



University of St.Gallen

Measuring and managing productivity

Digitally supported service designs and business models

Update ResTo SP 2

Lucerne, 4 June 2024

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Agenda

1. Productivity paradox
2. Mapping digitization
3. Rationale of approach
4. Recap of productivity
5. Developing measures

→ Ideation

Productivity paradox

in general, and in T&H specifically

“You can see the computer age everywhere but in the productivity statistics.”

Solow, 1987, The Productivity Paradox

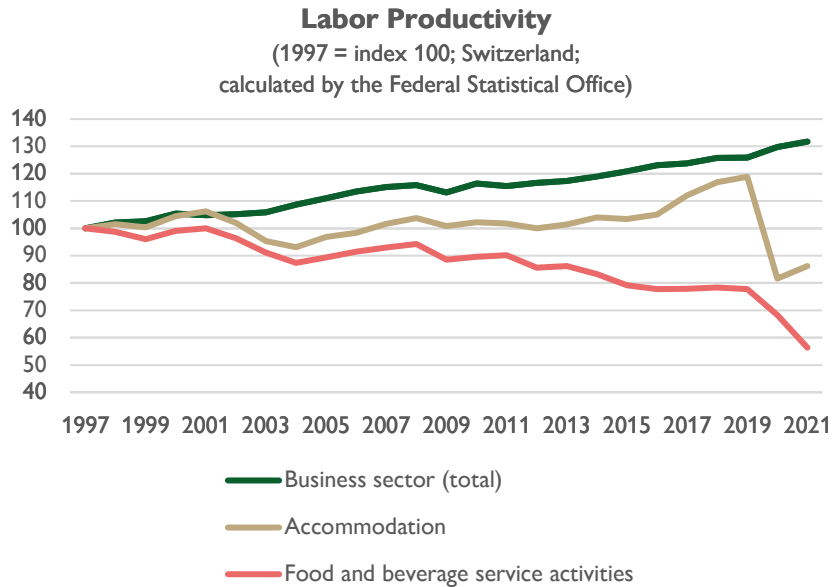
There is a wide range of reasons, why productivity of computers and effects of digitization seem to be invisible in the statistics

There are several **explanations, why productivity of computers (think: digitization) seems low:**

- (1) Even in places where there are many computers, (their) output is hardly measured** – or hard to measure.
 - Computers are prevalent in admin, finance, insurance, etc., where output is poorly defined.
 - Computers create efficiency gains which cannot be internalized but are met with increasing expectations.
 - Computers provide values that are hard to measure, such as convenience or (aesthetically) improved interfaces.
- (2) It takes time for computers to appear in the statistics** – or they might just be less productive than commonly thought.
 - Computers require high initial investments (and often involve sunk costs), that take time to materialize.
 - Computers are employed in inefficient ways by making systems more complex and demanding for users.
 - Computers provide potential for distraction that consumes any efficiency or time gains.
- (3) Although computers appear to be everywhere, they in fact aren't** – at least in economically relevant terms.
 - Computers make a relatively small share of the capital stock of a firm or country.
 - Computers provide returns which contribute to only a small share of (national/firm/individual) incomes.
 - Computers are dominant in non-productive (consumptive) areas (e.g., entertainment, gaming).

→ **Do these positions and explanations still hold after 20+ years of intense digitization across industries?**

There is a (widening?) gap in labor productivity and wages in tourism and hospitality in comparison to the average economy



→ **How is this possible in times of shortages of skilled workers and high tourism demand (even: over-tourism)?**

Productivity is a “problematic”
term for tourism and hospitality
(managers and guests).

Own finding; see also: Ingram and Fraenkel, 2006

Why is the concept of productivity disliked in the tourism and hospitality domain?

Less personal customer service

It goes against the principles of outstanding client service

It might lead to overtourism

Service is intangible

It is seen as a threat to their job by workers

Tough conditions for workers

It is evoking a mental image of factories, which goes against concepts like service quality

It is not always possible to measure our competencies and related productivity

Employees already work really hard

Service is not productive

It squeezes labor

Because it's hard to measure and some of the actors don't want to be measurable



Selection of feedback from the workshop

There are many reasons why productivity is seen as a problematic concept in tourism and hospitality

(1) In the context of services, productivity often has negative connotations.

