Chapter 1. Introduction

Operations Management 개요

- Production Management
  ⇒ Production & Operations Management
  ⇒ Operations Management
- 산업공학뿐만 아니라 경영대학의 필수 과목

- If there is excess demand, prices rise;
  If there is excess supply, prices fall;
  Do you agree with this theory? (Economists?)

Is matching easy?

Operations Manager!

Excess demand ⇒ Lost revenue

Excess supply ⇒ Wasted resources

In reality, matching supply with demand (이 교재의 제목) is extremely difficult and requires more tools than just price adjustment!

Examples of mismatch (timing or quantities) between demand and supply

- Nintendo's launch of the Wii game in 2006

  ⇒ too much demand

- Difficult to find a taxi in Manhattan at 4 p.m. (changing shift)

- Tsunamis in Japan in 2011, Big flood in Thai in 2011

  ⇒ delay in supply

Examples of mismatch (timing or quantities) between demand and supply

- The average customer to Disney World experiences only 9 rides per day ⇒ several mechanisms such as FASTPASS (Disney's FASTPASS allows guests to make 'reservations' for a popular ride to avoid waiting in long lines.) have been developed

- Universal Studio in Singapore ⇒ Universal Express

Universal Express

Limited to one (1) time usage at each participating attraction*. Pass is dated and can only be used on the selected date.

- From SGD40

Universal Express Unlimited

Unlimited access at each participating attraction*. Pass is dated and can only be used on the selected date.

- From SGD70

*Universal Express Access is not valid for Canopy Flyer, Treasure Hunter and for any front row access.

Why is matching difficult?

- We view that price adjustment as a symptom of a problem, rather than evidence of a healthy system.

- Why is matching supply with demand difficult?

  ⇒ **Demand can vary and supply is inflexible!**

  Successful companies continually strive for that goal!

Table 1.1 Examples of Supply-Demand Mismatches

	Retailing	Iron Ore Plant	Emergency Room
Supply	Consumer electronics	Iron ore	Medical service
Demand	Consumers buying a new video system	Steel mills	Urgent need for medical service
Supply exceeds demand	High inventory costs; few inventory turns	Prices fall	Doctors, nurses and infrastructure are underutilized
Demand exceeds supply	Forgone profit opportunity; consumer dissatisfaction	Prices rise	Crowding and delays in the ER; potential diversion of ambulances
Actions to match supply and demand	Forecasting; quick response	If prices fall too low, production facility is shut down	Staffing to predicted demand; priorities
Managerial importance	Per-unit inventory costs for consumer electronics retailing all too often exceed net profits	Prices are so competitive that the primary emphasis is on reducing the cost of supply	Delays in treatment or transfer have been linked to death

Table 1.1 Examples of Supply-Demand Mismatches

	Pacemakers	Air Travel
Supply	Medical equipment	Seats on specific flight
Demand	Heart surgeon requiring pacemaker at exact time and location	Travel for specific time and destination
Supply exceeds demand	Pacemaker sits in inventory	Empty seat
Demand exceeds supply	Forgone profit (typically not associated with medical risk)	Overbooking; customer has to take different flight (profit loss)
Actions to match supply and demand	Distribution system holding pacemakers at various locations	Dynamic pricing; booking policies
Managerial importance	Most products (valued $20k) spend 4-5 months waiting in a trunk of a salesperson before being used	About 30% of all seats fly empty; a 1-2% increase in seat utilization makes the difference between profits and losses

