

Learning to See Waste in New Product Development

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What is waste and where do we find it in product development?

Key Takeaways



- Knowledge is the “product” of product development, driving value creation.
- Waste is harder to see in product development because knowledge is invisible.
- Seven indicators highlight waste in product development.

What is waste and why is it important?

Waste is anything that does not create value. To see it, we must first understand the meaning of “value” as the ultimate customer would define it. While exact definitions vary by the type of product, customers generally value products that solve the need that drove their purchasing decision and perhaps some others as well, work as expected, last as long as expected and have reasonable costs to purchase and maintain. New Product Development teams contribute value by creating customer and product knowledge as embodied in a product design.

Why Is Waste Hard to See in Product Development?

On a manufacturing floor, waste is easy to see once you know what you’re looking for: excess inventory, extra steps, extra transportation, waiting, defects, excess motion and overproduction, . Finding waste in product development is much more challenging because the “product” of new product development is knowledge: knowledge about customers, knowledge about technologies and process capabilities integrated into specific knowledge about how to make a product - the product design.

All this knowledge is hard to see. Sometimes we have physical manifestations: drawings, reports, slide sets or prototypes. But much of the knowledge, and often the most important knowledge for value creation, resides in the minds of the individuals engaged in the process. That can make waste hard to see, too.

Can You Find the Waste in Product Development?

Here are some common activities in New Product Development. Which ones create value? Which ones are waste?

- Preparing the business case
- Defining requirements
- Designing a product
- Attending status update meetings
- Negotiating with suppliers
- Getting sign-offs
- Tooling
- Preparing sales materials
- Innovation

Knowledge Drives Value

Does innovation add value? The answer is. . .it depends. Why are we innovating? What question are we trying to answer? Can we get the answer from someone else? Do we really need the answer? Would the answer lead to a more robust design? Does the customer care about the answer?

In general, these are the kinds of activities that generate value in product development:

- increasing our knowledge about the customer and the market
- translating our customer and market knowledge into product requirements
- increasing our knowledge about technical and process capabilities to deliver on product requirements
- translating that knowledge into designs and tooling to deliver products

Everything else is waste.

Common Indicators of Waste in Product Development

To see waste in your product development organization, here are some things to look for:


- **Reinvention:** Lean product development teams appreciate the value of knowledge, and ensure that knowledge is easy to capture, easy to reuse and always used to make decisions.
- **Excess Requirements:** Lean product development teams recognize that every extra feature or performance enhancement must be designed, produced, maintained and supported – and customers pay the price in greater complexity and greater risk of failure.
- **Overloaded Resources:** Lean product development teams know that overloading resources makes them slower and less flexible, and that task-switching costs engineers valuable time.
- **Unintegrated Design:** Lean product development teams strive to understand and then manage their designs as an integrated system, so that they can focus innovation on areas that improve the market performance of their entire portfolio of products.
- **Ineffective Risk Management:** Lean product development teams acknowledge the uncertainty in product development, and develop plans to mitigate its impact on the system.
- **Waterfall Development in Departmental Silos:** Lean product development teams do work when and where it makes the most sense to do it, rather than allowing rigid processes or organizational boundaries to dictate workflow.
- **Unproductive Meetings:** Lean product development teams value their time, and use good meeting management to spend the time they have together for solving problems or making decisions rather than simply passing on information that could have been emailed.

Some Waste is Necessary

In our list of activities, a few items are always waste: status meetings, sign-offs, supplier negotiations, sales materials. The act of preparing the business case has some elements that create value (customer research) and others that don't (preparing a snazzy presentation for the board of directors). The activities that contribute directly to product delivery - requirements definition, innovation, design, tooling - add value to the extent that they either generate or utilize our best available knowledge about the customer, the market, technology and process capabilities. To the extent that they lead to reinvention, excess requirements or the other indicators, they too are waste.

No one claims that all waste can or should be eliminated. Even Taiichi Ohno, the most successful waste eliminator of the last century, recognized that some waste is necessary waste. A lean organization streamlines these necessary activities as much as possible.

Next Step

If you could do one thing to eliminate some reinvention, excess requirements or unproductive meetings in your organization, what would you do? 

For Further Reading:

Poppendieck, Mary. Lean Software Development. Addison-Wesley, 2002.

Although this book was written for software developers, don't let the title dissuade you from reading the best book available on lean product development to date. Ms. Poppendieck's wealth of experiences in Lean Manufacturing, software development and new product development lead to practical advice, realistic examples and a comprehensive understanding of how product development creates value.

Womack, James P. and Jones, Daniel T. Lean Thinking: Banish Waste and Create Wealth in Your Organization, Revised and Updated. Free Press: 2003.

This classic, newly revised and updated, has a host of examples of how companies have made the journey to become lean organizations. Although product development examples are thin, the book's description of value, flow, pull and perfection lay a solid theoretical framework for lean thinking, and the examples given offer glimpses into the new possibilities that await a team on the other side of the transformation to lean.



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