“If significant numbers of Swiss hotel managers hold an ‘impression’ that productivity concepts are impractical, is it surprising that conceptual thinking is rejected, both at an individual level and at a collective, value-forming level?” (Ingram & Fraenkel, 2006, p.441)

(2) The (co-created) productivity of services is not so easy to measure and interpret.

“...tourism industry is less productive than other industries...
actual tourism productivity measurement ... is not well understood” (Brien et al., 2022, p.4)

“...service and the phenomena quality, productivity and profitability ... have not yet been satisfactorily explained. They are ... affected by ... IT [and] ... many other things...” (Gummesson, 2014, p.656)

“...adoption of ICT does not significantly improve labour productivity in the tourism/hospitality industries.” (Li, 2014, p.385)

(3) The macroeconomic concept of productivity is of limited value to the individual firm or manager.

→ **Let us focus on the micro-level: Would companies implement ICT if it was not worthwhile?**

Mapping digitization

Applications in tourism and hospitality

[illegible][illegible]

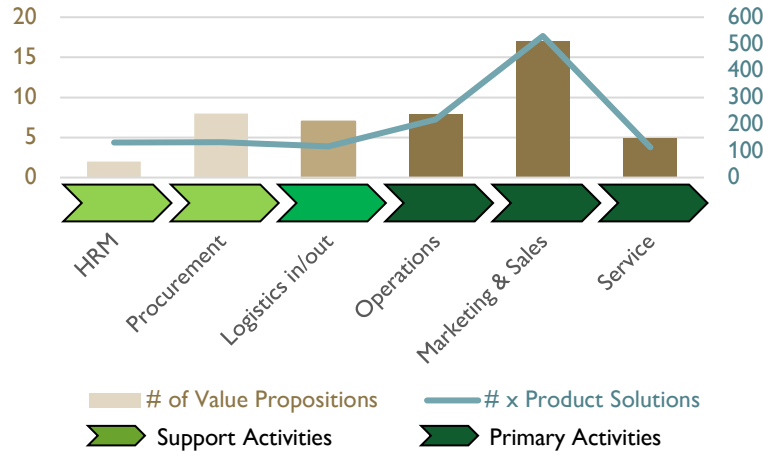
400 solutions with 60 functionalities



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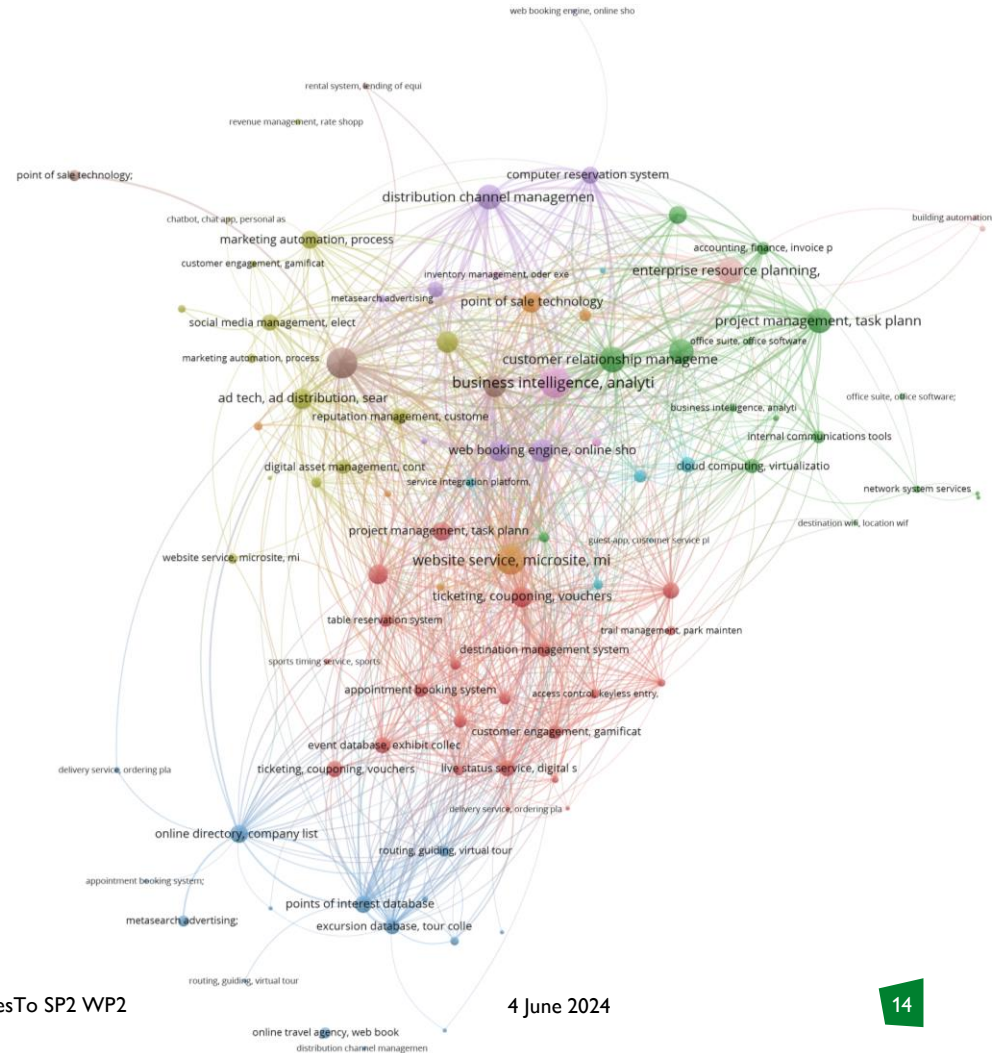
Most ICT functionalities in T&H support marketing and sales

