

# Module 1: Course Orientation & Process Analysis

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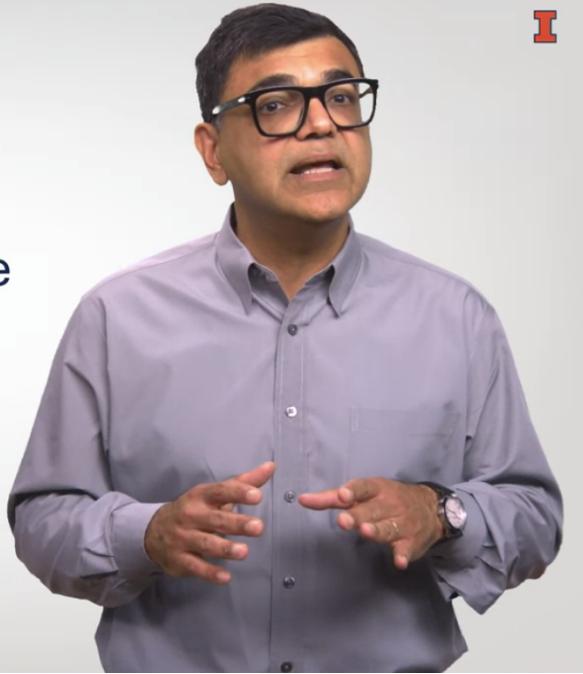
## Lesson 1-0: Course and Your Classmates

### Lesson 1-0.1 Course Introduction: Welcome to Operations Management

## Description

Managing how work is done

- In manufacturing and service organizations
- Through upper management and front line decisions



This course is about Managing the Operations of an Organization. It is about managing how any work has done. What you learn in this course will be applicable to broadly speaking, manufacturing and service organizations. In fact, managing how work is done applies to all types of organizations, including non-profits, manufacturing companies, service companies, and consulting companies. Within each of the topic areas of this course, that is, in the four modules, you will learn about strategy formulation decisions usually made at the upper management level, as well as process implementation decisions which are usually made at the level of middle management and frontline employees.

# Topics

- Operations Strategy
- Process Configurations and Metrics
- Inventory Management
- Supply Chain Management



The four modules will uncover decisions in four areas. In each area, you will be introduced to underlying thinking, underlying principles, some general ways of thinking about decisions, as well as some practical techniques, some frameworks, some analytical tools that you can apply to make decisions. First, Operations Strategy. This area deals with top-line decisions by upper management working with marketing and business strategy to decide what market do we want to be in. Then, who are our customers? What are their needs? How can we best fulfill those needs? At the end of this module, you will be able to recognize trade-offs, the realities of making compromises when formulating strategy. You will learn ways to break those trade-offs, overcome the need to compromise for the organization to perform well in multiple dimensions for its customers. Second, Process Configurations and Metrics. You will learn to apply the process view. The horizontal view of organizations. The process view means we focus on how things flow from the start of any work to its completion. Whether it is for assembling a cell phone, or for a patient's doctor's visit, or for processing, and insurance claim. From a long-term strategy formulation perspective, you will learn to evaluate different arrangements. We call these configurations for the multiple steps in a process. Then getting into a more detailed and analytical view of steps in an operation, you will learn about analyzing processes using measurements such as throughput time, flow rate and capacity, and the interconnections among them. This will also help you to evaluate what happens when you change one aspect of a multi-step process. The effects that has on the rest of the process. Next in Inventory Management, we will start with developing an understanding of the cost of inventory management. You will learn the thinking behind inventory decisions. Such as, what should a fashion retailer be considering when deciding how many dresses to order for

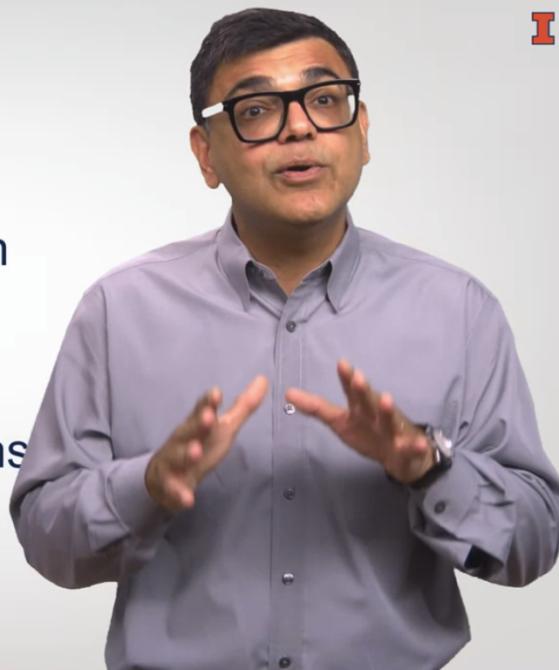
the season. Or a purchasing manager in a hospital, deciding how many gloves or surgical gowns to stock. This conceptual understanding will become the basis for you to be able to evaluate inventory management policies. While you will learn the basic versions of such techniques, these basic versions serve as the foundational models for the more advanced, more complicated versions for inventory management. Forth, Supply Chain Management. In this module, we will take you beyond the boundaries of an organization to suppliers and buyers. You will learn to evaluate outsourcing decisions. Deciding whether to make something in-house, or find an external supplier. You will also learn to align the type of supply chain with your operation strategy. You will learn about the importance of supply chain partnerships. You will see the impact that a disruption in one part of the supply chain can have on the others. Overall, through these four modules, you will learn about the most important decisions for designing operations that match the needs of your business.

## Relevance

Foundation for specialists in operations management topics

Essentials for other functions

Fundamentals for role in upper management



This course will give you an introduction to fundamental topics, give you a sense of the basics and operations management. Now, depending on your interests and your career path, you will be able to use this knowledge that you gain in three ways. First, you can build upon these basics to learn more about process analytics and optimization. That is, you may go more in-depth into the analytics part of this course. Second, as an executive in a different area such as marketing or finance, you will be able to have better conversations with the operations management executives. You will speak their language, and make them understand yours. Third, as an executive in the C-suite, you will be able to use your understanding of operations to take your organization to greater levels of success.

Lesson 1-0.2 Meet Professor Gopesh Anand

Hi, my name is Gopesh Anand, and I would like to give you some information about myself, where I come from, and about what I do currently. I joined the University of Illinois in 2006 and have been teaching courses mainly at the Gies College of Business. Occasionally, I get the opportunity to teach in other areas of the university. Most of the courses I teach are on the topics of operations management and process improvement. I enjoy the different experiences I have in the classroom, both in-person and virtual, and with a range of audiences from undergraduate students to graduate learners. Most of my work in academics, conducting research, writing papers, participating in conferences, and doing editorial work for journals is also in the areas of operations strategy and continuous improvement. A little bit about my past. I was born and brought up in India, in the city of Mumbai. I studied in Mumbai throughout my undergraduate education. After completing my bachelor's degree and working for a year, I decided to get my MBA and that brought me to the United States. I got my MBA from the Ohio State University, which is in Columbus, Ohio. There, I also met my wife. She was a doctoral student in Social Psychology. After my MBA, I returned to India, to Mumbai. I managed the business there making watch bands. This gave me the opportunity to learn about the various aspects of business, marketing, operations, managing suppliers, accounting, managing finances, and people. This had been a very valuable experience for me as now, I'm able to bring the perspectives of the different functions in business to my teaching and research. I can also relate to people who have specialized job responsibilities in these areas. I worked for nine years before I decided to return to the US and to the Ohio State University for my doctoral studies in Operations Management.

In 2006, after completing my PhD, my wife and I moved to Champaign, Illinois. Both of us had been with the University of Illinois since then. We call Champaign-Urbana home, and we enjoy life here with our twin daughters who were born in 2010. In my time at Gies, I have built a research program focused on operations strategy and continuous improvement programs. I'm an empirical researcher and my research is based on data. I use different forms of data, responses from interviews and case studies, data collected using surveys, secondary data based on archival records of firms, as well as from other sources, such as inspection scores and external certifications. I study both how organizations strategize about the big decisions in operations and how the people in the frontlines implement those decisions. I enjoy the synergies between conducting research on these topics and discussing these topics in various courses with learners like yourself. I'm excited to be here and I look forward to working together with you on these topics of planning, designing, and improving operations and supply chains. All the best.

