DIGITAL TRANSFORMATION IN MANUFACTURING SMEs

MATTIAS STRAND & MAGNUS HOLM

2026-09-03

FOCUS TODAY

A method to assess SMEs level of digital transformation in their organisations and processes

WHO ARE WE?

HÖGSKOLAN I SKÖVDE

My colleague Mattias Strand is unfortunately sick today

- Senior lecturer in Computer Science
- Multiple management positions at the University of Skövde
- Also management experience from the private sector
- Board and leadership experience from various organizations
- Conversation tips! Premier League, Board Games & Leadership Theories



Magnus Holm

- Associate professor in Automation Engineering
- Head of division and leadership positions at the University of Skövde
- Board and leadership experience from various organizations
- Conversation tips! House & gardening, chain saws, collaboration with industry

WHAT IS OUR MOTIVATION?

HÖGSKOLAN I SKÖVDE

PRIDE

The manufacturing industry and industrial services have been Skaraborg's (Sweden) growth engine in both recessions and booms and have accounted for most of the high GDP growth that Sweden has had in the last 20 years.

Increased digitalization is a prerequisite for the Swedish manufacturing industry to be able to maintain its viability over time!

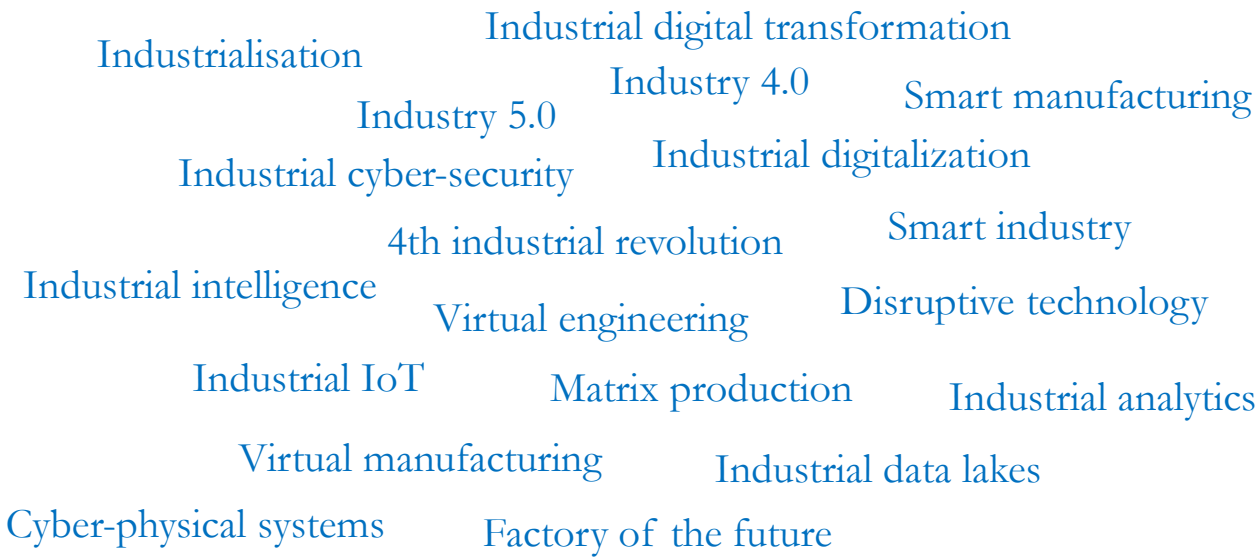
From:produktion2030.se

CONCERN

According to statistics from Eurostat, only a little over a tenth of Swedish manufacturing companies have an advanced level of digitalization and automation, which is lower than other Northern European countries.

From:ec.europa.eu

CONCEPTUAL CONFUSION?



