

Front End Loading in new product development  
**“Front-End Loading and Strategic Management”**  
— Visualisation and Quantitative risk assessment —

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It is no exaggeration to say that there are many problems that the manufacturing industry itself has regardless of the influence of COVID-19. Then now, we can predict that we could be asked, "What is the point of listing those issues here?" Therefore, let me set one framework for thinking over the issue to find the clue for the solution. The idea is that It attempts to solve the problem by classifying it into two categories, "the problem of determining the given condition" and "the problem of taking the optimum action after the given condition is decided". The basis of this idea is the premise that issues that a company has been associated with corporate behaviour. In thinking of corporate behaviour, I can say that all is based on a hierarchical structure: "Action Subject" in the higher level is subdivided into the lower-level, which maintains the interaction relationship. The higher-levelled "Action Subject" regulates the lower-level one. The results of the higher-levelled action subject depend on the lower-levelled that act under the given condition set by them. Therefore, we can consider that the higher-levelled "Action Subject" determine the given conditions for the lower-level one.

Given such a structure, I can infer that various problems are often caused by the incompatibility between the given conditions set by the higher-levelled "Action Subject" and the capabilities of the lower-levelled one. For example, suppose production cannot keep up, and many products are out of stock. In that case, it was because that the sales and production plans drawn up initially at a higher level were too poor to overcome the gaps to the actual production side (the lower-levelled "Action Subject").Also, in the quality manufacturing stage, the higher-levelled "Action Subject" designs the product design and the manufacturing system related to quality. Still, quality defects will occur if that design requires more than the workforce capability who manufacture the product.

In short, It will be that given the issues that arise in product development, ambiguities in product strategy, product definitions, project definitions, and organizational roles lead to a variety of problems. Because, If the product strategy is unclear, the project priorities will not be clarified, then it will not be known which one is in line with the corporate strategy, leading to many bosses favourite projects running rampant. Poorly defined products lead to constantly changing product

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requirements, constant design changes, over-specification leading to increased costs, inadequate risk assessment delaying the development of the technology to be incorporated and, if it becomes a critical path, delaying the whole project. The comparison with market needs also becomes insufficient. The more sloppy the definition of a project becomes, the more unclear the project's goals, it becomes difficult to trade-off between goals. Then, it becomes that appropriate or necessary personnel cannot be put into the project, and those projects selection criteria become a dead letter. Then, it would be in a situation where it cannot even prepare a subsidiary plan for high-risk technology. Also, Unclear organisational roles would lead to inadequate synchronisation of supply chain activities. It means that top management fails to play a part in product reviews, which can cause development team members to lose direction and create problems such as making frequent design changes.

These problems in development naturally have repercussions for manufacturing. In other words, it means the production conditions change, and it becomes difficult to react adequately. Inadequate production technology and process design, internalization of quality problems, delays in cooperation with suppliers, delays in procurement, and cost increases such as material costs will accompany them, it becomes.

In light of this, we can see that many of the problems originate from uncertain, unclear, and obscure given conditions for "Action Subject". As long as a company's activities presuppose a hierarchical division of labour system, such a given condition begins with front-end decision making. The fuzziness there creates the cause of the problem in the setting of given conditions at the lower hierarchy level as a chain reaction. To solve these problems, it is essential to set the appropriate themes for the upper-level "Action Subject" and then visualise and quantitatively assess the risks. And then, Front-end loading, which supervisions those given conditions on Upper/Lower levelled, functions and enables strategic management.