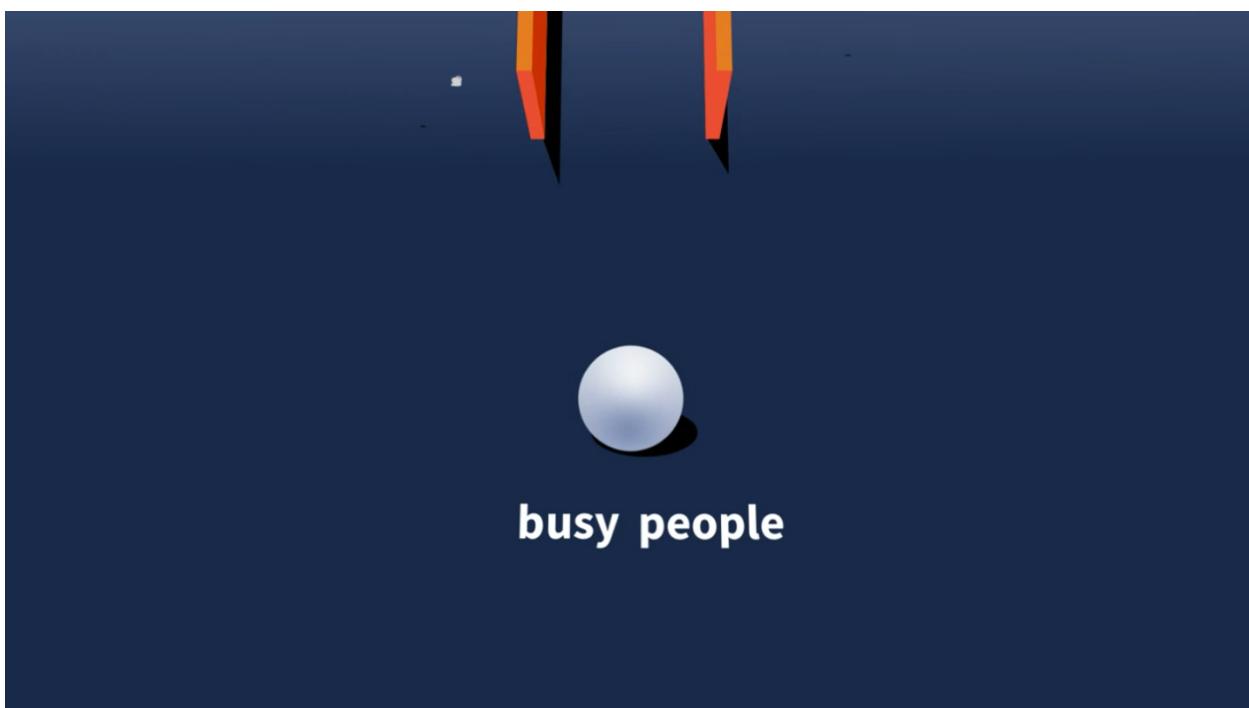
Lesson 1-0.3 Learn on Your Terms



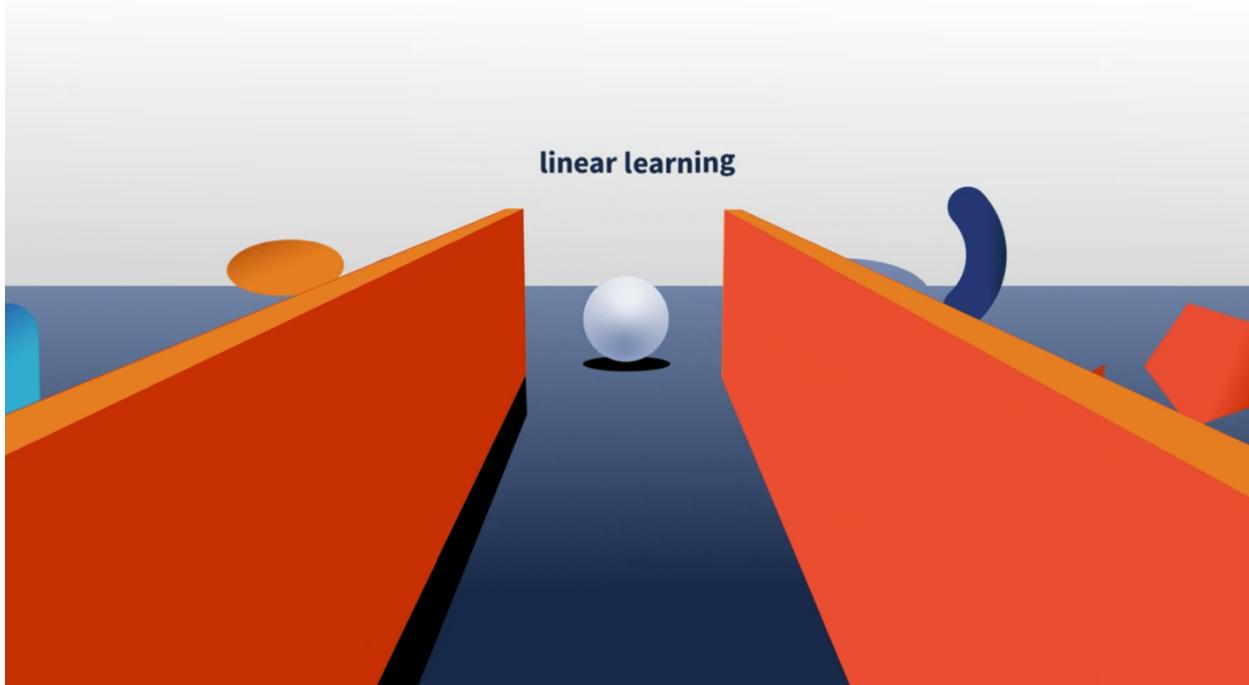
**smart people**



**hardworking people**



**busy people**



Too often, smart hardworking busy people miss out on education because of traditional linear learning.



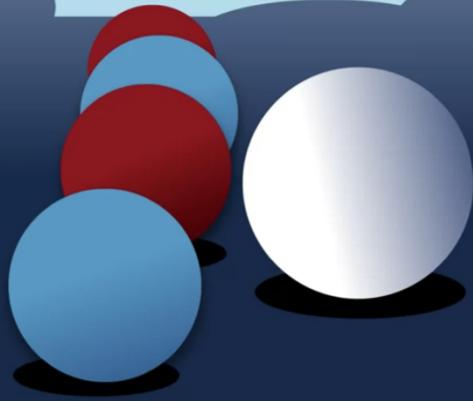
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## Lesson 1-1: Describing Operations Management

### Lesson 1-1.1 Role of Operations and Supply Chain Management

## RECOGNIZING OPERATIONS MANAGEMENT

Take the device that you are using to view this



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So we're going to start this session with a small experiment, a thought experiment for you, think of the device that you're using to view this particular session, you could be using a tablet pc or a cell phone to view this session. Think of the different stages that this product, this device had to go through before it got to you.

## RECOGNIZING OPERATIONS MANAGEMENT

I

Operations management impacted:

- Product design
- Assembly
- Supplier selection
- Employee training
- Sales outlet
- Troubleshooting support
- Safe disposal



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So you have the product design people had to figure out what consumers want from this particular product and figure that into the design. Next they had to be an assembly line put together for assembling the cell phone or the computer. The parts for the assembly line had to be delivered from some kind of vendors. Those vendors may be co located with where the assembly plant is or they might be abroad, they might be as far as 10,000 miles away. The employees who are working on the assembly line had to be trained in order to make that product to assemble that product in the right way, make sure that the quality of the product is correct. And finally it had to be sold to you from through a sales outlet. So it had to come to you from a sales outlet. Now it doesn't end there, although you would think that conventionally it sold to you, now it's in the hands of the user you do have the next step which is, you might have questions about the device, you might have some trouble after a few days, a few months and you might need to call in to get some help from the help lines. And that's another task that is involved with this particular device. And nowadays we're also talking about the lifetime value of the product. Where does it end up in a landfill? And what kind of disposal does it offer? What kind of parts have been used in that? Now, you've gone through from product design, through sales through the safe disposal of this particular product. And if you think about it, operations management is involved in all of these stages, it is involved in the product design in terms of what are the different components that are going to make this a manufacturer herbal product. It's involved in supplier selection. It's of course involved in the assembly of the product. And it's involved in determining inventories for sales, in determining the capacity for that call center that's going to give you the help and the support that you need. And finally, it's going to be a logistics issue of how they're going to take the used laptops and computers and dispose them off to a landfill.

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Lesson 1-1.2 Process View of Operations

## DEFINING OPERATIONS MANAGEMENT

Operations Management is about organizations effectively and efficiently using their resources and activities to transform materials and information into goods and services for customers.



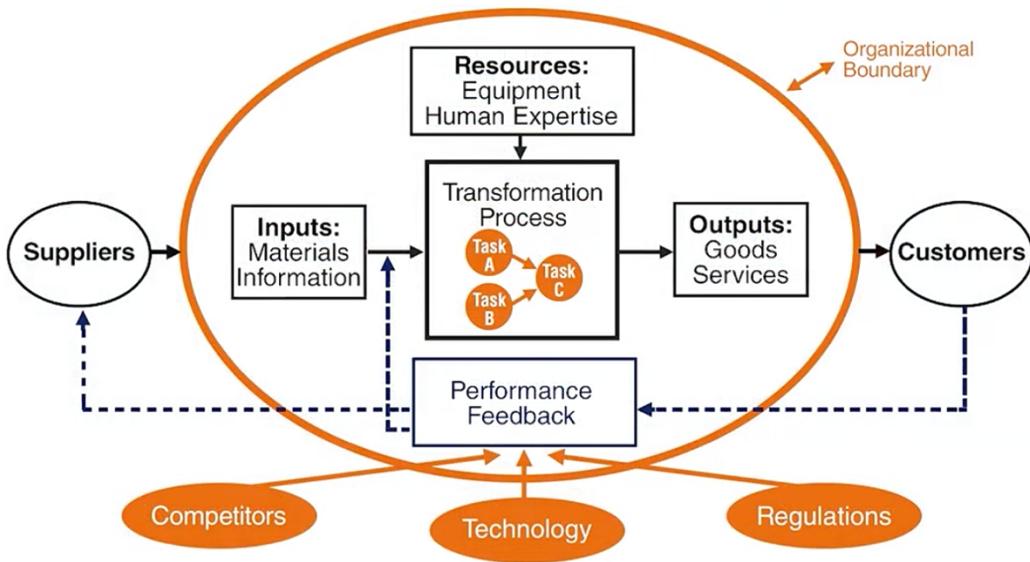
What I'd like to do is take everything that we've talked about and put it into a definition. It's hard to come up with a formal definition for a concept like this that pervades everything that we do, but we're going to give it a shot. Operations management is about organizations effectively and efficiently using their resources. Let's pause there and see what this definition is telling us. It's about organizations effectively and efficiently using their resources. Effectively means that it should be using it for the purpose of what you are giving to the customer. Efficiently means it should be using it from a cost-benefit perspective in the right way. Effectively means that the consumer gets what they're expecting, and efficiently means that the company is able to make a profit out of it, is able to deliver things to customers while making a decent profit. Continuing on with the definition, it is made up of resources and activities, so they're going to be resources, the location of the plan, the facilities that are needed to make things, they're going to be activities within the process that we're going to talk about, where we are going to have to do things to either make something or deliver a service to you. Continuing on, it has to transform material and information, do there's going to be some input of materials and information. Remember that input process, output view that we started off from, there's going to be some transformation. Hopefully, it's value-added transformation. You actually converting material and information into something useful into goods and services that customers are going to use. Let's take this input process, output view and get some specifics out of it when you're looking at the business of any organization.