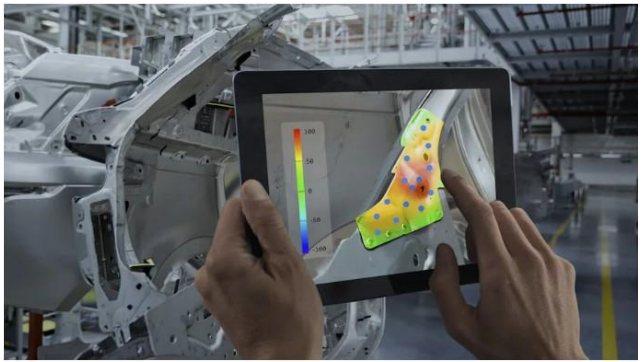
DIGITALISATION = TECHNOLOGY?



(From: https://techthelead.com/audi-smart-factory-how-drones-ar-and-vr-gears-help-build-cars/)



(From: Industry40marketresearch.com)



(From: https://www.ericsson.com/en/blog/2020/7/how-to-improve-roi-for-industry-4-0-use-cases)

STARTING POINT FOR SMEs

- It is not easy for an SME to implement and use digital solutions transforming the business
- Most research on Digital Transformation (DT) do not focus processes and implementation at SMEs

→→→ …they need more concrete, hands-on support to be successful

THE MOST IMPORTANT WORD

"The most important word in digital transformation is not digital, but **transformation**"

The transformation affects:

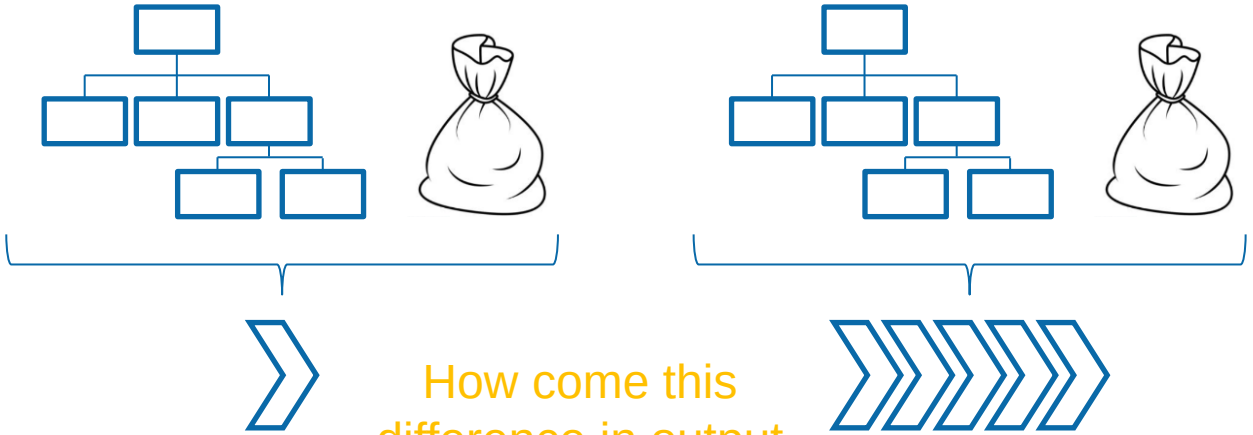
- The business model
- The leadership
- The organizational culture
- Internal organization
- Working methods
- Competence needs
- The concept of the customer



Which in turn affects:

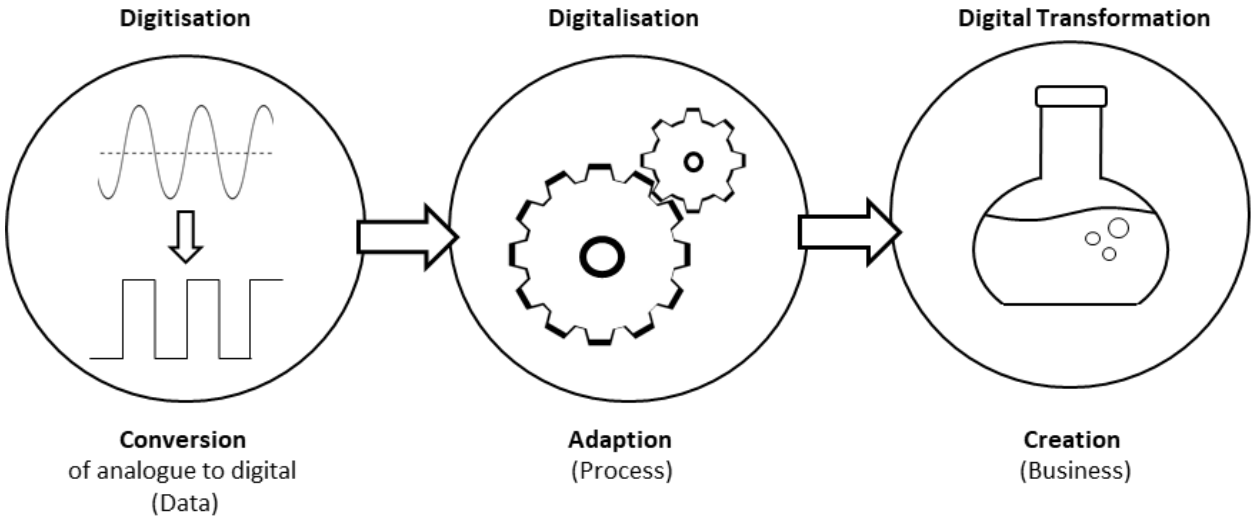
- Company brand (external)
- Company identity (internal)
- Revenue streams
- Approach to competence development
- Cooperation forms
- Salary structures/Salary setting
- Recruitment strategies
- Customer interaction

Two organisations and two bags of technology….



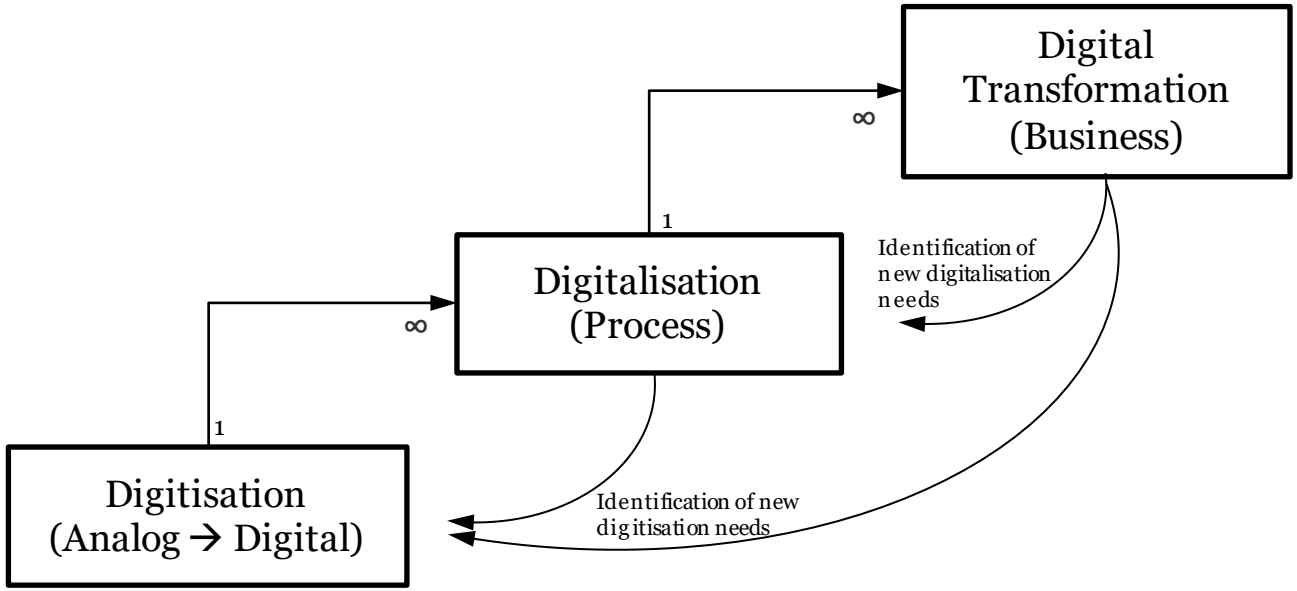
How come this difference in output occurs?

