Økonomiske implikasjoner av digitalisering i havbruk

Tekna lunsjmøte «Big data og digitalisering i havbruksbransjen» Ingeniørenes Hus, 27 nov 2018

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Economic implications

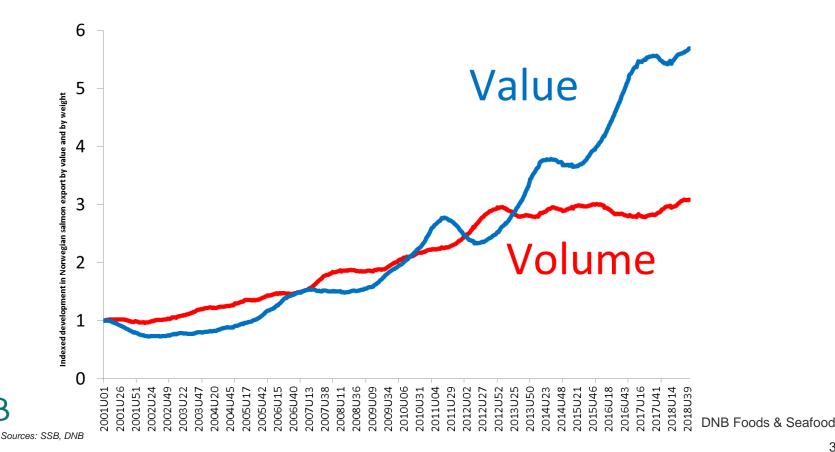
- Volume will increase
 - Lower environmental impact = increased sustainable capacity
- Prices will drop
 - Higher volumes = lower prices
 - More spread in prices vs reference price, branding
- Cost will drop
 - New service providers will gain
 - Existing service producers may gain or lose
- Value creation will increase
 - Farmers will grab some of the value increase
 - Consumers will also grab a large part as entry barriers and prices drop

Gross economic impact of disruptive technology next 10 years, \$ trillion

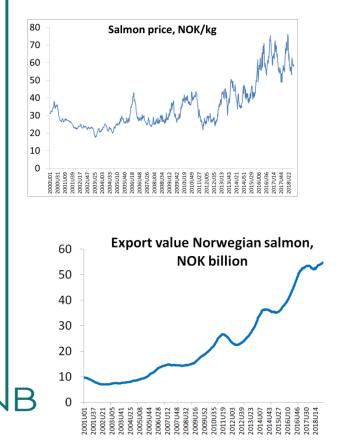


Source: McKinsey \$30 trillion = 1/3 of global GDP in 10 years

Problem #1: no volume growth since 2012



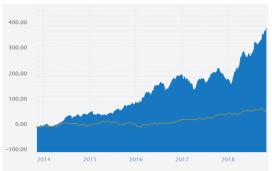
What was the problem again..?





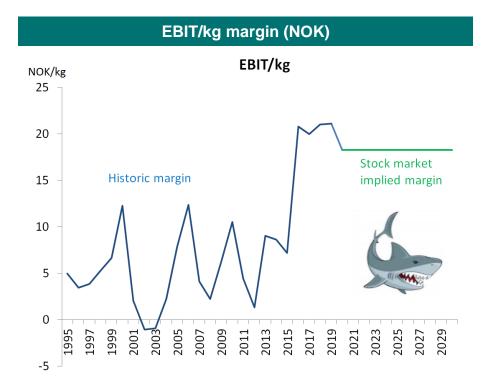
Sources: SSB, DNB, OSE

Seafood index +400% in 5 years

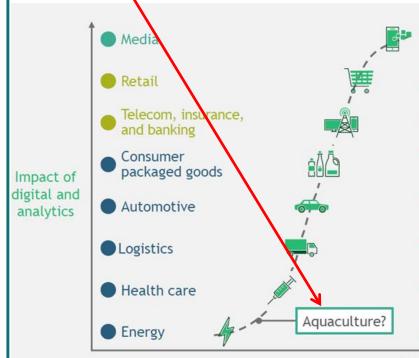


You can squeeze a lemon only for so long





Still early days for digital seafood



- Fully digitized players own the market with online stores and services such as Amazon and Netflix
- Online retailers gaining market share, especially in segments like electronics
- Major focus in all three industries, with both customer-facing initiatives and back-office improvements
- No major digital disruptions yet; most initiatives have been in supply chain management and product development
- Optimization mainly in supply chain management and customer-facing ventures such as websites
- Few disruptive players; some digital optimization, such as route optimization in parcel delivery, but little digital in shipping
- Digitization in early stages; increasing investment, regulatory barriers starting to be addressed. Emerging examples of Patient/Customer and R&D-focused initiatives
- Extremely limited use of digital, primarily in internal operations

Point on digitization journey

Several major disruptions have occurred



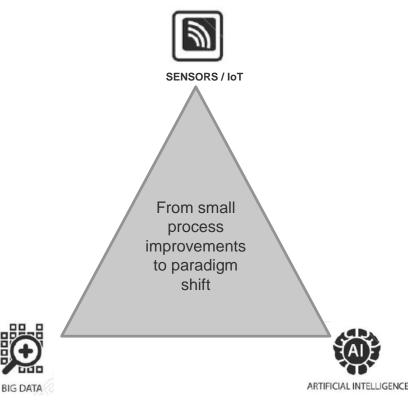
Disruptive moves (by pure online players, for example) have affected these industries, but the final outcome is still shaping