# PROCESS VIEW OF OPERATIONS MANAGEMENT

Here's the process view of operations management.

## PROCESS VIEW OF OPERATIONS MANAGEMENT



We're going to start off with the transformation process. Like we said earlier, hopefully, it's adding value to the product. The transformation process is taking inputs from suppliers and delivering outputs to customers. What you have is the resources, that's the capital and the equipment, and the human expertise that's going in. Now we can put a circle around this and call it the organizational boundary, so this is typically what we

think about. Generally, what we think about in terms of an organization that is making goods or services to be delivered to customers. It doesn't end there because when you have inputs and outputs, you also have your suppliers and your customers. The suppliers are the people who are going to deliver, the companies that are going to deliver the materials and information that is needed, and the outputs are going to be things that are going to customers. Further, what you can think about is there's going to be some information that has to flow between each of these stages. The customers have to give performance feedback, what did they like about the product, what they didn't like, how much more do they need, how much demand are we expecting, there's going to be performance feedback that goes all the way back to the suppliers in terms of how much raw material is needed and what quality of raw material will be needed.

Finally, we can go beyond the organizational boundary and the suppliers and the customers that are intimately tied to the Operations Management arena that we're talking about here, and look at the external environment in terms of the competitors, the technology that's being used and the regulations. The competitors are who you're going to have to keep an eye on as an organization to see what are the different developments that are coming up. Similarly, with technology and similarly with regulations, so there are going to be regulations to a different extent depending on which industry you're talking about. Of course, the food and drug industry, you're going to have a lot more regulation, the airline industry, automobile industry, you're going to have a lot more regulation than you would for, let's say, a mom and pop restaurant or a dry cleaning store, for example. Now that we have the process view of operations management, you also want to think about using this process view for different things that you see around you. Two things that you'd need to keep in mind over here is, one is the level of granularity at which you will study a process. What I mean by that is, you could be talking about a large organization that, for example, makes cars, the inputs are the things that they buy from the suppliers and the outputs are the cars that are delivered to you. However, there are going to be many sub-processes within this large process that you're talking about of taking components and converting them into cars. Each of these sub-processes can be studied, so what we're saying is that the level of granularity at which you want to study these processes is going to be determined by whoever is analyzing the process, and that's going to impact how closely you study each sub-process. The second thing that I want you to think about is that every process is not going to be dealing with external customers, you're going to have support processes that relate to the things that you need to do as a business. A car manufacturing company is going to need processes for hiring people, for employing people. A car manufacturing company is going to need to maintain its facilities and that's where it's going to need the support processes. In summary, what we're saying here is that there's going to be this, this core process and there are going to be some support processes that need to be there along with it. Also, what we're saying is that there's going to be a

large process and they're going to be sub-processes that you can analyze, that you can study in order to see how the process is working out.

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Lesson 1-1.3 Input-Process-Output**PROCESS VIEW  
REFLECTION**

Consider any organization – in other words, a company, business, or a non-profit entity.

Apply the Process View of Operations to think of the main inputs, processes, and outputs.



(commons.wikimedia.org/Pluke, 2011)



What I'd like you to do is use this input-process view and apply it to any organization that you know of. Any company, it could be a profit-making business, it could be a non-profit entity that doesn't really care about profit but is trying to do some good. What I'd like you to do is apply the process view, the input-process-output view, and think about the main outcomes that this organization produces.

**IN-VIDEO QUESTION**

Reflect on the sub-processes related to the main products – goods and services – of the business and the support processes that support the existence of the business.



Right: (flickr.com/taymazvalley, 2015)

What I'd also like you to do in addition to this, is you've thought about the core operations, the core processes, but I'd also like you to do is reflect on some of the sub-processes for this core processes. What are some of the interim things that the organization has to do to get the things done. Finally, what I'd like you to think about is the support processes that support the existence of the business. I'll let you think about it, and then we'll talk about it and see how we can align our thoughts there.

**IN-VIDEO INSIGHTS**

Reflect on the sub-processes related to the main products – goods and services – of the business and the support processes that support the existence of the business.



Now that you've had a chance to reflect on the idea of this process and sub-process, core processes and support processes, what you may have thought about is probably a manufacturing business, somebody that makes furniture, for example, an organization that makes furniture. What would be the main inputs and the outputs of their core process, which is making furniture? Getting wood and other materials, and delivering outputs which are furniture that's going to be delivered to customers. What you could have also thought about could be a service. You could have thought about a healthcare organization or a fast food restaurant. They get materials, they convert them into the food that is delivered to customers. If it's a healthcare organization, the input is the patients, and the output is the patients who have been treated in that health care process. Now, if you're thinking about the furniture organization, you could break that down into the sub-assemblies that would have been made inside the organization, inside the process, the big process that takes wood and converts it into furniture. The sub-processes will be making the sub-assemblies. They'll be making the legs for the chair, they'll be making the tabletops that need to be put into all these products. If you're thinking about the service, you could be thinking about the sub-processes that are the little steps. When you go in as a patient to a healthcare clinic, you have to go through registration, next you have to get your vitals taken, next you have to go and talk to the doctor and then maybe go to radiology or pharmacy and so on and so forth. There's going to be many different sub-processes. The important distinction that we want to make here in processes and sub-processes is some sub-processes will have the ultimate customer as their customer, the person outside the organization who's getting that product or service, while some of them will be having internal customers. When you think about a process and we talk about a process customer, it could be internal. The

other aspect of processes is the support processes. If you have a restaurant or a healthcare clinic, you still have to hire and train people, you have to maintain facilities, same thing goes for a furniture store. Hopefully what you've seen from this is that you can take any business and apply that input-process-output view, and it's going to prevail in pretty much everything that we see around us and everything that gets done in any organization. You can use this view to analyze how they're doing, how effective and efficient they're being in their operations.

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## Lesson 1-2: Business Success from Operations

### Lesson 1-2.1 Business Success from Operations



Faster claims turnaround

Better fraud detection

Lower costs of claims processing

Owed to operations management feature:

Customer claims process using mobile vans for adjusters

(Farris, Thompson, and Steenburgh, 2015; Hammer, 2004)

(progressive.com)



In this session, we're going to look at successes that a few companies have had. And in these are companies that you may know about, that you may have heard of. And these successes that these companies have had can be traced back the things that they've done from an operations management perspective in their operations. So the first company that you're, that you're looking at here is called Progressive Insurance. This is a US based insurance company that is very well known for their claims turnaround time. And claims turnaround simply means when you, for example, get into an auto accident and you file a claim with the insurance company. And then the insurance company sends you the check for your repairs to your automobile. And that closes the claims process. So they are very well known for that. It turns out that for the company that faster claims turnaround time also helps with better fraud detection. It also lowers their costs of claims processing, from a customer perspective, getting the claims done faster is very beneficial. But it also turns out that, that historically when there is a faster claims turnaround time, that average claims sizes are also much lower. Now, what's the operations management role in this faster claims turn around. So what progressive insurance did was they completely turned around the idea of the people who have to come in to inspect the damage that has been done for them to pay the claim. Traditionally, what used to happen is, let's say you got into a fender bender with your car, you would call the insurance company. And the insurance company would say well

get the car appraised to get the car inspected. And then we'll start the claims process. What progressive did was turn this process completely around and they said well we'll send the adjusters to you, will send the people to estimate the damage to you. And what that has done is that has reduced the time that it takes for people to file their claims. So that's completely turned around from the point of view of the customer, completely turned around from the point of view of this traditional process. Progressive has done a number of other things that are remotely related to operations. So for example, they give you the rates of competitors when you go online to buy insurance, they give you the rates of competitors and they are the first company who started doing that. And that helps with customers making their decisions quicker, whether they want to buy from insurance or from whether they want to buy from progressive or from elsewhere. They also have the idea nowadays of tracking your use of your vehicle in order to give you better rates based on how your driving habits are.



- Lower costs
- Better utilization
- Better labor productivity
- Faster airplane turnaround



southwest.com

Another company that is quite well known, especially in the US is Southwest Airlines. Now, Southwest Airlines has been around for about 45 years and out of which they've had 42 years of continuous positive profits. They've been profitable for the past 42 years. How does Southwest do that? Well, first of all, they are able to give very low prices to customers. Their costs are very low. Utilization of their aircraft. Utilization of their main equipment, which is, the aircraft is very high. Their labor productivity compared to other airlines in the industry is also very high. So if you look at the number of labor hours per passenger mile that has flown on any airline, Southwest is better than any other airline. They have a very quick turnaround of airplanes. Now, if you think about it, how do airlines make money by having their planes flying people around? Not

when they're sitting on the tarmac. So having a faster plane turnaround helps them become more profitable. Now, what is it about Southwest operations? That's different, that helps them achieve these things.

# Southwest®

Owed to operations management features:

- Point-to-point routes
- Smaller airports
- One type of aircraft
- Cross-trained staff

(Schmenner, 2004)



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So let's take a look at that. Well, first of all, when they decided to get into this idea of a budget airline, they started with point to point routes. They moved away from the hub and spoke model of most traditional large airlines and they started to focus on point to point routes. Their logic was that they are not really competing with the airline industry. They're actually competing with the people who want to travel by road and they want those customers to be moving into their airplanes? They start to smaller airports to keep their costs down. And they used one type of aircraft. Now, if you think about it, what is using one type of aircraft get too well for one thing you don't have to worry about. Or they don't have to worry about the types of gates that are needed for each of their aircraft. It's the same type of aircraft. So it's a very standard gate. They don't have to worry whether it's a 747 or a different aircraft and whether it needs a different gate for that aircraft. The second thing that they get from using one type of aircraft is that they're scheduling of the cruise. And their pilots is much simpler. Everyone is trained for that one type of aircraft, everyone the higher is trained for that one type of aircraft. So it gives them a lot of flexibility. The third thing that it gives them is, if you think about maintenance of their aircraft, they have to hold only one type of inventory because they have only one type of aircraft. It gives them a lot of advantages which allows them to run a very low cost operation. They also have cross trained staff. What does that mean? Well, the people who are helping you with the check in process are also the same people who might come in and help with the seating in the aircraft. They are the people

who might help with the cleaning with the aircraft. So what you have then again, is trying to get the plane off of the ground as quickly as possible through the use of this cross trained staff. Now, Southwest secret is that they have a lot of, employee, incentive programs in order to keep their staff incentivized to do all these things. So that's the other perspective that they use, toward getting their operations to be much more, much more efficient and much more effective.