THREE LEVELS OF DIGITALISATION



(Based on: Buman & Peter, 2019)

STARTING POINT – DEVELOPMENT OF NEW ABILITIES (AT DIFFERENT LEVELS)



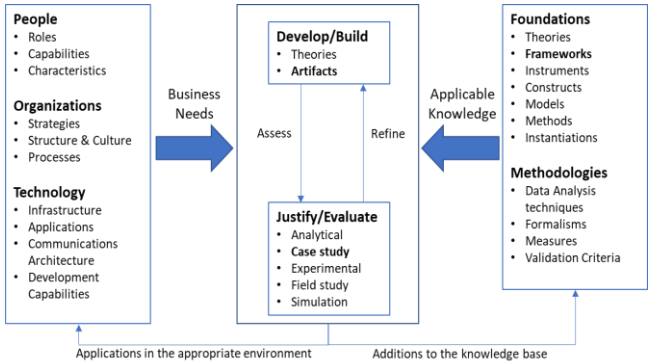
(Based on Strand & Holm, 2026)

15. Which of the following skills or abilities are most lacking in your organization? (Select up to three)

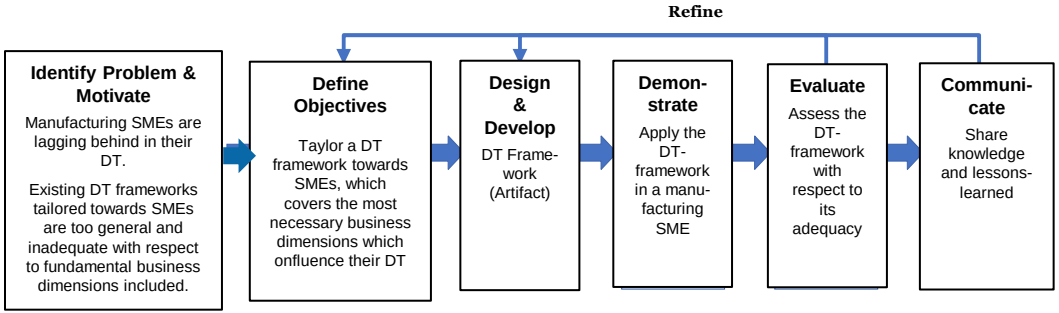
Knowing the business and being able to conceptualize how new digital technologies can impact current business processes/models — 44%

(Baserad på: Kane, 2015, s.20)

RESEARCH METHOD & PROCESS



Design Science research framework based on Hevner, A.R., et al. (2004), p. 80.



Research process of the presented work based on Peffers et. Al. (2007), p 54.

