

Effectively managing complex supply chain relationships could provide value

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As supply chains become more complex and stretch across the globe, companies may be able to effectively manage their relationships with suppliers to not just minimize risk, but realize strategic opportunities. Credit: ThisisEngineering RAEng on Unsplash

Many modern industries rely on a network of suppliers to independently

develop and provide parts that are later combined into a finished product by the buyer, a process often referred to as modularization. For example, computer parts makers may sell parts to a firm that assembles them into a finished computer.

As supply chains grow more complicated and technology more complex, managing these supplier relationships is becoming more challenging and, if mismanaged, could lead to hazards on how [knowledge](#) is shared—or not shared—with the buyer.

However, in a study, a Penn State Smeal College of Business-led team of researchers found that companies that effectively manage these relationships might be able to not just minimize risks, but even uncover strategic opportunities in these relationships.

In order to turn [supply chain](#) hazards into opportunities, the researchers suggest that buyers need to be aware of the pros and cons of different governance mechanisms to manage their relationships with suppliers, said Stefan Wuyts, professor of marketing, Smeal College of Business and director of the Institute for the Study of Business Markets. Governance encompasses formal processes such as monitoring and contracts, as well as less formal socialization approaches, such as meetings and discussions with suppliers.

"We found that the effectiveness of these formal and informal mechanisms depends on the modularity of the system," said Wuyts.

"System modularity actually substitutes for monitoring. Monitoring is formal control, but so is the threat if a supplier doesn't stay in line with the agreements, then the buyer will replace the supplier. We find that good [relationship](#) performance is achieved if you assume one of them, but there's no point investing in intensive monitoring when your system is already highly modular. They're basically a substitute for one another."

On the other hand, modularity complements socialization, according to the researchers, who report their findings in the *Journal of the Academy of Marketing Science*.

"Socialization is a collaborative approach to control, one where the parties hold regular conversations to identify common goals and develop collaborative relationships that may build trust and develop relational norms over time. And that can also serve as a way to keep both parties in line," said Wuyts, who worked with Nukhet Harmancioglu, assistant professor of marketing, Koç University, Turkey; and Peren Özturan, assistant professor of marketing, Özyeğin University.

The researchers found that managers do not consider modularity when selecting governance mechanisms. In addition, past research has not adequately examined the governance implications of modularity for innovation sourcing relationships.

Threats and opportunities

Modularization obviously has advantages, particularly in cost and efficiency, but Wuyts added that the supply relationships present some risks for firms.

"It goes to the whole idea that companies operate independently of one another, they pursue their own self-interest and, in some cases, that conflicts," said Wuyts. "The question then becomes how do you manage those relationships to avoid opportunistic behavior, which refers to the supplier exploiting the buyer firm?"

Broadly, three strategic problems may arise in how knowledge is managed among buyers and suppliers, said Wuyts.

First, he said that problems may arise in knowledge specificity, which

means buyers might become too dependent on suppliers for knowledge and know-how.

"For the buyer, it's a case of 'I invest in you—and all my investments are specific to you,'" said Wuyts. "But, that could give the supplier the opportunity to say, 'OK, now that you've made all these investments, let's change the terms of trade.'"

Another concern for buying firms is knowledge asymmetry, which means knowledge may be unevenly distributed across the partners, leaving the buyer vulnerable.

"In a case of knowledge asymmetry, let's say I'm a buyer and my suppliers are claiming to be following the latest technological breakthroughs, but in fact are choosing to use techniques because they make the most sense for their firms, not mine. If I don't have the technological knowledge, I can't call out these suppliers," said Wuyts.

Finally, buyers are concerned with knowledge spillover, which is when a buyer's knowledge may spill over to the supplier and they could share innovations with other parties, including competitors.

"It's in these situations that companies have to very carefully think what they are going to do about these relationships," said Wuyts.

Establishing contracts between the parties, while necessary, probably cannot serve as a complete solution to these problems, said the researchers.

"Sometimes drafting the contracts works to manage these relationships," said Wuyts. "But, in innovative industries, where the future is so unpredictable, what are you going to put in that contract? You can hardly put all of the contingencies in a contract. So, you need to think of

alternative ways to hedge against risk."

According to the researchers, socialization offers another approach to managing relationships with buyers.

While knowledge specificity, asymmetry, and spillover are generally considered negative for the buyer, Wuyts said the research team found that they can also benefit the buyer as long as the right governance mechanisms are used to control the suppliers.

Making specific investments in the supplier may benefit the buyer when the supplier reciprocates; knowledge asymmetry may benefit the buyer as it gains access to novel knowledge; and while knowledge leakage may be a risk, suppliers may be a source of other pieces of knowledge that they are gaining from other relationships in the market.

Wuyts said that as the business environment becomes more complex, better management of [supplier](#) relationships is becoming increasingly important.

"As these relationships are becoming more complex, it is important to recognize potential hazards, and then make appropriate governance decisions to turn them into strategic opportunities. As systems become more modular, appropriate governance means less emphasis on monitoring and more emphasis on socialization," said Wuyts.

The researchers interviewed about 663 officials at North American buyer firms. They selected only firms that were active in technology-intensive industries, such as biotechnology, computer hardware, pharmaceuticals and automotive. These industries often rely on external sourcing and modular systems. The researchers only contacted officials at the business if they were ranked as managers or above.

After the initial interviews, about 663 firms met those criteria and were sent a questionnaire. A total of 194 usable questionnaires provided data for the study.

Among other future research ideas, the researchers said they may expand the scope beyond relationship performance and examine system-level outcome variables.

More information: Nukhet Harmancioglu et al, Governance implications of modularity in sourcing relationships, *Journal of the Academy of Marketing Science* (2020). [DOI: 10.1007/s11747-020-00748-w](https://doi.org/10.1007/s11747-020-00748-w)

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