ICT applications along the value chain in T&H
(own meta-analysis)



Legend (to figure on the right side)

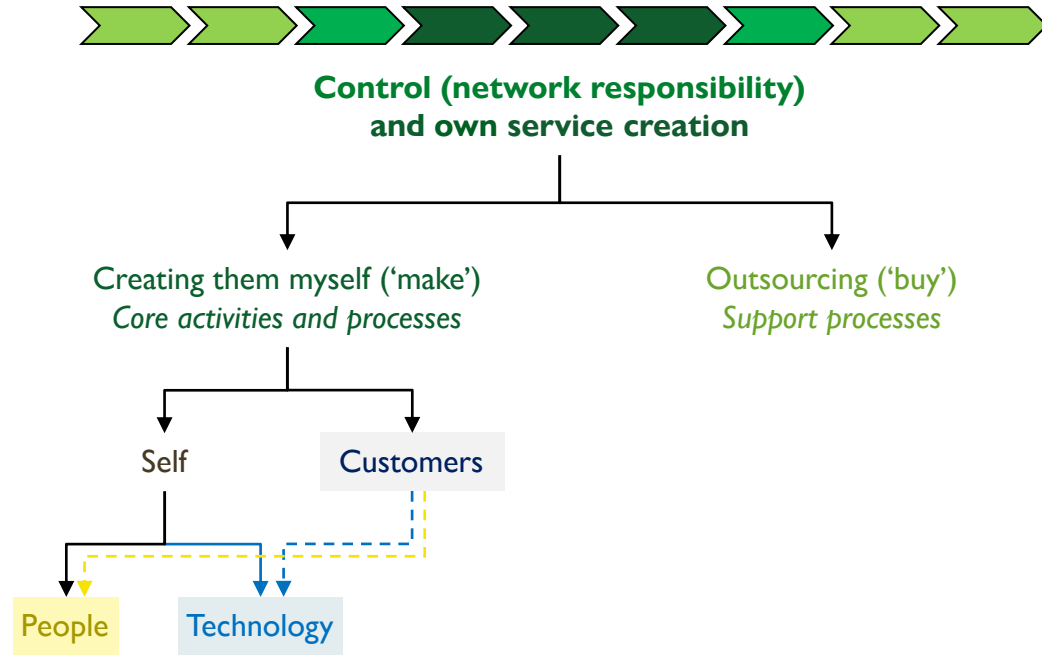
The larger the circle (and label), the more solutions or tools are available to digitally enable the respective functionality or (business) process. This map contains 60 of the most relevant functions for Swiss tourism and hospitality. Due to space limitations, some circles are not labelled. The proximity of circles and connecting lines represent a frequent combination or integration of the functionality in one single solution or tool.