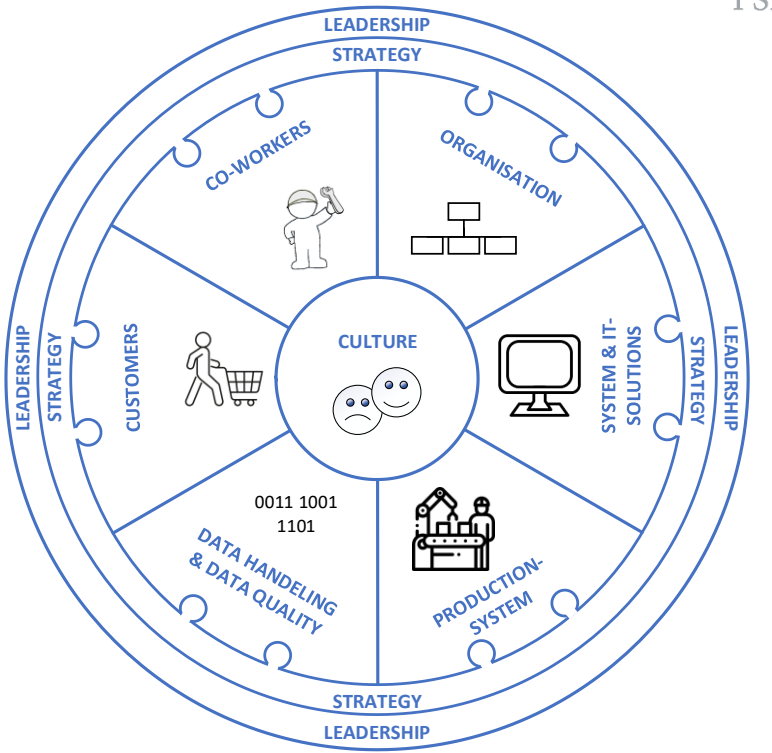
CASE COMPANIES & ITERATIONS

Iteration	Case company	Interviews	Gemba walks	Work-shops	Turnover	Employees	Funded
1	Sheet metal	11	2	2	240 MSEK	~100	110 years ago
2	Sheet metal	15	2	3	220 MSEK	~130	120 years ago
3	Printing	8	2	1	75 MSEK	~30	35 years ago
4	Plastic	15	3	2	143 MSEK	~40	60 years ago
5	Services	14	2	2	Part of a group	~30	--
6	Electronics	12	3	2	200 MSEK	~40	50 years ago
7	Plastic	16	2	1	350 MSEK	~140	40 years ago

Still ongoing

DIMENSIONS IN THE ANALYSIS

1. Leadership for digitalization
2. Strategy for digitalization
3. Organization for digitalization
4. Development-oriented culture
5. System and IT solutions
6. Production system
7. Data management and data quality
8. Digitalized customer interaction
9. Employees & Digital competence

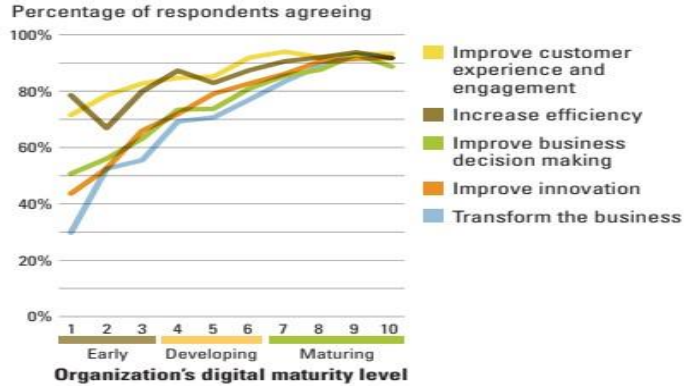


THE ANALYSIS: 3 LEVELS OF DEVELOPMENT

1. Initial level - The company is at an initial level where the dimension has not been given much focus and where there are still major development steps to take.

2. Has come some way - The company has carried out activities and started to develop this dimension. Usually through various, sometimes isolated, projects where new lessons and knowledge contribute to concretizing the way forward. At the same time, there are important development steps to take.

3. Has come a long way (even if it is never finished) - The company has carried out a lot of work within this dimension and has placed a great deal of focus on developing it. The dimension is an area of strength for the company and does not need to be prioritized at the moment.



(Hämtad från Kane et al., 2015, p.6)

THE ANALYSIS IS BASED ON A CASE STUDY METHODOLOGY

HÖGSKOLAN I SKÖVDE

- Data collection techniques
  - Review of business documents (Document analysis)
  - Gemba walks (Observations)
  - Conversations/Dialogues (Interviews)
- Qualitative analysis
  - We identify patterns in the material (Thematic analysis)
  - The analysis is done based on the dimensions (Deductive/theoretical analysis)
  - Based on our interpretations of what is said (Latent interpretation)

