

Does size matter in logistics performance measurement systems?



A practical challenge in managing logistics performance is the size, or the number of actors involved, in a performance measurement (PM) system.

This article examines the advantages and disadvantages of four logistics performance measurement system sizes – internal, dyadic, triadic, and supply chain performance measurement systems.

Advantages and disadvantages of four PM system sizes

All of the logistics PM systems contain certain advantages and disadvantages. Advantages are positive effects of an applied PM system. Disadvantages are both negative effects of an applied PM system and implementation problems. Few references directly addressing the issue of logistics PM system sizes were found; hence, references on PM systems in general were also consulted.

Advantages with internal PM systems

Subsidiaries and departments can apply internal PM systems in order to ensure reaching of the company's goals and following of the business strategies. Additionally, issues such as management incentives and employee appraisal are considered. Managers can understand which departments and activities are adding more or less value to the firm's revenue and how to control them. Controlling makes it possible to compensate employees and make them work better and harder. It can be challenging enough to work with an internal approach, and to streamline different departments within an organization to work cooperatively to satisfy customers.

An internal approach provides a "closed" environment, which can be seen as an advantage. The company can follow its own strategy, goals, and interests and has full control over the PM system design. Furthermore, the metrics important for one company may not be defined in the same way as in another company, so an additional beneficial circumstance is the fact that the company does not need to justify its metrics. The IT infrastructure is less complex in an internal PM system. Information is less complicated to process and there is a higher level of information security and confidentiality, since companies do not share the data. It is easy to find literature and guidelines on internal performance measurement systems, since many scholars view PM systems as an internal issue. A number of practical applications exist. Altogether, an internal PM system may have high efficiency.

Disadvantages with internal PM systems

A clear disadvantage appears when it comes to understanding customer needs. It is hard to succeed with approaches such as customer service, logistics quality or customer satisfaction, as the customer is excluded from the PM system. With only internal metrics, managers do not know whether their company contributes or not to the overall goals of the supply chain. The distance between partners can create walls around each company in the supply chain, which can lead to sub-optimisation. Maintaining an internal focus does little good when supply chains must battle a rapidly changing environment and competition. This cannot be accomplished only with internal resources, so external help from supply chain partners must be sought.

There is a risk of misunderstanding, as performance can be perceived differently between customer and supplier. This means that even if a metric is rated good internally to the supplier, the customer often has a differing perception. The company has less information from other companies in the supply chain, risking a spread of the bullwhip effect. Altogether, an internal PM system may have a low effectiveness.

Advantages with dyadic PM systems

A dyadic, one-firm-versus-the-other framework offers a parsimonious abstraction of an inter-organisational relationship. Two business partners apply the measurement system not only to their own company but also to the partner's. Approaches such as improving customer service, logistics quality or customer satisfaction, are now applicable. It is possible to create more tailored service solutions. Other kinds of measurements can be used to ensure the collaborative work and lead both partners to a win-win relationship, which at least should be the goal for each party. In a study of dyads, suppliers perceived an increased relationship with their customers as enhancing the performance of both themselves and the customer. In a buyer-supplier partnership, the partners can assist in mutual problem-solving efforts. It can also imply cost savings, improved flexibility, and quality.

Some disadvantages for internal systems can now be considered as advantages: shortened distance between the companies can provide more reliable information, and the bullwhip effect can be reduced.

Disadvantages with dyadic PM systems

The theoretical assumption on this topic is that "the constituents of the supplier-buyer dyad are willing and able to cultivate mutually beneficial relationships, which leads to supplier satisfaction. However, it may be argued that a firm with significant power might not find it necessary to establish the win-win alliance since it can achieve its own profitability and effectiveness through control of its suppliers. In this case, there seems to be no reason to cooperate. Instead, these companies can choose to seek their own profitability and business success.

When two companies are involved in a PM system there is a risk that they have different objectives. Problems really arise when the objectives stay in direct conflict with each other. Discrepancies in the way companies in dyads define metrics, and incompatibilities in the IT systems, have been found. The IT systems were found to hinder dyadic PM systems. A dyadic system is not the last step of integration of the logistics performance measures in the supply chain. Due to this fact, important actors are left behind, what can be understood as a disadvantage. Furthermore, the bullwhip effect can still occur even though it is reduced. There is a scarcity of dyadic research approaches in PM.

Advantages with triadic PM systems

A logistics service provider can enter the PM system with the responsibility to provide different logistics services, such as transportation and/or storage, to the companies. This makes it possible for the supplier and the customer to focus on their core competencies; consequently, the operational costs can be reduced, because of the reduction related to the costs of transportation and storage. The logistics service provider may bring specialised expertise into the relation with contemporary technology, IT systems, process design, and managerial expertise to aid in logistics measurement efforts. A triad will improve customer service for the customer and lower costs in the relation. Others see a development going from managing dyads to triads and then to managing supply chains. Triadic systems seem to be the least researched PM system size.

Disadvantages with triadic PM systems

There are barriers to triadic PM systems similar to those of supply chain PM systems: lack of coordination among the parties, lack of (technological and/or relational) expertise within the parties, and power imbalances, which make information sharing difficult. Many relationships with logistics service providers fail because neither partner fully explains their expectations.

Very little research on triadic logistics PM systems exists; the same is valid in general for triadic approaches. Few empirical applications exist.

Advantages with supply chain PM systems

This is the most complex system, where the actors in the supply chain interact with each other and are measured as a single entity. The ultimate goal of supply chain management is to improve the performance of all supply chain members. The supply chain PM system can enable the company to have visibility in the supply chain; in other words, it is possible to get access to performance information beyond one's own firm and give access to performance information to other partners. Accuracy in important data can eliminate the bullwhip effect, by providing precise forecasting data and reducing total logistics costs. By sharing performance data with partners, weak links in the supply chain can be identified and attacked.

Companies learn more about each other's needs and limitations, which will influence co-ordination efforts, service levels, and total cost to serve in a positive way. Furthermore, greater total return, savings, inventory cost savings, reduction in purchasing costs and total logistics costs can be achieved with a supply chain PM system. The suppliers perceive an improvement in the ability to do their job because of access to critical information flows and planning activities, which emerge from a closer relationship with their supply chain partners. This improved performance is reflected in higher quality, reduced costs, competitive prices and as a consequence enhanced sales, market share and customer loyalty, from which in the end the whole supply chain benefits. A number of scholars have advocated supply chain PM systems; hence abundant literature exists. The number of empirical applications is, however, small.

Disadvantages with supply chain PM systems

No disadvantages in the shape of negative effects of an applied supply chain PM system were found. Instead, implementation problems were found. Streamlining heterogeneous supply chains is not an easy undertaking, since each company has individual work structure, organizational structure, workflow, information flow, or culture. This is even more so when supply chain suppliers are located globally and are managed in different ways.

Summing up

Internal PM systems have some advantages, including convenience and the avoidance of implementation problems. On the other hand, the disadvantages of an applied system are severe, especially in a supply chain context. Supply chain PM systems contain a number of attractive advantages that can be reached with an applied system. However, a number of disadvantages in the shape of implementation problems must be considered. Logistics PM systems could develop with a basis in a functioning internal PM system, and can successively be expanded into dyadic, triadic, or supply chain systems. Dyadic PM systems were found to be an interesting system size, being a "medium-sized" PM system trading off advantages and disadvantages.

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