New method can help industry choose the best location for production

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Petchprakai Sirilertsuwan. Credit: Suss Wilén

Despite the recent trend toward increased sustainability and the development of new sustainable ways of working, there is more to do when it comes to decisions about manufacturing and location. Today's fragmented supply chains, with suppliers at several levels and different production sites, have led to reduced traceability and difficulties in ensuring the supply chain's economic, environmental, and social

sustainability.

In her project, doctoral student Petchprakai Sirilertsuwan has started from corporate, environmental, and socio-economic dimensions and developed a model that shows advantages as well as disadvantages based on various factors for the production chain, such as distance between the market and the head office, distance between the production site and the market, but closeness to material suppliers and production at another location.

Acts as decision support

The model can serve as decision support when choosing a location (whether in-house or outsourced) for production facilities in a multi-stage supply chain—when several companies are connected; for example one for materials supply, one for transport, one for production, and one for distribution.

"If materials, the final product, and the market locations can be situated closer to each other, it leads to less transportation, which gives businesses better control of supply chains, as well as both temporal and environmental gains through the ability to respond quickly to markets and reduce greenhouse gas emissions. Moreover, businesses can help reduce greenhouse gas emissions through not only less and shorter transport of products and managerial visits to factories, but also by using clean energy sources in production," explains Petchprakai Sirilertsuwan.

Includes work to ensure sustainability

New, in comparison to previous models, is that this one is so comprehensive and practice-based. It is based on objective and measurable criteria; it assesses risks in the supply chains; and it takes

into account not only companies' manufacturing and logistics systems, but also their work to ensure sustainability.

"In industry, it is possible to use the model to estimate the final cost of the product when it arrives at the department store based on production cost, as well as that the products maintain the expected quality and at the same time comply with social and environmental requirements," says Petchprakai Sirilertsuwan.

The model has been developed based on systematic literature studies, interviews with members of management of textile companies in Sweden, and simulations of supply chains; it can be adapted for different types of industries by adding the relevant parameters.

More information: Manufacturing Decisions and A Multi-Tier Supply Location Decision-Support Model for Enhancing Sustainability in Textile and Clothing Supply Chains: hb.diva-portal.org/smash/record.jsf?pid=diva2%3A1464220&dswid=9135

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