% are indexed in Scopus whereas for fundamental sciences it is around 92%. The number of papers in social sciences are 2.5 times more than in natural sciences. Next best result after fundamental research is for technical papers with 38% coverage in Scopus. Comparing status of universities shown in Figure 3 the most successful are universities which were selected for the "5-100 Project”. As one of the objectives they should have become internationally recognised leading universities. The 70.27 % of “5-100” Project participants are indexed in Scopus, for other state universities the percentage 19.17%. Private universities have 7.73% that for the most institutions could be due not pursuing research objective and the number of papers produced is the smallest.
In our previous study we explored the disciplinary profiles of universities based on publication distribution with 6 distinctive clusters oriented towards certain scientific fields mix which are social-classical, technical-classical, medical, agricultural, social and humanities. Figure 4 shows how these clusters of universities look different in their profiles between national and international databases. All universities produced a number of papers in social sciences but universally there are underrepresented in Scopus. Social-classical universities which have in a core social sciences in based on RICS profile diverged into fundamental sciences for Scopus. Technical universities have a good coverage of their main focus but appear to be stronger in fundamental sciences when seen though the Scopus data. This shift in profile where social sciences papers are produced more but less indexed and papers in fundamental sciences being more dominant is also present for medical and agricultural universities.
Flagship or leading university identity was imposed by the development of “5-100” Project created by the Russian government with purpose to establish internationally recognised universities and being present in international rankings. As the plans were big in the initial stage in the final phase of the evaluation, it was understood and recognised as success that universities break their records and improve their placement at least in separate disciplinary rankings. The technical university were the most successful, as their integration is less of a threat to their core identity.

Medical universities, on the other hand, as not traditionally a part of comprehensive universities and separate entities are purely integrated in international knowledge production. Most of the papers that are indexed in international databases are coauthored with other countries. They are rarely integrated in the international programs and medical profession lack prestige and mostly one of the purest paid jobs which is different countries in the core.

Social sciences and humanities are struggle the most to be represented in international databases. Of 176 902 publications in national database, 10 309 indexed in Scopus database which is only around 6%. The universities specialised in social sciences and humanities are also the smallest compared to others. Most of these universities produce papers only for local market. Except for a small group of universities specialised in social sciences that were created with this international applicability of knowledge and standards as a part of their identity.

Private universities are mostly focus on teaching, and research is less of the objective. They gained a reputation for producing specialists only on paper due to several fraud cases. In the
eyes of many, this history left a long-lasting impression that private universities were not worth attending. In general, private universities to pursue research objective struggle for funding that quite limited for social sciences which are most of them specialized in.

5. Discussion
As Mannheim argued that knowledge is not objective or neutral, but is shaped by the social, cultural, and historical context in which it is produced. The dominating group decided what kind of produced knowledge is worthy and should be spread around (Rojo, 2021). Hegemonies and inequalities in academic spaces are reflected in research trajectories not only on individual level but also experienced collectively by organisations. The dividing lines drawn North and South, Centre and Periphery are the foundation for exiting inequality among many others (Castro Torres & Alburez-Gutierrez, 2022; Demeter, 2020; Rodríguez Medina, 2014; Úsdiken, 2014). The decolonisation of knowledge involves a critical and ongoing process of re-evaluating and transforming the ways in which knowledge is produced and disseminated, in order to create more equitable and just systems of knowledge.

Global institutional realm can enter not all organisation striving for global orientation and identity. The global organisational identity varies with the national institutional traditions (Goldenstein, Poschmann, & Hunoldt, 2022). Universities try to answer both global and national demands spread their resources in multiple directions, some are successful in this pursuit and become more recognised (Marginson & Xu, 2023). However, the question remains if these organisation from non-dominant categories are “truly” excepted as global universities despite high numbers of international students, research collaborations and publications in international journals. Due to path dependency applying the same strategies by different institutions can lead to variety of outcomes (Sydow et al. 2009). What is a success story for one university could lead to a demise of the other. Universities specialising in social sciences are more prone to end up in lock-in where they cannot change their identity as easily as technical universities. Even if the new established programmes in social sciences lack the prestige compared to other in technical universities, they are in better position to perform this lateral movements in their organisational life (Geschwind & Broström, 2022; Geschwind, Broström, & Larsen, 2020). They identity as technical universities and its prestigious status are the shield against scrutiny of external evaluators.

Open science practices
The data that support the findings of this study are available on request from the corresponding author on OSF https://osf.io/cj9gs/. After final publication the data will be available openly.

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