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## Lesson 1-3: Focused Operations

### Lesson 1-3.1 Strategic Alignment

#### STRATEGY

“An integrated and coordinated set of commitments and actions designed to exploit core competencies and gain a competitive advantage”

(Hitt, Ireland and Hoskisson, 1997; p. 115)

“Competitive strategy is about being different. It means deliberately choosing a different set of activities to deliver a unique mix of values.”

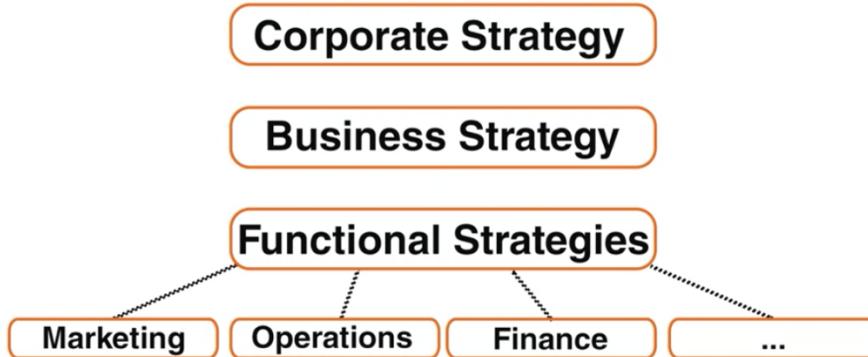
(Porter, 1996; p. 64)



In this session, we're going to talk about operations that are focused on the objectives that they are trying to achieve. And we're going to talk about how misalignment can make companies falter. So before we get into the nitty gritty of operations strategy, let's look at a definition of a broader strategy. Let's look at two definitions of strategy in general. So the first one states that since integrated and coordinated set of commitments and actions. So it's deliberate actions that companies take and they're designed to exploit the core competencies. So some kind of competencies of the companies have, something that they're good at and try to gain a competitive advantage. The second one is by Michael Porter and it talks about competitive strategy being as something that is unique, that is something different from others. And the main reason that Porter points that out is that's how you get business that otherwise other companies would have taken away. Competitive strategy means deliberately choosing a different set of activities to deliver a unique mix of values.



## ALIGNMENT AMONG STRATEGIES



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So given these definitions in the background, let's dive into the idea of operation strategy. So first of all, when you think of operation strategy, it's among a set of functional strategies, the other functions strategies being marketing, finance information systems and all the different functions that we have. A corporate strategy, let's take an example of a large conglomerate such as General Electric. Now, if you think about General Electric, it has many different businesses. For these businesses, it might have a common vision that dictates what the different business strategies to be. Now for example GE has GE finance, GE healthcare, GE is also into aircraft engines. So the business strategies for each of these different businesses should ideally come from the corporate strategy, which might be an overarching strategy for the conglomerate. And then after that level of business strategy, you have the different functional strategies, the marketing operations, finance. And hopefully what you have is there is some kind of agreement about the direction that each of these strategies are going to work. So there's a common goal, there's a mission statement for the company, there's a mission statement for the corporation as a whole that dictates what each of these strategies are trying to pursue.

## CHALLENGE OF ALIGNMENT

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“... a fully consistent set of manufacturing policies resulting in a congruent system is highly rare”

(Skinner, 1974, p. 116)

### Reasons:

Focus on professional/functional goals and lack of coordination

Strategic direction never clarified/codified

Product proliferation without concern of focus

(Skinner, 1974)

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When we look at operations strategy, we can think about it from the point of view of Vic Skinner, who wrote in an article in 1974, on focused factories. Now, this was related mostly to manufacturing strategy or exclusively to manufacturing strategy, because that's what operation strategy was mostly about at that point in time. And Vic Skinner pointed out that a fully consistent set of manufacturing policies is highly rare. And what he meant by that was that a lot of times manufacturing is at odds with other strategies such as the marketing strategy and the business strategy. And why that happens is because most of the organizations, most of the companies are organized by functional silos. Everyone who works in the company has a boss in the finance department or in the accountancy department or in the marketing department or in the operations department. So what they end up doing is they end up focusing on their functional goals and they don't end up focusing on the process view, on what the company is trying to do. The second reason he pointed out was that there is never clarified common theme for the whole company. So the strategic direction coming from top, coming from the business strategy is never clear. If that is clear in fact, then each of the functional strategies can be pursuing that business strategy, in which case there would be automatic alignment. He also pointed out that in the case of operation strategy in particular, there seems to be a kind of tension between operations strategy and marketing strategy. Because marketing strategy is usually going after product proliferation, meaning having a lot of variety for different types of customers. And while operation strategy is trying to narrow down the product portfolio and try to focus on a limited number of products. So there's a tension between them. Now although this article is exclusively about manufacturing, I think it brings out a problem that we see with several companies even today when they're talking about the different different

functional strategies and their business strategy. That there seems to be some type of misalignment that gets them in trouble. And we'll see some examples of such things later on in this session.

## ASKING THE RIGHT QUESTIONS

How can we compete?

Not just how can we increase productivity

How can we improve system efficiency?

Not just how can we improve labor efficiency

What should we focus on?

Not just what else should we produce

(Skinner, 1974)



So Vic Skinner also pointed out that the problem of alignment does exist and how can companies get away from this problem. So he gave a set of questions that you can see can be very useful for any company to think about when they are thinking about operations strategy. So these questions that he was talking about were how can we compete? How can a company compete in terms of whether it should be cost, whether it should be the quality of products, whether it should be, how quickly they are able to deliver or how much they can customize a product. And he was contrasting this with the idea of how much a company can increase productivity, which means exclusively focusing on cost. And his point was that when we're thinking about operations strategy, in his words, manufacturing strategy, companies tend to focus on cost exclusively and that should not be the case. That they should focus on other requirements of customers as well as other competencies that operations can bring. Second he pointed out that operations should be focusing upon increasing the efficiency of the system and not just of each one of the tasks each one of the activities. And here you can see the tension between cost accounting numbers. Where we are trying to look at the utilization of different parts of a company versus looking at how much a company is increasing its sales or decreasing its costs or getting better sales from giving better operational competencies. So there he was pointing out that we should not just be focusing on labor efficiency or efficiency of particular machines, but we should be focusing on the total system efficiency. How does operations help increase sales dollars at the end of the

day? On the same lines, he was also pointing out that although we should be focusing on how can we do better in terms of not just cost but also in terms of offering more products. He found that a lot of companies falter on the other side that they add a lot of products and think of what else can be produced in order to keep our capacity utilized. Instead of focusing on what else should we be concentrating in terms of our product portfolio, in terms of what we can do well from the operations. So his idea was not just that operations should be taking a reactive role to whatever is determined by business strategy or marketing strategy. But that there can be a proactive role in terms of this is what we're good at in terms of operations and this is what we can take and offer to the market or in terms of the business strategy. So there might be a proactive role for operation strategy from that perspective.

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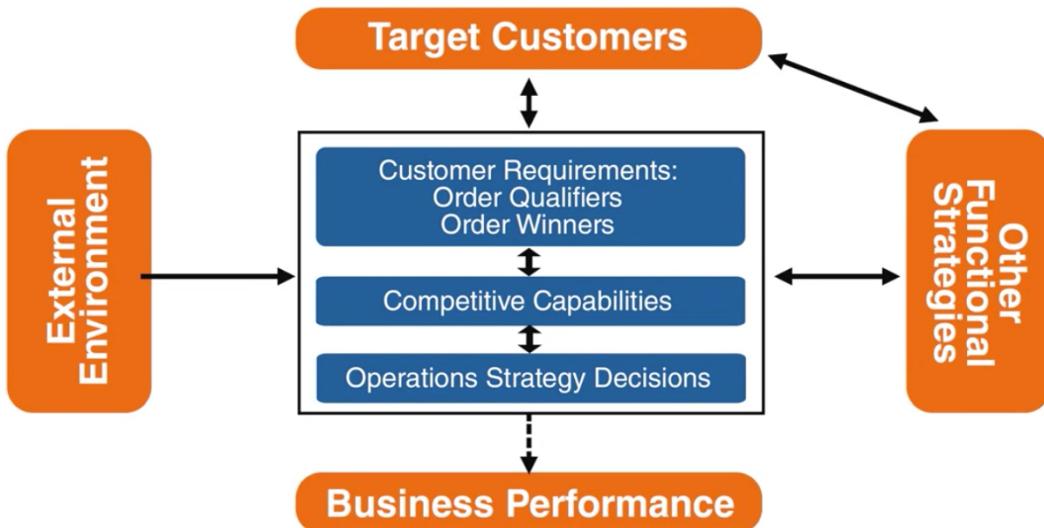
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### Lesson 1-3.2 Formulating Operations Strategy

## OPERATIONS STRATEGY ELEMENTS



Let's take a look at this framework that we can build in terms of the different decisions that can be made from an operations strategy perspective. The framework that we have is going to be encompassed in this box that you see in the middle of the slide and what we have outside are the different things that have to be kept an eye on and be aligned with, so you see the double arrows and the double arrows signify that there's going to be some iteration of operation strategy, communicating with other functional strategies, operation strategy, communicating with what the target customers want. Then you also have the external environment on the left side and business performance, which is dictating what Operations Strategy is able to provide. Let's break down the operation strategy elements here. We're going to see three elements. The first one of which is customer requirements. The basic idea is that you start from the target customers and what are the requirements of those target customers. You'll see more about order qualifiers and winners, the terms that are used in this slide later on in this session. Next is competitive capabilities that come from operations because we're talking operations strategy. What competitive capabilities can be derived from operations? Again, you see the double arrow, which signifies that they can be competitive capabilities that say, we are good at doing something from operations. Let's offer something extra to the customers, or this is something unique that we can offer to the customers based on the competitive capabilities of our operations. Then we have the operation strategy decisions. Once there are the competitive capabilities in terms of what the company is good at, in terms of its operations, it can look at certain decisions and what you'll see in the following slides is a set of decisions, a laundry list of decisions that make the

implementation of Operations strategy real, so what are the things that companies can do in order to implement an operation strategy? That's what you'll be able to see based on this framework.