Effect still unknown, disruptive changes remain to be seen; these industries are very similar in their overall level of digitalization

Source: BCG

Trends in digitalization in salmon farming

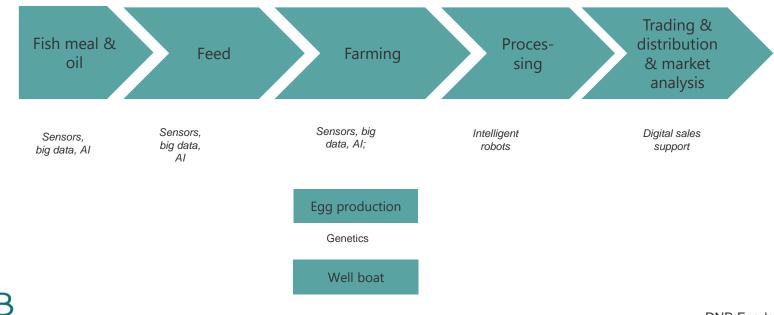
- 1. Increased instrumentation & data collection
 - Doing things right: <u>saving cost</u>
- 2. Increased biological & environmental focus
 - Doing the right things: <u>changing</u> <u>the game</u>



Salmon farming value chain – new technologies

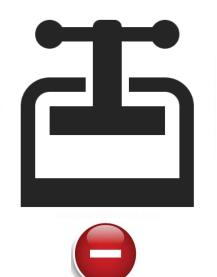
Block chain - food safety, sustainable sourcing, reduced paper load

Data collection - better coordination and optimization along value chain, better capacity utilization



Feed – could swing both ways

Margins squeezed by raw material sellers and salmon farming buyers as both close feed producers' knowledge advantage "Feed as a service" – feed producers provide feed and run the feed operations and get paid based on biological performance







What happens within the farming segment?

Today small and big farmers are equally profitable, will digitalization change that?

 Common or individual infrastructure



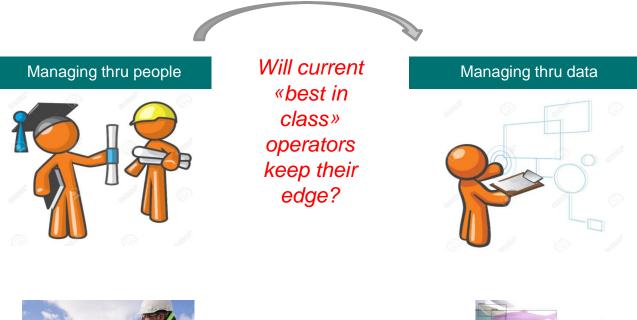


 Common or individual access to data?





Moving from managing through people to managing through data Organizational and cultural implications



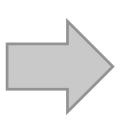
DNB

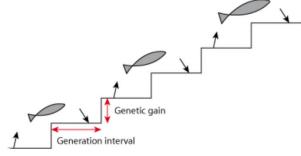




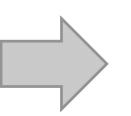
Big data and AI can short circuit the learning curve entry barrier

 A salmon generation is 4 years, it takes many generations and years accumulate know how and make improvements





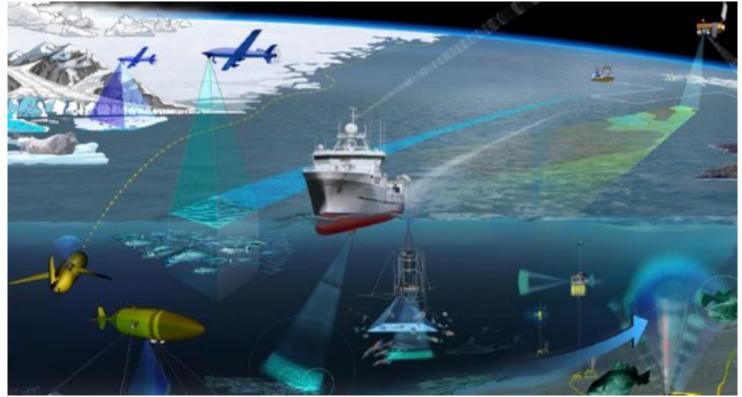
 Big data & AI may devalue value of accumulated vs new knowledge and lower the entry barrier for land based farming





Sensors, big data & artificial intelligence

Potential for regulatory innovation also – regulation of each individual site instead of 13 national zones?



& Seafood

Online distribution and sales New channels in new markets













Summary; digitalization will lead to:

- Lower cost
 - Process improvements, biological improvements
- Higher volumes
 - Better understanding of the fish, the environment and the interaction between the two will increase sustainable capacity
- Development of technology which can also be used for other types of aquaculture

And remember: new technology + new regulations + new business models can create major disruptions

Thank you for your attention



