Ihor Tsalunha, Postgraduate Student
Taras Shevchenko National University of Kyiv
Kyiv, Ukraine

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THEMATIC PRIORITIES IN AGRICULTURAL BUSINESS MODEL RESEARCH: DYNAMICS OVER 2003–2025

Academic writing has firmly adopted the assumption that the themes of agricultural research succeed one another: first digitalisation, then the green transition. Testing this assumption is difficult because a shift in research priorities is captured by no direct indicator: it is usually judged indirectly, from the impression left by what one has read. The test proposed here relies on the vocabulary through which researchers themselves label the subject of their work, namely the author keywords of publications indexed in Scopus. The need for such a test is reinforced by the fact that scholars still do not agree on what a business model is, while the literature is developing largely in silos, the first of which is e-business and the use of information technology [1, p. 1019].

The observation covers 1,581 publications for 2003–2025; the calculations were performed on those containing at least one author keyword after normalisation. For every year, the share of publications whose keywords contain at least one term of a given thematic group was calculated; the groups were built by semantic affinity from terms occurring in no fewer than five publications. Shares rather than absolute frequencies were used: since the flow of publications grows rapidly, absolute figures would mechanically increase for any term that merely exists. The dynamics of publication activity on business models in the agricultural sector by period is presented in Figure 1.

The years were combined into three intervals at the points where the annual flow of publications rose abruptly to a new level and maintained it thereafter. The first such point falls in 2015, when growth reached +63% and the field moved from a level not exceeding three dozen publications a year to several dozen. The second falls in 2020, with growth of +47% and a shift to more than 130 publications annually. Both points have external counterparts: the adoption of the Sustainable Development Goals and the pandemic reassessment of food supply chains – yet the boundaries themselves were derived from the dynamics of the data rather than postulated from events. It is also telling how young

the field is: half of the entire corpus falls in 2021 and later, whereas the first twelve years produced only about an eleventh of the publications. This result is consistent with qualitative assessments describing business model research in the agri-food sector as a young, emerging and even immature field [2, p. 6].

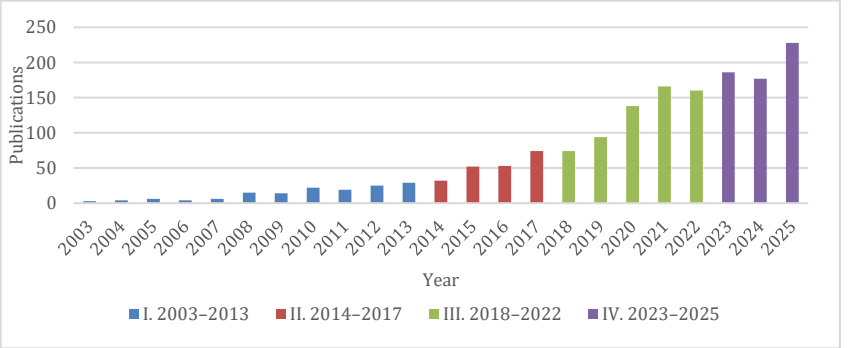


Figure 1. Dynamics of publication activity on business models in the agricultural sector by period, 2003–2025

Source: developed by the author

The resulting shares do not support the hypothesis of sequential replacement. The sustainability group grows monotonically: 10.5%, 16.9% and 25.9% respectively, so that in the last interval its terms appear in every fourth publication. The digital group behaves differently: 9.0%, then a decline to 7.4% and a recovery to 11.7%. The market group, by contrast, falls from 12.0% to 7.2% and stabilises at that level, while the group associated with rural development and food security remains virtually unchanged after doubling in the middle period. None of the groups disappears from use, and the decline of digital vocabulary proves temporary rather than final.

What happens inside the digital group is even more telling. Its recovery is driven not by the terms that worked at the outset. In the early interval the digital vocabulary is informational and transactional in character: the most frequent term of the entire first period is e-commerce, joined by designations of data interchange and network technologies. In the third interval these designations are almost absent, and their place is taken by the notions of blockchain, digitalisation, industry 4.0 and artificial intelligence, which enter circulation in 2020-2021. The object of attention changes as well: whereas earlier the technology was considered

at the level of an individual farm, the focus is now on platforms and access to data, that is, on an infrastructural layer lying beyond the enterprise itself. This shift also has a theoretical grounding: digital innovations deliver gains in sustainability and resilience only under targeted policy, which moves the question from technology to institutional design [3, p. 1300].

The digital frame is therefore not displaced by the sustainability frame; it changes its own content and returns already in combination with it. A characteristic example of such a combination is circular business models built on the digital accounting of material flows: closing the cycle of resource use requires precise measurement, which digital instruments are able to provide. Notably, the combination of both frames appears in the literature as early as the end of the second period: smart technologies such as artificial intelligence, robotics and the internet of things begin to be described as a means of achieving not only higher productivity but also greater eco-efficiency [4, p. 5], which places technology within an environmental criterion from the outset.

This leads to a methodological generalisation: the semantic frames of the business model do not replace one another but are layered. Each previous frame remains in the vocabulary of the field yet yields its dominant status. Indirect evidence of layering is the spread of specialised qualifiers of the concept: nine types of business models for sustainable food systems have already been distinguished, from the circular and the inclusive to the focal company model [5, p. 6], and each of these types coexists with the others rather than displacing them. The practical consequence concerns the comparability of research: findings obtained in different years may rest on the same name of the concept while its content differs, so they can be compared correctly only with regard to the frame within which the author worked. The same applies to the borrowing of foreign managerial solutions: a model developed to address one problem may, in a new context, be assessed against criteria that do not apply to it.

The relation between the normative and the economic dimension deserves separate attention. The growth of sustainability vocabulary is accompanied by a persistently low share of market vocabulary, which means that sustainable and circular models are described mainly in terms of what they ought to be rather than of profitability, market position or scaling conditions. The social strand shows a similar pattern: after a sharp rise, the share of the corresponding vocabulary freezes and does not change further, which allows it to be read as a way of signalling the social orientation of a model rather than as an object of measurement. Both

observations point to a single gap: the lack of empirical verification of how economically viable the described models actually are.

Thus, the change of semantic frames of the business model in the agricultural sector proceeds through layering rather than displacement, and the digital and sustainability frames are not successive stages but coexist and complement each other. Further work should focus on an empirical assessment of the economic viability of sustainable and circular agricultural business models and, in the Ukrainian context, on their wartime adaptation, where the ability to preserve production and the continuity of supply forms the security dimension of sustainability.

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