## FORMULATING OPERATIONS STRATEGY

Begin with the customer

What does the market want?

What do targeted customers value in each of the markets that we have decided to pursue?

How is the market changing?

How are customer needs changing?



What you're doing here is breaking down the elements of operation strategy into the three elements that we talked about previously and the first one is customer requirements. We start with, what does the market want? Depending on the product or service, the goods or services that you're selling, you're trying to figure out what are the different features of the product or service that customers value do they value timeliness more do they value cost more, or customization more. Those are the different aspects that you focus on with what does the market want? Now the second question is talking about, what do the targeted customers value? This is getting at a company does not want to be targeting all types of customers because different types of customers might have different requirements. They might have different compromises that they're willing to make. Let's say, for example, between cost and quality. Some might value quality more and are willing to pay a higher price, some might say, I am very cost-conscious and very price-conscious, and I can compromise on quality a little bit. The question here is getting at what do the targeted customers value? Meaning that the customers that we are targeting from our operations, what do they value in the markets that the company has decided to serve? Now you can start with these questions and think about these from a stationary point of view. But what is going to happen is that the market is going to be dynamic, it's going to be changing. The third question gets at, how is the market changing? Now, remember, you're trying to make operations strategy decisions and these are going to be long-term decisions. These are going to be decisions that are

going to stay with you, investments that are going to be staying with you for a long period of time, so you have to figure out not just the present, the market today, but also how is the market going to be changing over time and what's going to be happening in the market. Similarly, if you are focusing on certain customer segments, are the customer needs going to be changing and how do you want to react to those changes. Whether you want to go with those changes and target those customers' different needs. Or you want to say we are going to get out of this market because the customer needs have changed, and we simply are not able to offer what the customer wants.

## ORDER QUALIFIER & WINNER

### Order Qualifier

Minimum selection criterion that permits products or service to be even considered by potential customers

### Order Winner

Criterion that differentiates the products or services from competitors, thus resulting in winning orders of customers

(Hill, 1993)



Now, this brings us to the next question of order qualifiers and winners, which is the idea that everything that a customer values is not going to be at the same level. What do we mean by that? So this concept of order qualifiers and winners is this. Order qualifiers are the minimum criteria that a customer expects. It's something that a customer will absolutely want from a product. For example, if you're thinking about an airline, what's something that customers expect from any airline that they might be flying, or any customer who is going to fly an airline, it's going to be safety. They want to get from point A to point B, and they want to get their safety. That's going to be an order qualifier and that's something that all customers will look for in all kinds of airlines. But if you think about order winners, they are the criteria that differentiate the products of different companies. If you're talking about the airline, for example, the order winner could be cost, price for the customer might be an order winner. For different types of customer segments, it may not be price, it may be the ability to change tickets and get preference seats through different loyalty programs and those kinds of things. Now again, the idea of order winners and qualifiers, as we talked about with the focus

factory, came to us from the idea of manufacturing strategy. Traditionally this was thought about from a manufacturing strategy perspective. But today, we can take these concepts and translate them into operations for manufacturing as well as services, so physical goods as well as intangible services. These criteria apply equally. Now, order qualifiers and winners are from the customer's perspective. It's what the customer desires, is what the customer values.

## **COMPETITIVE CAPABILITIES**



What is the current capability of the process?

What should the targeted capability of the process be?

In light of targeted customers

And considering competitors

Should we be targeting different customers?

Is the current market that we are serving changing and/or growing or declining?

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From an operations capabilities perspective, you have to think about the questions in a very similar way. The other side of the picture, it's the company side of the picture. It's the operation from the point of view of what is the capability that the operation can provide. Here the questions are similar, except they're focusing on what is the current capability, what should be the targeted capability? And if we're not able to have the targeted capability for a changing market, should we be targeting different customers? Finally, like we did for order winners and qualifiers, you also want to be thinking about is the current market that we're serving changing is a growing, declining. Again, because operations strategy decisions are going to be long-term decisions you want to be thinking about. Do we have the capability to keep on serving this market, the changing needs of this market over a longer period of time and that's something that should be kept in mind if a company is to survive and have a sustainable competitive advantage over time? We're adding the idea of them being able to sustain this advantage that they're getting from operations here.



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### Lesson 1-3.3 Priorities and Capabilities

## TWO SIDES OF A COIN



Order Qualifiers and Winners Attractive to Customers	Competitive Capabilities Needed from Operations	Example Companies
Low price	Cost	Walmart
Conformance quality	Quality control	Rolls Royce
Added features	Quality improvement	Apple
Fast delivery	Speed	Amazon
Reliable delivery	Dependability	Southwest
Variety	Mix flexibility	Ikea
Personalization	Customization	Subway



Putting these two together, the idea of order qualifiers and winners, and the idea of competitive capabilities. Order qualifiers and winners are features attractive to customers. Competitive capabilities are what the company can do well. You can see that they are two sides of the same coin. Let's take a few generic order qualifiers and winners that we talk about on operations. One is low price. This is something that customers might desire. Now if customers want low price, the competitive capability that must come from operations has to be low cost. They should be able to make things at a low cost to be able to offer them at a low price. The example company that I have up here for this is Walmart. Walmart is a company that is able to get lower prices from its suppliers and is able to pass them on because of its focus on keeping low inventories, keeping information about sales, and that's how it keeps its low inventories and is able to keep its costs low. Conformance quality is something else that customers might value. We differentiate here between conformance quality and the idea of added features because conformance quality is what the customer expects in terms of the quality. Using the example of Rolls Royce that I have here, there's a certain degree of quality that customers of Rolls Royce cars expect. It's a high-quality car and they have certain expectations of perfection in every feature of the car that they're going to purchase from Rolls Royce. For that, the competitive capability the company would need would be very tight quality control. In terms of the other aspect of quality, adding more and more features, you could think about Apple computers or Apple phones as the products where there are many different features being added, and now with apps coming into the picture, even a phone is being enhanced in different ways and different

features are being added to them. That's the idea of quality improvement or quality enhancement from a competitive capability, from an operations perspective. We've talked about cost, quality as being two competitive capabilities. The third capability that an operation can have can be the speed at which they are able to deliver products. If the competitive capability for an operation is speed, it is able to cater to the customer need of fast delivery. The example that you can think of here is Amazon, which in the US is able to deliver products to customers at a very fast pace. They've gone to two-day shipping, one day shipping, in larger cities they are even contemplating the use of drones to drop packages off to customers and deliver them within hours of them ordering something. What you can see is the match between the competitive capability of speed with the order qualifier and winner, things that customers desire of fast delivery. Moving on in terms of delivery, fast delivery is one thing, but the other aspect of delivery that customers might desire is reliable delivery. I don't care if you send it to me quickly or not, as long as you send it to me when you promised it to me. That's the idea of reliable delivery and the competitive capability there is dependability, so if the company promises me something, it gets me there. Southwest Airlines is known for being low cost, but it's also known for its dependability. Getting from and to the gate for a particular flight on time is something that they pride themselves on and they're dependable for that. The final two categories catered to changing needs of customers. Customers value the capability of being able to change their orders, being able to get different products from a particular provider, and they might value the idea that even when they change their orders, the prices are not increased. Here the two examples that I have are Ikea and Subway. Ikea is a furniture company that involves customers in assembling the product. You get the product from Ikea, from their store, and then you go and assemble it on your own with the idea that they are giving you a lot of flexibility in how you're going to put together your furniture. You put it together in different combinations based on what they're able to provide you. For personalization, Subway Sandwiches is a company that is known in the US and has presence worldwide, is a company that uses the idea of using customer involvement in the production process. Customers go and choose what they want in a sandwich and are able to customize their sandwich exactly to their needs. So the idea of customization is coming from using the customer to decide what exactly they want.



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Lesson 1-3.4 Operations Strategy Based on Customer Needs**I****IN-VIDEO QUESTION**

Take any fast food chain and luxurious sit-down restaurant.



Upper left: (mcdonalds.com) lower left: (subway.com) right: (Royan, 2008)

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So here I'm going to ask you to take these concepts the idea of order winners and qualifiers and apply it to a situation that you might be familiar with. So take any fast food chain that you know of any fast food chain that you visit. In contrast take any luxurious sit down restaurant that you might have visited or that that you would like to visit. So fast food restaurant versus a luxurious sit down restaurant.

**IN-VIDEO QUESTION**

Take any fast food chain and luxurious sit-down restaurant.

List the order qualifiers – essential criteria sought by customers – and order winners – additional features that would delight customers – for both businesses.

Compare the two lists.



(flickr.com/taymazvalley, 2015)

Now what you want to do with this is you want to list think about the order qualifiers and winners of both these products that you care about. So for the fast food restaurant, what would be the order qualifiers? The essential criteria that that you would want and then on the other hand, the same kind of thing for the sit down restaurant. Similarly for the order winners, additional features that you would love to have, although you don't expect it, but you would love to have those for fast food versus a sit down restaurant. So take these two kinds of services, two kinds of food providers and and think about the order qualifiers and winners for both. And then we'll come back and we'll compare the two lists.

**IN-VIDEO INSIGHTS**

I

Take any fast food chain and luxurious sit-down restaurant.

List the order qualifiers – essential criteria sought by customers – and order winners – additional features that would delight customers – for both businesses.

Compare the two lists.