- Table 1.1 Examples of Supply-Demand Mismatches

Eg. British Airways: 76% utilization in 2007

⇒ 122 seats occupied/160-seat aircraft

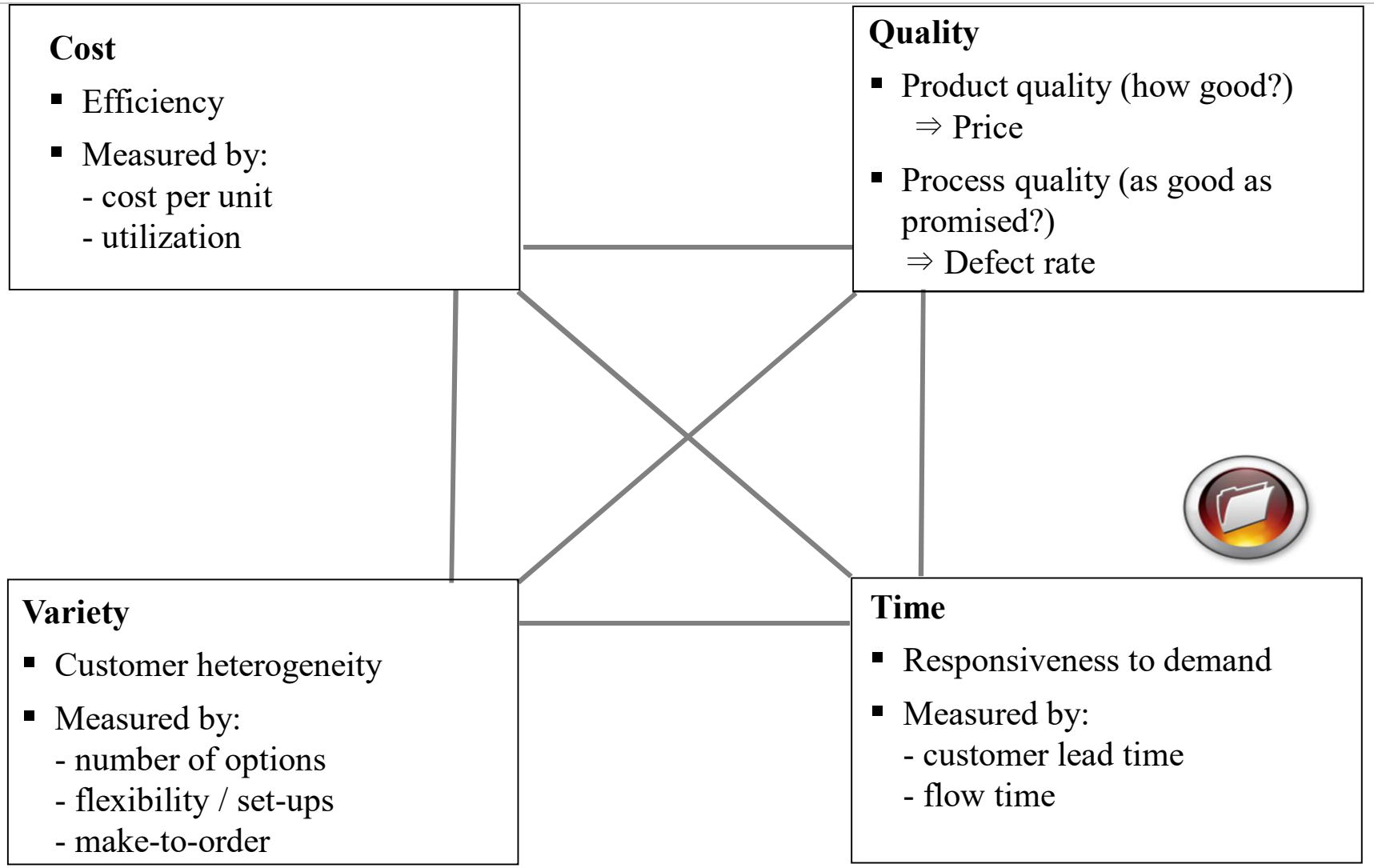
⇒ Increase 4 more passengers (2.5% increase in utilization)