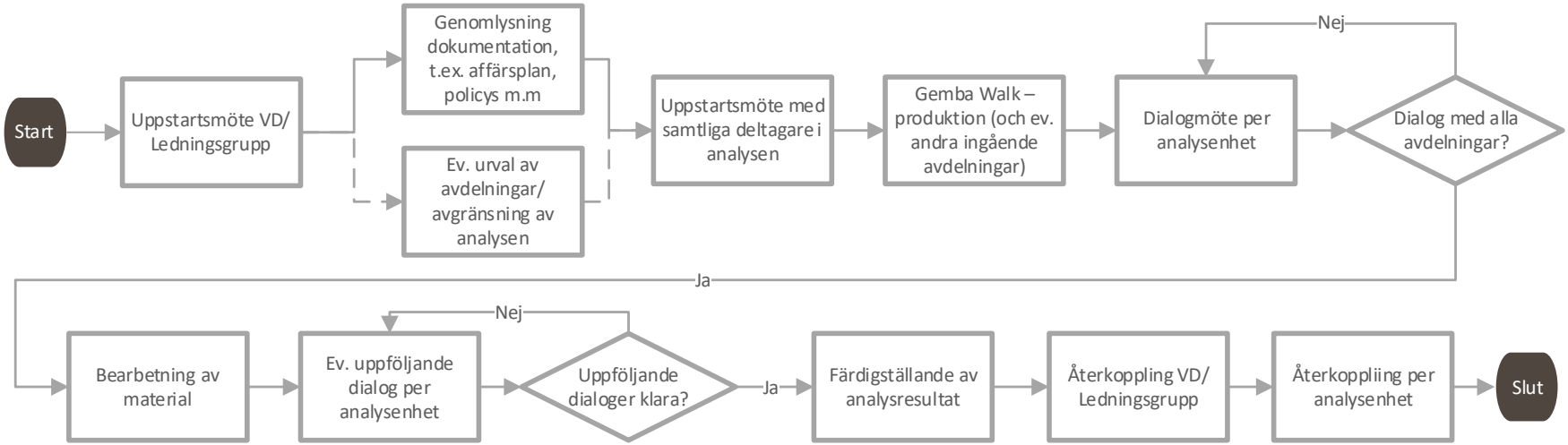
PROCESSING AND ANALYSIS OF THE MATERIAL

HÖGSKOLAN I SKÖVDE

- Qualitative approach/research methodology
- We identify patterns in the material (Thematic analysis)
- The analysis is based on the model (Deductive/theoretical thematic analysis)
- Based on our interpretations of what is said (Identified latent themes)
- Quotes have been used to make the empirical data more "alive"/demonstrate statements coming from respondents

(Braun & Clarke, 2006; Säfsten & Gustavsson, 2019)