Well so you may have thought of the fast food restaurant such as McDonald's or Burger King and the order qualifiers there should be obvious just from their name, right? Fast food. It should be quickly delivered, it should be cheap, you're probably thinking of it should be very convenient to go to a fast food restaurant. So it should be located in a very convenient location. On the other hand, for the sit down restaurant, the order qualifiers are going to be different. You don't really care about price or not as much as you would for a fast food restaurant and you probably don't care too much about delivery speed there. You don't expect the food to be delivered quickly to you. You're going to a sit down restaurant to spend some quality time and you're going to expect a good ambience. So that would be the order qualifier. There is a good ambience there and a good menu that would be the order qualifier. Order winners, what would you absolutely love to have without having to pay extra in a fast food restaurant and a fast food restaurant. That might be healthier foods. That's something that you might say. Well that would be great if we could get healthier foods. It would be great if they would allow extreme degrees of customization which you don't expect from a fast food restaurant. Now for a sit down restaurant the order winners would be completely different. What would you expect there? You're already getting very high quality service, you're getting this great ambience. Perhaps it's something to do with personalization. They keep a record of what you like and they remember your name at that restaurant when you go back, they might also have tie ups with charities that you value. And that would be order winners that would make you choose that particular restaurant versus another sit down restaurant. And those would be the order winners that are attracting you to those restaurants. So that would be the concept of order

winners and qualifiers for the same type of service except for two different customer segments.

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Lesson 1-3.5 Implementing Operations Strategy**OPERATIONS STRATEGY  
DECISION AREAS (1 OF 2)**

Size of facility and its capacity

Location and layout of facility

Choice of technology

Vertical integration

(Hayes, Pisano, Upton, and Wheelwright, 2005)



We've talked about two of the four elements of operations strategy and that's the customer needs and then the order winners and qualifiers for customers and the competitive capabilities that are coming from operations. But how does a company target these competitive capabilities? How does it go after these competitive capabilities? So, we have a list of operation strategy decision areas and this list again comes to us mainly from manufacturing strategy. So most of these concepts were conceived when they were talking about manufacturing strategy but now they're as applicable to the service area as they were to manufacturing. And we can divide this list up into two different types of decision areas. The first one that you see here, the four decision areas that you see here are more the brick and mortar, the sort of the hardware decision areas, if we could call them that. So these would be the size of the facility and its capacity. If you're thinking about a fast food restaurant, the decision that you have to make is what kind of facility is it going to be? What kind of drive through is it going to have? And what kind of capacity in terms of the line for getting their food and in terms of being seated in the restaurant are you expecting? The second type of decision that you would be making from an operation strategy perspective is the layout of the facility and this would have to do with the process design, is it going to be a design which focuses on mass production? Is it going to be a layout of the facility that's more kind of we're going to make customized product so it cannot be a mass production kind of a layout for the facility. So, obviously for a fast food restaurant versus a sit down restaurant, you're going to have different types of layouts there. Third is the choice of technology. It may or may not apply to a restaurant, but if you're thinking about a

business which is very technology focused, cellular phones, videos, then you're thinking about, well is this technology kind of technology this kind of platform going to be there for a long time, how is it changing? And what kind of technology should we be adopting when we are getting into this business? Fourth is the idea of vertical integration should be outsourced some of the things that we are currently doing ourselves, or should be vertically integrate in the sense of should be doing more of what our suppliers are doing and our customers are doing ourselves versus outsourcing them to other people.

## OPERATIONS STRATEGY DECISION AREAS (2 OF 2)

Salaries and incentives, and employee training

Quality management

Scheduling of production

Centralized versus decentralized control

(Hayes, Pisano, Upton, and Wheelwright, 2005)



So these would be the brick and mortar kind of decisions, then you have the more software kind of decisions. The more the lesser long term in terms of salaries incentives that you would be paying to your employees and the kind of employee training are you expecting to have very highly trained employees? Again, you can think of the fast food restaurant versus a sit down restaurant. And there would be different needs in terms of the training that you would require the salaries and the incentives and how you would structure them. Quality management and quality control. How is it that you're going to assure that customers get the quality that they expect? Is it going to be through training the people to make autonomous decisions in terms of the quality? Is it going to be very standardized in the way they do their work? Or is it going to be something that you don't pay too much attention to and you control quality based on inspection. Scheduling of production this would be whether you do made to stock kind of activities when they're standardized product. If customers don't care about customization, you would schedule the production from a make to stock perspective. If it is more customers wanting customized products than you would say, well, it has to be a made to order strategy. And then finally, the idea of whether it should be centralized versus decentralized

control from an organizational structure perspective, is the businesses, the operation in each one of the different stores, in each one of the different facilities, is that going to be controlled from a central place or is there going to be autonomy given to each one of the store managers to the factory managers to make their own decisions? So these would be the different operations strategy decision areas that would play into coming up with a competitive advantage from operations.

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## Lesson 1-4: Tradeoffs and Combinations

### Lesson 1-4.1 Tradeoffs and Cumulative Capabilities

#### **NOTION OF TRADE-OFFS IN OPERATIONS CAPABILITIES**

Cannot achieve one capability without sacrificing another

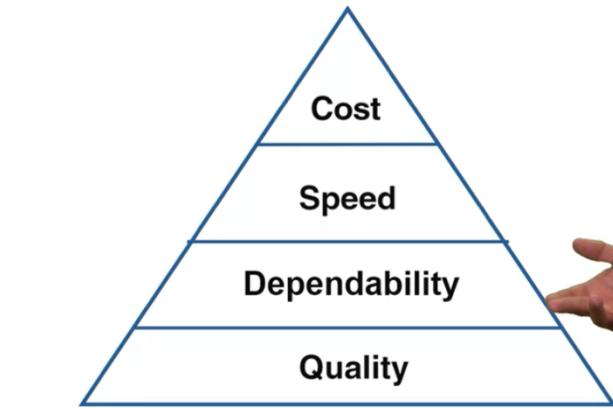
To achieve high quality production, costs will increase

To achieve flexibility, costs will increase and quality will decrease



Most businesses have to make some compromise in terms of what they're able to offer their customers and what capabilities they are able to build in order to offer different things to customers. If they try to be everything to everybody, then it usually ends up being an issue and they end up being not liked by any of their customers. The idea of trade-offs is the idea of compromises, is that a business cannot achieve one capability without sacrificing another. Now, we can think about the competitive capabilities of cost and quality and talk about trade-offs. If you generally think about if you want high-quality production, the costs are going to increase. We are going to have to sacrifice cost-efficiency if high-quality production is needed. Similarly, you can think about customization and flexibility. If you need to offer customers different types of variations in your products, be it a physical good or a tangible service, the costs are going to go up. It's possible that quality will also get compromised when you increase the variety and increase the flexibility that you're offering customers.

## NOTION OF CUMULATIVE CAPABILITIES



Now, that's the idea of trade-offs. But you can contrast this with a opposing perspective, the perspective of cumulative capabilities. The idea of cumulative capabilities is that you should start with quality as being the first operational competency that you should target. You should be focusing on quality, and then you can move on to dependability while expanding that base of quality, and that's why the triangle. You expand that base of quality as you move towards dependability, and finally, you get to cost after getting through increasing your delivery speed. That's the notion of cumulative capabilities that has come out from academic research that a lot of companies are able to do this if they start from quality as being the base. That's a prescription for companies if they want to try and build more cumulative capabilities and have lesser trade-offs between the different capabilities.



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Lesson 1-4.2 Mass Customization**MASS CUSTOMIZATION**

- Modular designs
- Postponement of finishing
- Assemble to order
- Customer involvement
- Using customer intelligence

(Pine, 1999)



How can companies do this? How can companies try and get to cumulative capabilities? So there are a couple of standard ways of doing this and here I have a few listed. So the idea of mass customization is a way of getting at cumulative capability where you have the advantages of mass production and at the same time you're able to customize the product for the customer. So if you look at this list, starting up with modular designs, let's talk through these with a few examples. So you could have a company such as smart cars, a company in Europe that builds cars that are highly customized and these have very modular design. So smart cars is a company that is a collaboration between swatch watches and the Mercedes car company and they have very modular designs which lets customers choose what kind of combinations they want in their car. So they are able to deliver different combinations based on modular designs, for the fender, for the roof and for different aspects of the exterior, as well as the interior. The second way of getting towards mass customization, this idea of mass production with some customization for the customer is postponing the finishing of the product. Benetton, which is a garment company more popular in Europe uses this idea of postponement of finishing. What they've done is come up with the process of making their sweaters in white all the way almost till the end of the production process and being able to dye them into whatever color is needed. So a postponement of finishing has helped them use the mass production idea and customizing at the end based on whatever colour orders that come in from different stores assemble to order is the idea that was used a lot by Dell computers. And Dell computers was known for giving their customers choices in the kind of combinations they want and at the same

time delivering at lower prices, customer involvement is used a lot in services. If you go to a sandwich shop which involves you in building the sandwich there, involving you in whatever kind of sandwich you're going to have. So it's customization based on that customer involvement and finally the idea of using customer intelligence. So companies have started using information about customers in customizing the kinds of coupons that they send the discount coupons that they send to their customers based on the information that they have about the previous sales. Online sellers do this based on previous purchases, they make suggestions to customers about products that they might be interested in. So that's one idea of mass customization using information technology.

## IN-VIDEO QUESTION

You have probably come across products that are produced using mass customization – combination of mass production and personalization. Reflect on a couple of these and relate to their production processes.



(flickr.com/taymazvalley, 2015)

Now, it's going to be your turn to think about products that use this idea of mass customization. If you reflect on products that you see around you, you've probably come across some products that have used this idea of mass customization that involved the customer in some way in customizing the product for the customer and personalize it for whatever the customer needs are. So what we're going to do here is you're going to think about a few of these products and then we're going to make inferences. I'm going to ask you to make inferences about how they would have achieved this kind of customization for their customers from a process that otherwise is not very high cost.

**IN-VIDEO INSIGHTS**

You have probably come across products that are produced using mass customization – combination of mass production and personalization. Reflect on a couple of these and relate to their production processes.

