ABSTRACT:

We tried to create new R&D indicators to foresight the picture of pharmaceutical industries for the sake of providing evidences that contribute to policy making or strategy planning in pharmaceutical industry. We found that R&D pipelines can be good drug-R&D-indicator.

We also show new drug-patent-indicators for identifying patents related with pharmaceutical entities' R&D progress ("Pre-clinical" → "Phase 1" → "Phase 2" → "Phase 3"→ "Filed "→ "Approved" → "Marketed"). IPC Count, forward citations, and Citations to Non-Patent Literature were efficient as drug-patent-indicators. Especially generality Index and scope are found as new drug-patent-indicators. The generality index and scope are able to represent technological effectiveness of patents. Not only R&D pipelines but also patents extracted by new drug-patent-indicators are considered to foresight pharmaceutical industries' potential of creating new drugs.

Moreover we analysed who plays a key role in pharmaceutical R&D, focusing on the sizes and categories of the entities possessing pipelines. Results show that the Small and Medium Enterprises (SMEs) play the important role for the drug R&D in the United States. On the other hand, the SMEs in EU28 and Japan fall far behind.