⇒ Increase of 242million pounds of its profit

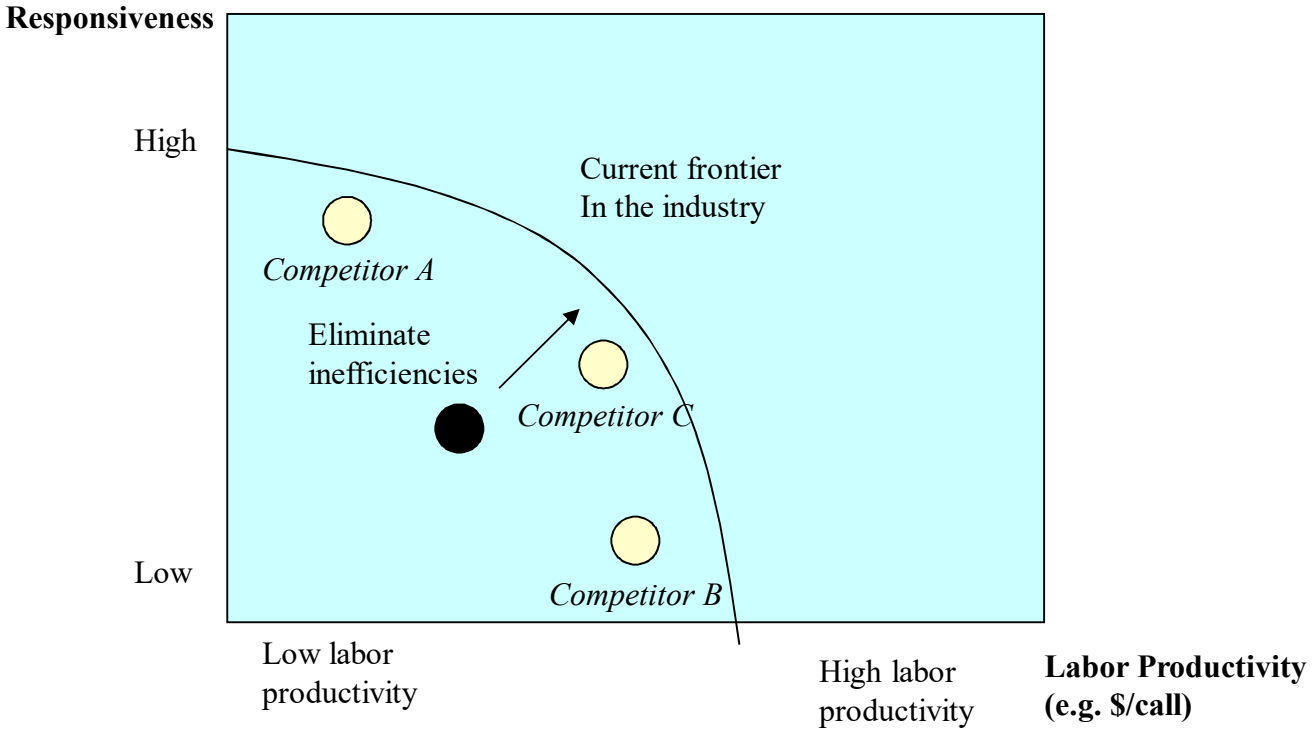
⇒ 44% increase of its profit!

Effective operations management is about effectively matching supply with demand!

Four Dimensions of Performance: Trade-offs



What Can Ops Management (This Course) Do to Help?
Step 1: Overcome Inefficiencies