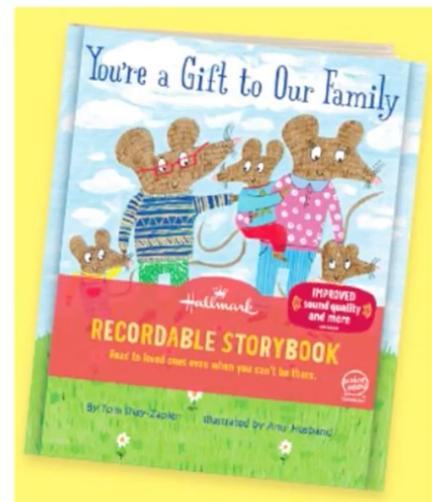


So hopefully you've thought of a few products where mass customization or mass production and personalization have been combined in a good way.

**MASS CUSTOMIZED PRODUCTS (1 OF 5)**

Hallmark's recordable story books

(hallmark.com)



I have a few examples that I'm going to share with you over here, so Hallmark is a company that's known for their greeting cards. And they have this product called Recordable Storybooks which lets customers send in their audio stories and is able to customize the products for them in terms of the production process. This company uses

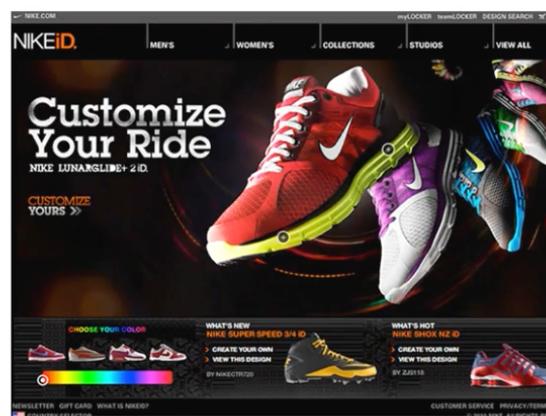
information technology and the internet to be able to achieve this objective for their customers.

## MASS CUSTOMIZED PRODUCTS (2 OF 5)

**I**

Hallmark's recordable story books

Nike's customized shoes



(nike.com)

Another example, that you may be familiar with is customized shoes from Nike, how is Nike able to achieve this? Again using information technology involving the customer and having a production process that makes some products in a mass production environment in a make to stock kind of environment and then customize is at the end based on different aspects that a customer is able to choose.

**MASS CUSTOMIZED PRODUCTS (3 OF 5)****I**

Hallmark's recordable story books

Nike's customized shoes

Ford Fiesta's combinations of exterior appearances and interior trims



(ford.com)

Ford Fiesta is an example, much like the smart car that we talked about earlier in the session, it allows combinations of different exteriors and interiors based on modular production. The same idea that, that is used in smart cars, the idea that pieces fit into each other relatively easily and so you can have multiple choices in each feature of the car and are able to combine them in different combinations.

## MASS CUSTOMIZED PRODUCTS (4 OF 5)

I

Hallmark's recordable story books

Nike's customized shoes

Ford Fiesta's combinations of exterior appearances and interior trims

Personalized M&Ms with message and photo



(mymms.com)

Personalized Eminem's with a happy birthday message with the photograph are things that are produced by the company based on a process that is able to print if you think about it. Quite a sophisticated process that is able to print the ems on one side and flip each Eminem over and put a message on the other side. So mass customization based on a production process that they have, that they have pioneered. What you'll notice in all of these mass customization ideas is the role of information technology. The first three of these, you see that information technology plays a big role in terms of what customers are able to do. They're able to go in and request what they want and, and get the product for themselves.

## MASS CUSTOMIZED PRODUCTS (5 OF 5)

I

Hallmark's recordable story books

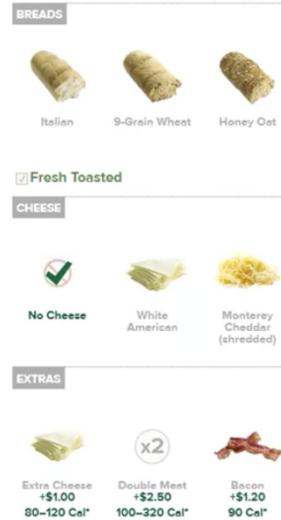
Nike's customized shoes

Ford Fiesta's combinations of exterior appearances and interior trims

Personalized M&Ms with message and photo

Subway sandwiches

(subway.com)



In the last one, what you'll see is the idea of subway sandwiches where mass customization is based on, again, customer involvement, the customer going to the store and picking and choosing some of the things that they want.

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## Lesson 1-5: Manufacturing and Service Orientation

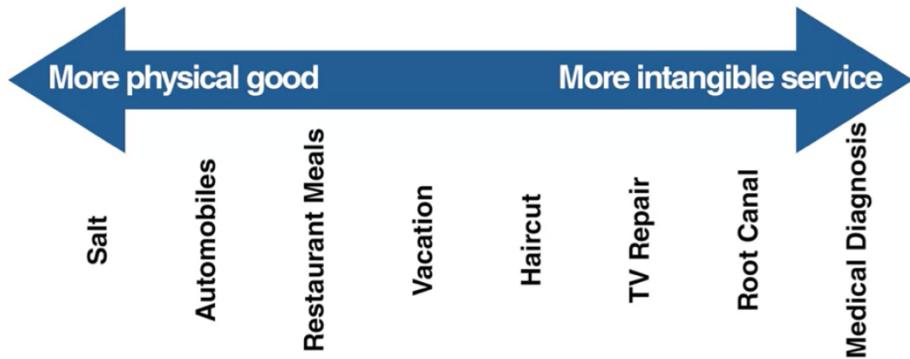
Lesson 1-5.1 Manufacturing vs Service Operations**MANUFACTURING & SERVICE ORIENTED OPERATIONS****I****Manufacturing Oriented Operations****Activities and Information Oriented Operations**

Most products are service-goods bundles

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In this session, we're going to look at the differences between physical goods and intangible services. And the challenges that companies face from being able to design processes for delivering physical goods and delivering intangible services. So, first, most products you can think of most products as being either physical good or an intangible service. And from an operations perspective, the operations have to be designed based on a manufacturing oriented or an operation that's focusing more on activities and information. Because if you think about services, they're going to involve employees and customers are going to be involved in the process for delivering the services in some proportion. Sometimes they're both going to be there and sometimes it's going to be employees and sometimes going to be customers and there's going to be information exchange that's going to happen when you're thinking about services. So, for example, if you're thinking about an insurance company or an accountancy firm, they are relying on focusing on information and transforming information and into something that's more value added for the customer. Now, most products are going to be on this continuum, they're not going to be on one end on the other. There going to be on the continuum of whether there will be a physical good or an intangible services. So we can think of them as bundles of some service aspects and some good aspects.

## MANUFACTURING & SERVICE ORIENTED OPERATIONS



Zeithaml, V. A. (1981)

To take this notion a little bit further the idea of physical goods and intangible services here are a few examples of physical goods and intangible services. On one extreme you have salt and automobiles and on the other extreme you have medical diagnosis and root canals. Now, what you'll notice here is that even within services you're going to have some kind of an implied level of satisfaction that a customer will have based on the service that they're getting. What we mean by that is when somebody goes for a medical diagnosis, they have to imply their level of service based on how they were treated at the clinic, where they got their medical diagnosis. They're not necessarily going to know much about the quality of the diagnosis other than what they can imply from other things that they experienced at the clinic. Versus if you're talking about services such as tv repair or a haircut, you're talking more about the quality being explicit at the end of the service received, you can basically talk about the service experience, but you can also talk about the quality of the actual service that you received. So even within services, there's going to be some differentiation along this continuum of intangible services.

**IN-VIDEO QUESTION**

I

Consider Starbucks



What are the physical goods and what are the intangible services that customers expect?

Left: (starbucks.com) Right: (flickr.com/taymazvalley, 2015)

So, the challenge that companies face when they're talking about services is that there are things that customers are expecting and have to be delivered at in a real time from the customer. So at this point, what I'd like you to do is consider Starbucks, the coffee company that most of you may be familiar with, if you're not, you can think of any coffee company that you would be familiar with and think of what they are trying to provide their customers. So specifically for Starbucks, what are the physical goods and what are the intangible services that customers expect when they go to a Starbucks store to get coffee. So when you thought of Starbucks or a similar coffee company, the physical goods are simple. You thought of coffee, tea, perhaps other drinks that the store provides the intangible services are going to be mainly focused on the ambience that the coffee shop will have. The internet facility, the seating capacity that they will have in terms of you go to a coffee shop with the expectation that you're going to sit and have a cup of coffee with your work or you're going to be chatting with colleagues or friends and you expect there to be a certain capacity to that coffee shop.

## EXAMPLE OF BUNDLING SERVICES WITH GOODS

“At Caterpillar, service doesn't end at the sale. With every purchase, Caterpillar offers you the full extent of our experience and legendary customer service. The deal and the handshake isn't the end, it's the beginning of a beautiful partnership.”

(caterpillar.com)



So those would be the intangibles that you expect at the coffee shop, think about caterpillar very different from Starbucks, Caterpillar is a company that makes heavy equipment, earth moving equipment tractors, farm equipment, those kinds of things. Now you would think of this as being mainly a physical goods company, it makes heavy equipment. However, even they, according to the website, you can find this on caterpillar.com talk about the idea that they're offering more than simply their product to the customer. When they sell heavy equipment to their customer, they're offering the idea that it's an experience that is going to be beneficial for the customer that that the deal that they're making with the customer is more than just the selling of the tractor. That they can always get good after sales service, that they can always get advice from Caterpillar on the product or on the use of the product that they're selling them. So it's a goods and services bundle that a customer is getting even from a company like caterpillar.com.