Rationale of approach

Thinking about productivity in a conceptual way

Productivity of labor (and capital) depends on the configuration of the business model and processes



What is

- my understanding of
- and contribution to the service or value chain?

→ **Value proposition and business model**

What do I make myself?

What do I buy from others?

What do I do myself?

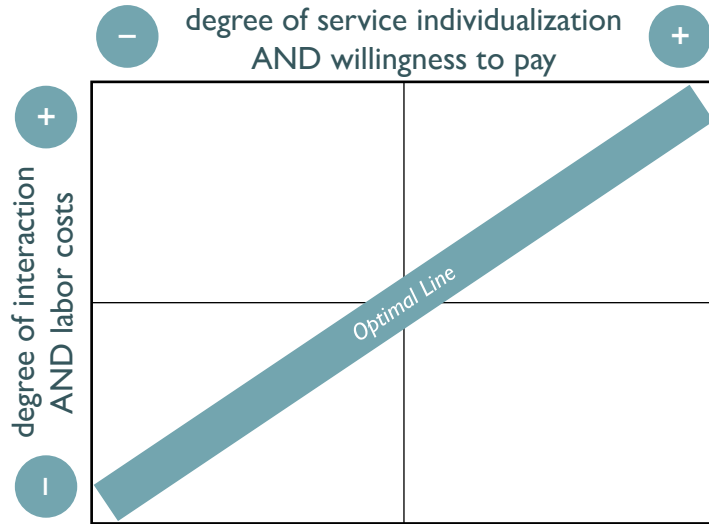
What do I delegate to customers?

Where do I use people?

Where do we (myself + customers) use technology?

The decision of people versus technology (capital) depends on the customers' willingness to pay for human interaction

The allocation of human resources is valuable for both sides, where the marginal willingness to pay for human interaction is bigger than the related own marginal costs.



What is the willingness to pay for personal check-in (versus digital)?

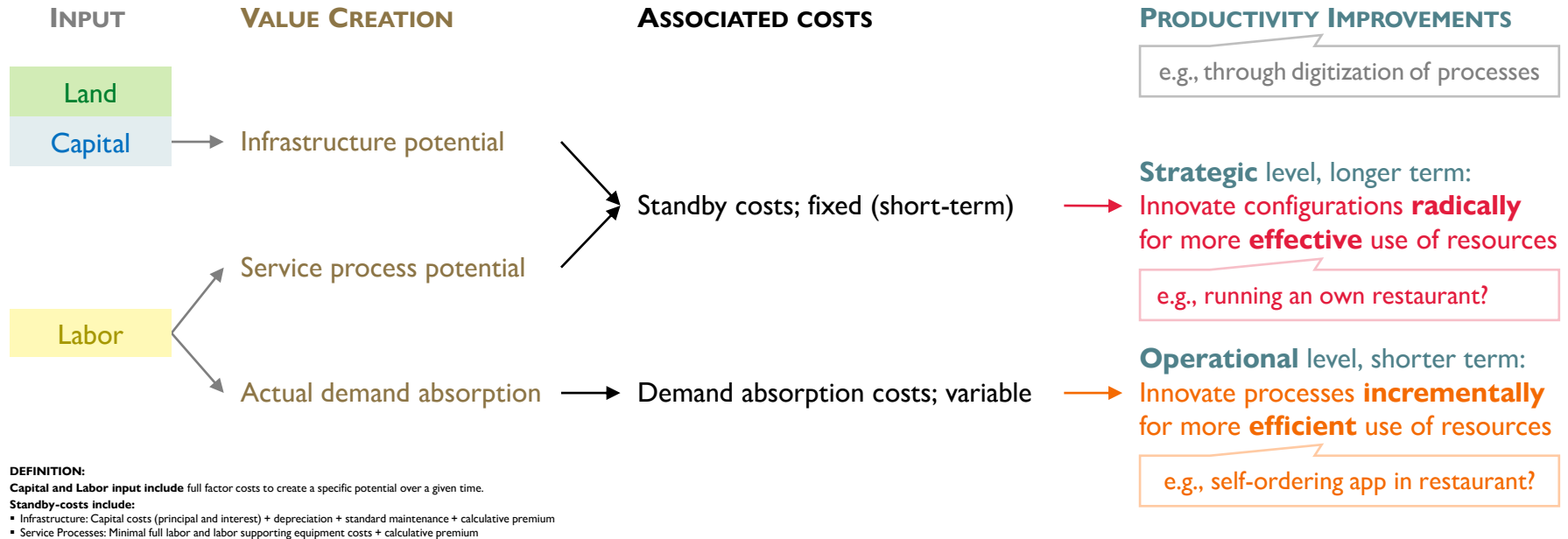
What is the willingness to pay for having food served to the table or the room?