IMPLEMENTATION PROCESS: STEP-BY-STEP TRANSPARENCY



IMPLEMENTATION OF DIALOGUE MEETING

HÖGSKOLAN I SKÖVDE

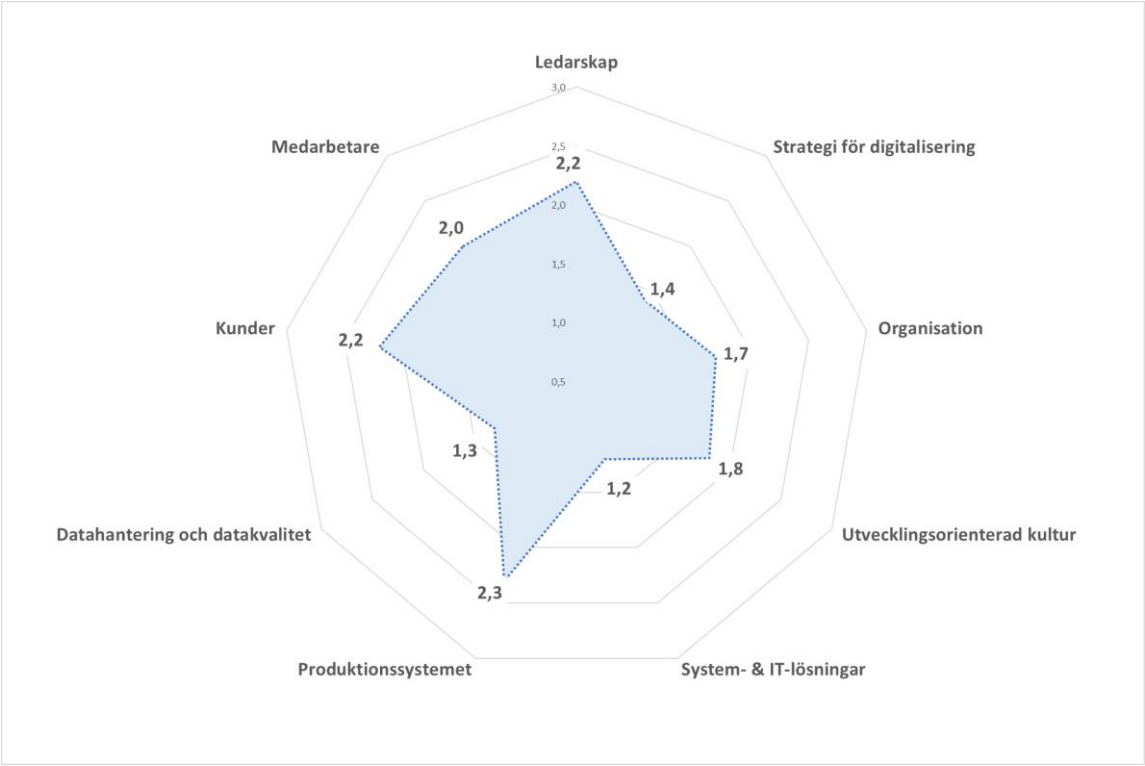
- 12-15 dialogues with selected roles/functions
- Approx. 90-120 min per dialogue
- Dialogue meeting instead of interview
  - The process is as important as the product!
- Possibly walking dialogue meeting/walk (mini-Gemba Walk)
- Grateful if there may be an opportunity to come back for additions!

SELECTION OF PARTICIPANTS

HÖGSKOLAN I SKÖVDE

- Management team
- Marketing/Sales
- Product Development
- Purchasing
- Technology/Preparation
- IT
- HR
- Production (Coordinator + operator *X)

RESULT: OVERVIEW OF THE CURRENT SITUATION



RESULT: OUTCOME AT DIMENSION LEVEL

2. STRATEGI FÖR DIGITALISERING



Styrkeområden

- Det finns ett initierat arbete med att definiera hur nya digitala lösningar skall väljas ut och prioriteras i relation till en digitaliserad kundkontakt, som också knyter an till *Företag X:s* utvecklingsplan.
- Ledningsgruppen har en samstämmig uppfattning om vad digitalisering betyder för *Företag X* och vikten av att prioritera utvecklingsmedel i kommande budgetar.

Utvecklingsområden

- Strategiska dokument saknar till stora delar en konkretiserade planering som kan ligga till grund för val och prioriteringar av verksamhetskritiska utvecklingsinsatser i en bredd av funktioner, som knyts till övergripande målsättningar/måltal. Detta innebär också att stora delar av verksamheten inte är medvetna om kommande prioriteringar och fokusområden.

EXEMPEL

x 9

RESULT: OTHER IMPRESSIONS - THOUGHTS

HÖGSKOLAN I SKÖVDE

Secondary results (not to forget)

- A process that creates expectations among employees
- New knowledge about digital transformation/own reflections
- Confirmation of what you already know/suspect
- A shared view on/dialogue about digitalization in the management team

And

- This is a digitalization analysis, but we also run into some other things that we sometimes want to send to the CEO and management team

OUR FINDINGS

It's not primarily about technology, but about management, strategy, organization and culture

- Digitalization manager
- Digitalization strategy
- System management model
- Coherent digital flows
- Identifying business critical functions and systems
- System architecture
- Information model
- Competence development
- Internal culture
- Leadership style

HÖGSKOLAN I SKÖVDE

Questions and reflection