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Lesson 1-5.2 Challenges of Service Operations

## CHALLENGES FOR OPERATIONS MANAGEMENT

- Dimensions of quality
- Inventory
- Production & consumption
- Customer involvement
- Employee role
- Returns and repairs



If you think about the difference between manufactured goods and services, you can think about it in a number of ways. These ways will also get to why it is challenging for operations management to deliver services. Why does it become more difficult as compared to manufactured goods? Think about the contrast between manufactured goods and services as you are taking a look at these different elements. The first element is dimensions of quality. When you think about a service, the dimensions of quality are much more intangible. What the customer wants is something that is going to be a good feeling. Satisfaction from going through a haircut, going to a healthcare clinic, going to a restaurant is going to be very different for each customer. Each customer is going to have a very different expectation, or at least at a narrow level, it's going to be different. At a broad level, it might be similar, but a narrow level, it's going to be different. On the second element of inventory, it's virtually impossible to be able to have stock of services that a customer might want. You can't have stock of time during dinner for customers who are going to come into your restaurant. In terms of inventory, services can think of capacity as being inventory. They can plan on having some people who come in part-time and make up that capacity. That can be their inventory, but they can't really think of inventory in terms of time that the customer is going to spend at the restaurant, for example. Production and consumption in services is mostly simultaneous. When you're thinking of services like a restaurant or a haircut, the production consumption is right there. That also goes back to the idea of you can't really have inventory in a service. Customers are intricately involved in the service itself. The customer is there getting their service, or the customer is even involved in the

production of the service. What is that? Why does that make it challenging for operations? It's because customers are human beings and they bring in variation into the process. They have different expectations, they have different abilities, and they're going to bring in variation at the process, which makes it challenging for operations management to make the process effective and efficient for customers. Similarly, the role of employees like customers, are going to be human beings with different moods, with different attitudes when they come to work on a particular day. That's going to have an impact on trying to manage the efficiency of the process, trying to manage the effectiveness of the process. That variation will play a role. Returns and repairs can have a very different meaning when you're talking about goods versus services. If a physical good doesn't satisfy a customer, you can always offer a return guarantee. In the case of services, that has a different meaning in the sense that what do you offer if somebody's not satisfied with the haircut? You can offer a second haircut at a discount or free. There's not really much you can do for that particular haircut. Same thing for a meal that a customer has already consumed. There's not much you can do. At the same time. You can turn this around and say that service recovery can be immediate. If you notice that a customer doesn't like anything, it is going to be right in the employees' face. That actually can be an advantage if you think about it from an operations perspective, because in manufactured goods, customers might not complain. If you're talking about returns and repairs, customers might not complain. They might just give up on your product and go buy a different product versus when you're talking about services, because the employee is going to be able to see that the customer is not satisfied. They might be able to have a service recovery that might make the customer a customer for life if they're satisfied with the service recovery. That can be an advantage. Although it's considered more of a challenge for operations management.



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### Lesson 1-5.3 Implementing Service Operations



A service operation can be divided into a front office and a back-office based on where the employees and customers are interacting and where the employees are doing some back-office operations that need to be done for the service to run. For example, if you take a coffee shop, you have customers coming in placing the orders, making their payments, waiting to pick up their orders, and then going to the sitting area. In the back-office what you have is employees working on different aspects. The key difference between these two is that in the front office you have the customer and employee interacting, which makes it more inefficient if you think about it, because there's variation coming from both sides. Customer wants different things and employees have to react to that. At the same time, involving the customer in that aspect of production makes it easy to customize for the customer, so if you need to make some changes for that customer, it makes it quick and easy if that is going to happen in the front office. While in the back-office, you can focus more on making the process more efficient. You can use techniques to standardize the way drinks are pre-mixed. You can use automation to make the process more efficient at the back-end where the customer is not involved. That's a key difference between the front office and the back-office.

## IMPLICATIONS OF FRONT OFFICE

Direct customer encounters

- Provide opportunities to delight

- Increase uncertainties in service delivery parameters

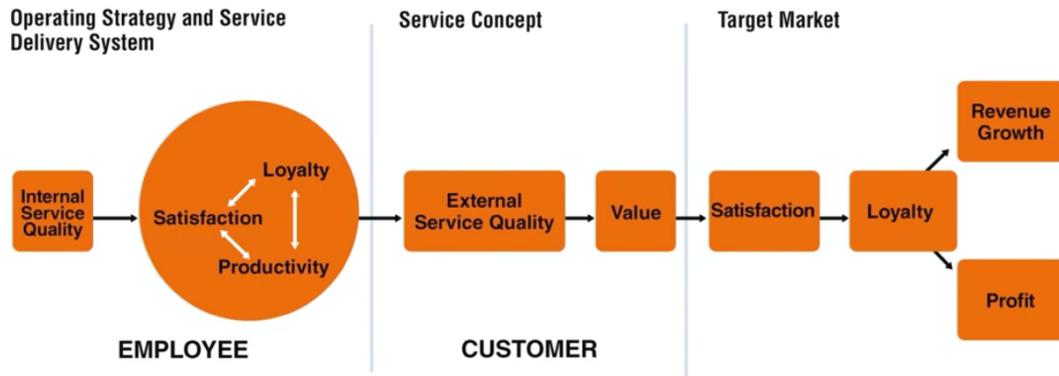
- Result in inefficiencies in service delivery

- Provide openings for hybrid strategies



If you think of the front office, normally you think of it as adding inefficiencies. However, you can turn this concept around and think of the idea of a front office as a golden opportunity. It's a golden opportunity because it is giving you the opportunity to delight the customer. The customers can have different requirements and needs, but also the employees can react to those and make sure that the customers needs are satisfied even if they are different from what is normally expected. It increases the uncertainties because the customer might demand something different which the employee might not be able to deliver. In which case, it's a little bit risky when you have things in the front office. There are inefficiencies in service delivery. You might have different types of customers that are going through from the front office through that line. For example, if you are a bank and you have a teller at which there are customers waiting, there might be a customer who wants to chat about the weather, who wants to talk about 10 other things other than simply getting their business dust and done and moving on. While there may be another customer who is in a rush and just wants to cash their check and leave really quickly. That's where you say, we won't going to move this operation to the back-office and use self-serve ATM where the customer can get efficient service delivery. That's what you have to think about between the front office and the back office. The front office does provide openings for hybrid strategies. We've used the example of Subway sandwiches. Subway sandwiches are an example of a hybrid strategy where you are mass-producing some of the products and then you're using the customer input to give them a customized product, so that's a hybrid strategy based on the idea that customer is going to be involved in the production of the service in the front office.

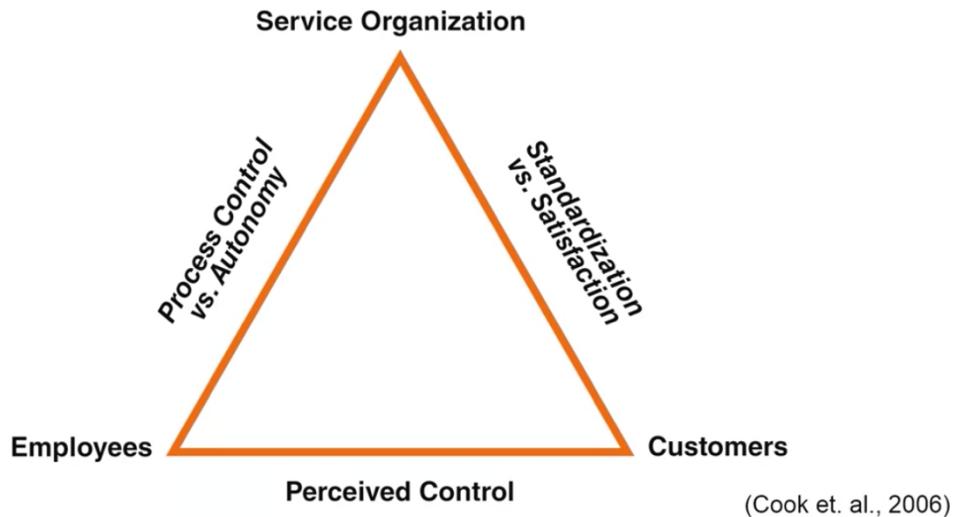
## SERVICE-PROFIT CHAIN



(Heskett et al., 2008)

The service profit chain is a framework. It's a model that can be used to make services more profitable. Based on this, you can think of how services can be more profitable. The idea is that you have employees and customers, if you have your employees trained well to do the tasks that they're supposed to do, you give them the technology that they need, you give them the training that they need, the knowledge that they need to do their tasks well, and you keep them satisfied in the workplace, there's employee satisfaction as well as you give them the right incentives and the right autonomy for them to make decisions. What that can result in is giving you a good external service quality. The service profit chain talks about this as internal service quality being the service quality that is from the point of view of the employee. The employees are happy about the service that they're providing. If that's the case, then the customers are happy with the service that they're getting, and which further leads to customer satisfaction. Customers coming back often to get the service from the same provider, and that leads to profits and growth in sales. This is a model that is about profitability in the service profit chain that came out of research at the Harvard Business School, and that in a very simple way, brings out the idea that you have to think about employee satisfaction, especially in a service context, because that's going to be directly related to customer satisfaction. Now why does this become challenging?

## SERVICE ENCOUNTER TRIAD



This becomes challenging because if you think about the service concepts, there are several contradictions within the service concept. Let's take this triangle, which is made up of employees, customers, and the company itself. If you think between the employees and the service organization, the service organization, the company, probably wants to have a standardized process so that it's more effective, more efficient, and wants to have standard times for how much time it should take for the service to be delivered, and that's more about process control. Employees want to say that every customer is different and therefore, we should have the leeway of being able to customize and take whatever time it takes to deliver the service in the right way to the customer, and if a redo is required by the customer, we should be able to have the autonomy to do that. There's a tension there. There's a contradiction there between what the employees will need to give good services and what the company wants in terms of providing goods services in an efficient way. The same kind of tension is going to be there between the company and the customers. Customers want customer satisfaction based on whatever their needs are, and the customer is always going to be queen or king, and whatever their needs are should be satisfied by the company whereas the company is going to focus on more standardization of their service because they want to provide these services at a lower cost and be able to do this in a predictable amount of time. Now, even between the employees and the customers, customers are going to have certain expectations, and if the employees don't have the autonomy to react to those customers, the customers are not going to be satisfied, so there's going to be some tension between who has control over the process, between the employees and the customers.



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