What is the willingness to pay for having a restaurant inside the hotel's premises?

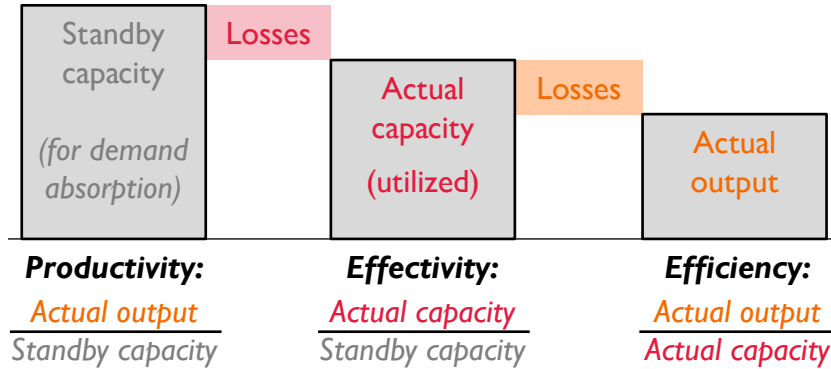
Recap of productivity

Effectiveness and efficiency of services

Digitization can increase both effectivity (reduce standby costs) and efficiency (reduce demand absorption costs)



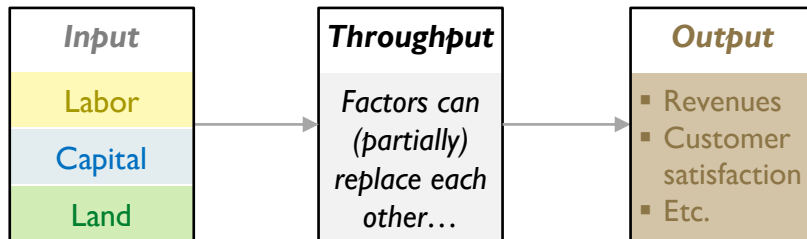
In a process view, (in-)effective allocation and (in-)efficient use of resources must be differentiated



Two aspects of service productivity:

Readiness to deliver a service and associated labor costs
 → **Losses** due to **ineffective** utilization of resources

Execution of a service and associated labor costs
 → **Losses** due to **inefficient** configuration of processes



$$\text{Productivity: } \frac{\text{Output}}{\text{Input}} = \frac{\text{Output}}{\text{Labor} + \text{Capital} + \text{Land}}$$

Developing measures

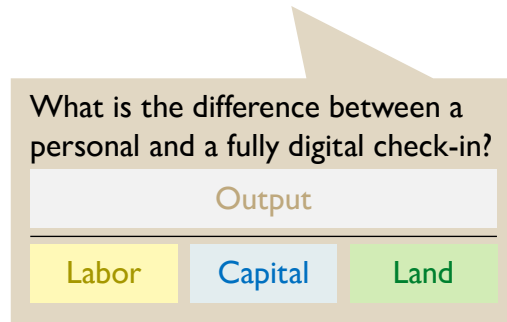
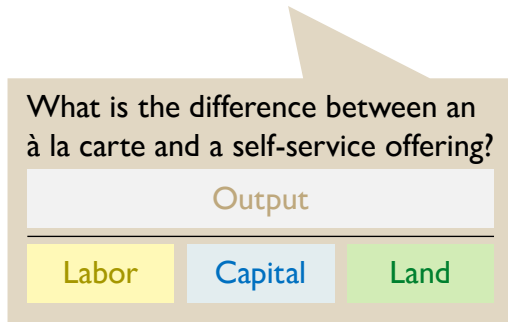
Productivity KPIs in tourism and hospitality

Recap:

Why should we measure productivity of services?

