

Developing a framework for supply chain planning in construction

[Business](#), [Industries](#)



The developed SCP framework addresses problems in all problem areas. The framework as such improves the supply planning in construction by introducing a balanced material delivery schedule. The work of developing this schedule addresses the complexity issues. KPIs are suggested, which have to be measured for identifying improvements. The process can facilitate addressing the dynamic nature, changing site layouts, and local variations as pre-conditions and prerequisites are incorporated in the planning process and this should be shared with the participants. A better planning of the material flow and regularly updating the plan can also reduce the uncertainties. Plans should be seen as tentative documents developed prior to construction and must be updated on-site. They should be updated on a regular basis to cope with uncertainties.

The key aspect of the framework is to involve the subcontractors and the suppliers more actively in the planning process. Involving them early in the project improves coordination and trust as they are able to express their views on the time schedule and material deliveries.

If the main contractor develops the plans without firmly establishing the plans with the subcontractors and suppliers it can result in diminished trust within the project. All of these are important problems in the project communication area. The framework facilitates in coordinating plans, including suppliers and subcontractors in the planning process, and sharing goals. All of these are important for developing trust among members.

Involving both project members and internal staff members in the planning process can also result in better understanding of the project and less

information deficiencies. Ideas about the project can be shared among members within the balancing activities and any uncertainties in information can be sorted out. These are important problems in both the internal company communication area and in the project communication area. Involving the suppliers and the subcontractors in the planning process is a means to integrate the supply process and the construction process. It should also be noted that architects should be involved in the planning process, but this is subject to further research.

Tools for coping with complexity and improving communication through better planning processes could result in a better material flow. More realistic material delivery schedules firmly established among contractors and suppliers provide for a better delivery reliability. This can be verified by measuring the suggested KPIs. Better identification of what material is needed and when, together with better supply chain reliability can reduce the inventory levels on-site. It is not needed to order extra materials, to store on-site for coping with uncertainties in the time schedule. The use of focus groups has been useful for developing the framework. The participants have all contributed by validating previous findings. This provides a means for achieving external validity. The problem here is that the process is developed based on logical reasoning without testing the process on an actual project to see how the problems are addressed. The conclusion of the testing should also exemplify how different contexts affect the design of the framework. The lack of external validity can hamper the usability and the generalization. However, the focus group participants were able to provide

feedback on the suggested framework. The use of a heterogeneous group makes generalization better, but can also result in a situation where they were talking about different things as they had different perspectives. It is difficult to say whether this was the case in this study. However, one of the members in the group was “stronger” in his opinions than others. This resulted in the discussion often taking his perspective. It was important to have this in mind when developing the framework.

The conclusion is that SCP can be a facilitator for addressing the identified problems through integration of the supply and construction processes, via the integration of the main contractor, the subcontractors, and the suppliers. The construction industry has had problems with productivity and with the flow of information and materials.

Insights and Future Directions

From the above analysis, we can absorb the following insights and future directions in the area of operations research of logistics and supply chain management.

First, the logistics issue regarding the people’s livelihood becomes a hot spot. The traditional research in this regard is related to perishable product, fashion product, and electronic product, which have short life cycle.

Nowadays, such topics might include city logistics, emergency logistics, and agriculture supply chain.

Second, new directions on logistics and supply chain management can be brought about by the development of economy and technology. A typical example is the information technology which leads to the research on e-business and related distribution channel choice. Nowadays, the common usage of RFID, cloud technique, and big data can be important research directions for future study.

Third, the environmental related research will continue to be big issue. With the steady increase in global population and economic scale, resource crisis, ecological damage, environmental pollution, and other issues have drawn universal concern. It has been the consensus of the international community to attain socioeconomic sustainable development through a greener economic pattern and lifestyle. Many countries create a new outlook in industrial and technical competition by increasing investment in the green logistics and supply chain field, formulating and implementing various bills, plans, and strategies, and strengthening the implementation of green economic development strategy. In the future, the range of this topic will not only be just remanufacturing, reverse logistics, and closed-loop supply chain. Low-carbon issues can be an important research direction.

Finally, multi methodology is an important direction for future study.

Traditionally, major research methodologies in operations management can be classified into several categories, such as theoretical modeling, computation and simulations, surveys, cases, event studies, and behavioral experiments. In recent years, there is an emerging trend towards combining

multiple research methodologies to explore research problems in logistics and supply chain management.