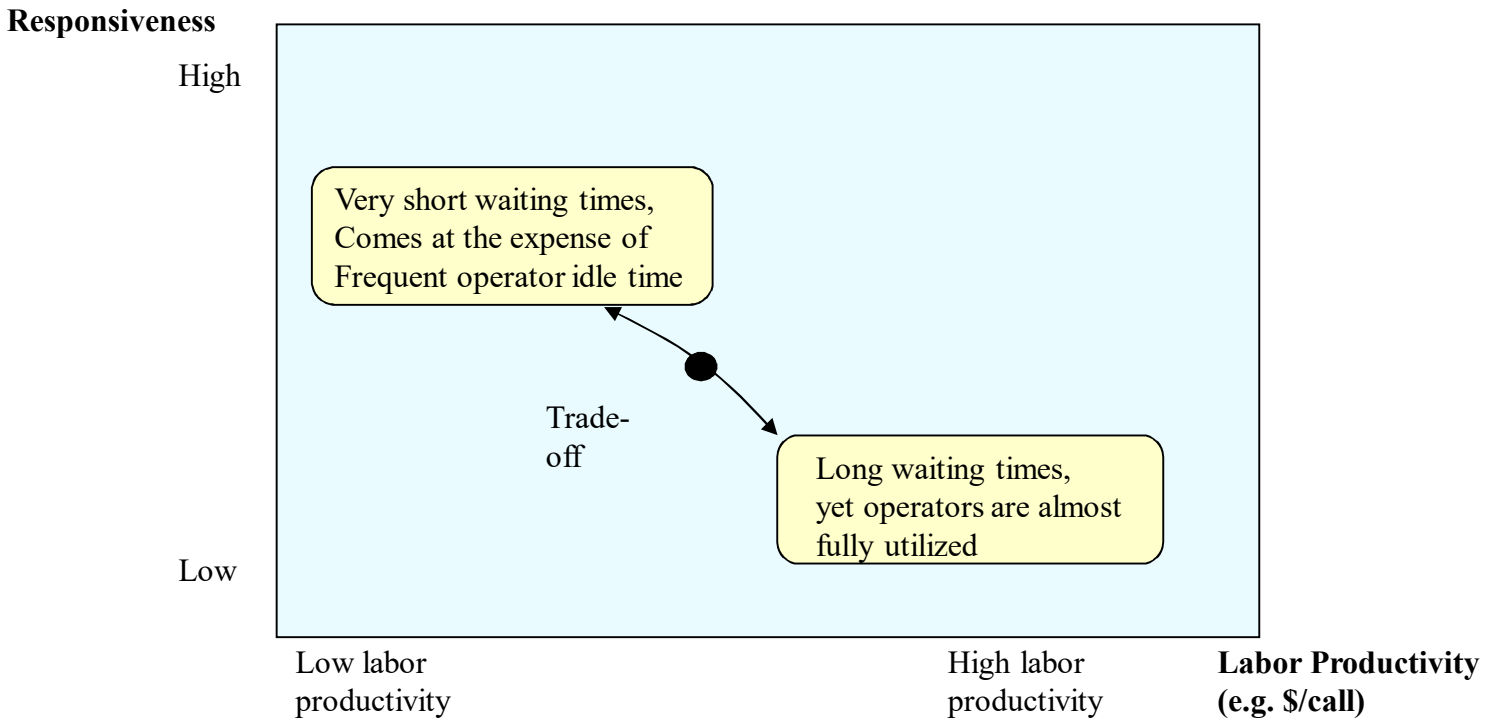


Call Center Example:

- Benchmarking shows the pattern above
- Don't just manage the current system… Change it!

OM helps: Provides tools to identify and eliminate inefficiencies

What Can Ops Management (This Course) Do to Help?
Step 2: Help Making Operational Trade-Offs