We look at productivity on a micro-level: **firm(s) and their processes**.

- To identify **weaknesses** in the business model.
- To find and simulate **improvements** in the business processes.
- To ensure an **effective** allocation of resources and an **efficient** process design.



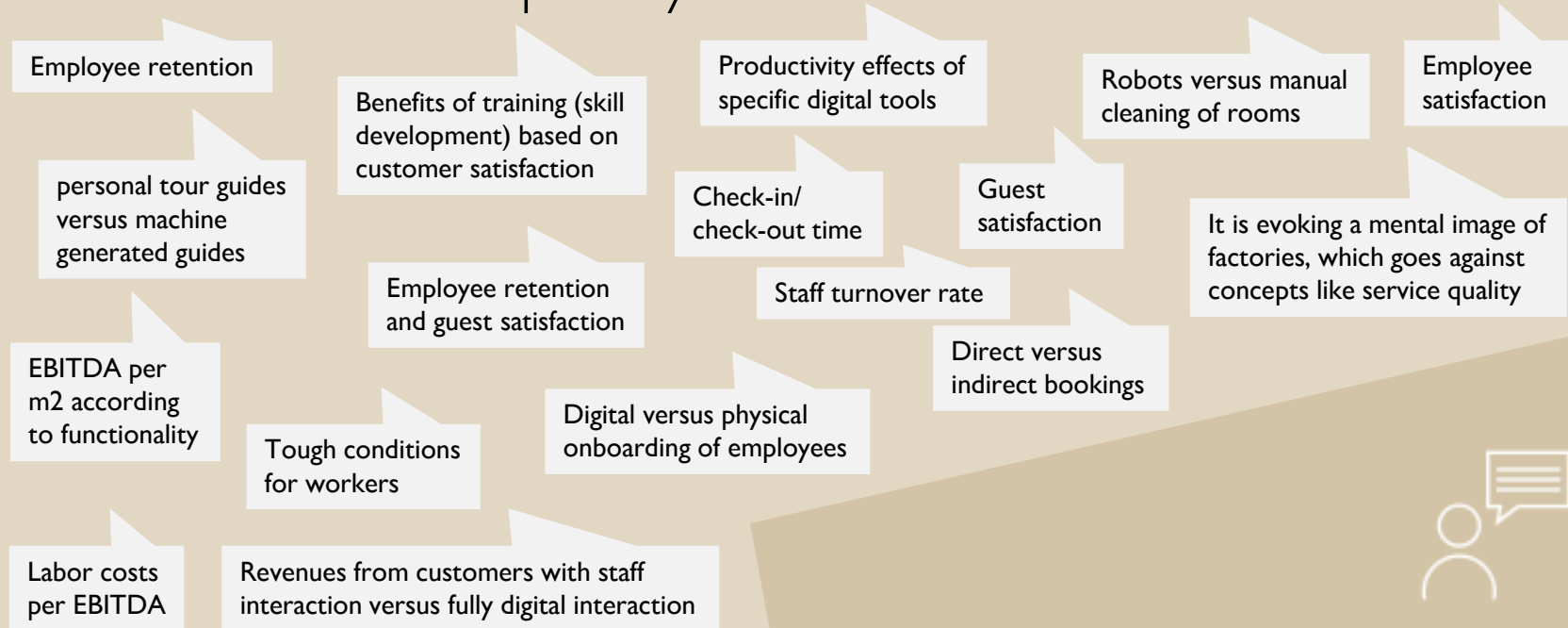
→ **What would you want to measure? Share your ideas and KPIs!**

What would You want to measure?