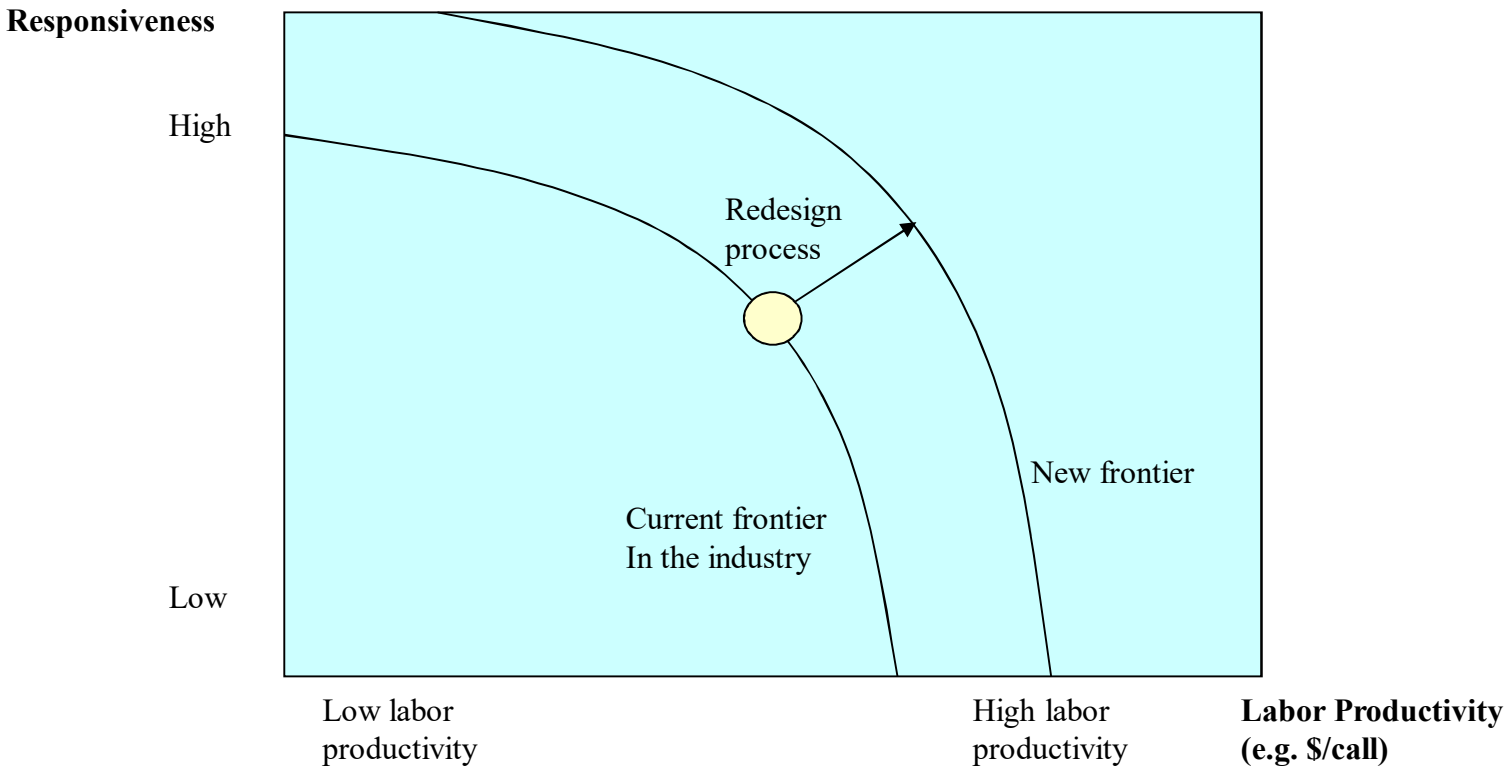


Example: Call center of Deutsche Bundesbahn

objective: 80% of incoming calls wait less than 20 seconds
starting point: 30% of incoming calls wait less than 20 seconds
Problem: staffing levels of call centers / impact on efficiency

OM helps: Provides tools to support strategic trade-offs

What Can Ops Management (This Course) Do to Help?
Step 3: Evaluate Proposed Redesigns/New Technologies



Example:

- Merging with or acquiring another call center.
- What will happen if we develop / purchase technology X?
- Better technologies are always (?) nice to have, but will they pay?

OM helps: Evaluates system designs before they occur

Chapter Summary

Chapter	Managerial Issue	Key Qualitative Framework	Key Quantitative Tool
2: The Process View of the Organization	Understanding business processes at a high level; process performance measures, inventory, flow time, and flow rate	Product-process matrix; focus on process flows	Little's Law Inventory turns and inventory costs
3: Understanding the Supply Process: Evaluating Process Capacity	Understanding the details of a process	Process flow diagram; finding and removing a bottleneck	Computing process capacity and utilization
4: Estimating and Reducing Labor Costs	Labor costs	Line balancing; division of labor	Computing labor costs, labor utilization Minimizing idle time
5: Batching and Other Flow Interruptions: Setup Times and the Economic Order Quantity Model	Setup time and setup costs; managing product variety	Achieving a smooth process flow; deciding about setups and ordering frequency	EOQ model Determining batch sizes

Chapter Summary

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6: The Link between Operations and Finance	Process improvement to enhance corporate performance	Return on Invested Capital (ROIC) tree	Computing ROIC
8: Lean Operations and the Toyota Production System	Process improvement for competitive advantage	Lean operations; Toyota Production System	__
9: Variability and Its Impact on Process Performance: Waiting Time Problems	Waiting times in service processes	Understanding congestion; pooling service capacity	Waiting time formula
10: The Impact of Variability on Process Performance: Throughput Losses	Lost demand in service processes	Role of service buffers; pooling	Erlang loss formula Probability of diverting demand
12: Project Management	Time to project completion	Critical path	Critical path analysis

Chapter Summary

Chapter	Managerial Issue	Key Qualitative Framework	Key Quantitative Tool
14: Betting on Uncertain Demand: The Newsvendor Model	Choosing stocking levels for seasonal-style goods	Improving the forecasting process	Forecasting demand The newsvendor model for choosing stocking quantities and evaluating performance measures
15: Assemble-to-Order, Make-to-Order, and Quick Response with Reactive Capacity	How to use reactive capacity to reduce demand-supply mismatch costs	Value of better demand information; assemble-to-order and make-to-order strategies	Reactive capacity models
16: Service Levels and Lead Times in Supply Chains: The Order-up-to Inventory Model	Inventory management with numerous replenishments	Impact of lead times on performance; how to choose an appropriate objective function	The order-up-to model for inventory management and performance-measure evaluation
18: Revenue Management with Capacity Controls	How to manage demand when supply is fixed	Reserving capacity for high-paying customers; accepting more reservations than available capacity	Booking limit/protection level model; overbooking model

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'SMOKE AND FIRE WAS POURING OUT' Samsung urges customers to switch off Galaxy Note 7 phones after ANOTHER explosion

Tech fan reveals the terrifying moment his phone 'went pop' and burst into flames

BY JENNIFER UDLEY-NICHOLSON | 6th September 2016, 10:13 am | 2 COMMENTS

SHARE NOW

SAMSUNG has urged thousands of customers to switch off their Note 7 smartphones after one of the devices exploded in an Australian hotel room.

The company's Australian wing advised the nation's 51,060 Galaxy Note 7 buyers to turn off the handsets immediately and return them to stores as a precaution in part of an unprecedented, potential billion-dollar worldwide recall.

Samsung Galaxy Note 7 Recall: Rush to Beat Apple Sees Firm Trip on Quality Control

Reuters, 6 September 2016

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HIGHLIGHTS

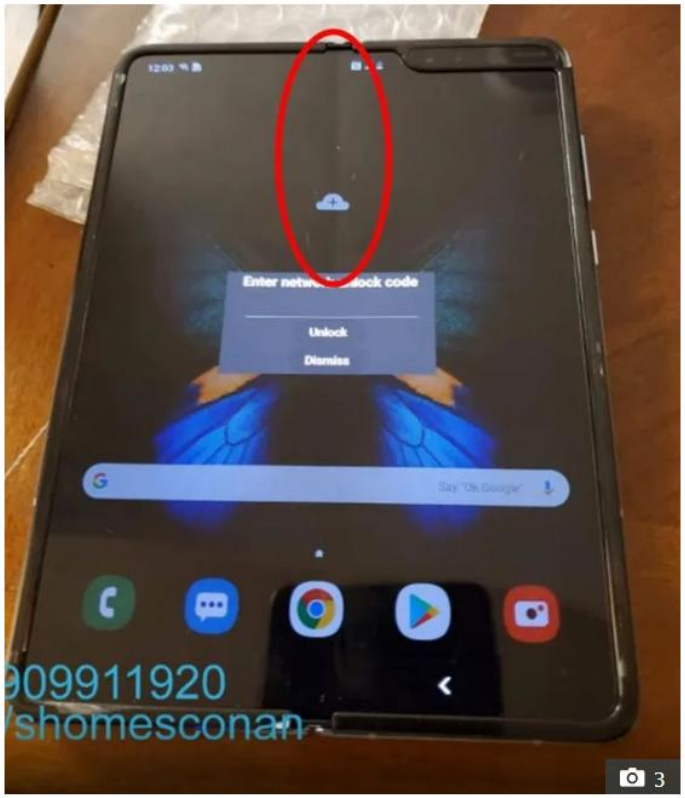
- Samsung recalled Galaxy Note 7 in 10 markets including South Korea and US

...e recall looks set to hamstring a revival

In its rush to beat rival products to market, notably Apple's new iPhone, Samsung Electronics has accelerated new phone launch cycles, but its haste is raising concerns that it fell short on quality testing.

SAMSUNG has found itself in hot water after a leaked video revealed a major fault with its £1,800 Galaxy Fold smartphone.

The high tech blower hits shelves soon and is one of the world's first foldable phones – but footage shows its bending gimmick leaves an unsightly crease on the screen.



The Samsung Galaxy Fold has a very visible crease down the middle of its screen