Ideation I/II

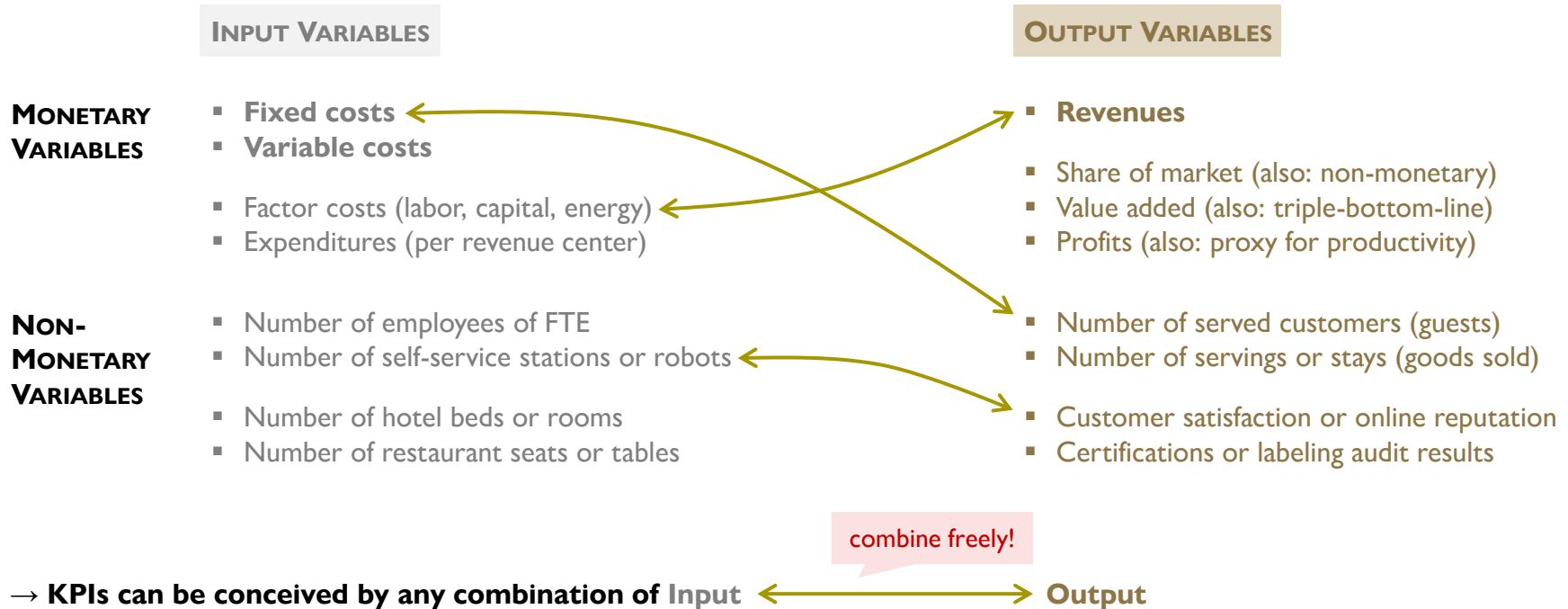


What would YOU want to measure in tourism and hospitality?



Selection of feedback from the workshop

Productivity is essentially the relation of output per input but can be measured with a range of variables



On the operational level, the efficient configuration of processes needs to be measured (shorter term)

Labor

Capital

Land

e.g. Hotel

- **Housekeeping**

- Labor per Room Sold [h or CHF]
- Labor per RevPAR (or ADR) [CHF or %]

- **Reception**

- Labor per Reservation (Bookings, across all Channels) [h or CHF]
- Labor per Check-in/-out (per Arrival) [h or CHF]
- Labor pro Night [h or CHF]

- **Maintenance/Repairs/Replacements**

- Labor per m2 (by Hotel Category and/or by Occupancy)

On the strategic level, the effective configuration of resources needs to be measured (longer term)

Land

Capital

Labor

e.g. Hotel

- + **Rooms** (sleeping; transient, <3 months; possibly by room category) [GOI/m²]
- + **F&B** (catering; possibly external versus internal; production/consumption) [GOI/m²]
- + **Minors** (wellness, fitness, etc.) [GOI/m²]
- + **Living** (residential; resident, >3 months) [GOI/m²]
- + **Retail** [GOI/m²]
- = **TOTAL** [GOI/m²]
- Administration, marketing, maintenance, etc. (indirect expenses or overheads)
- = **GOP** [GOP/m²]
- Property expenses (insurance expenses, rental and leasing costs, etc.)
- = **EBITDA**
- Depreciation and amortisation (D: tangible; A: intangible)
- = **EBIT**
- Financing expenses
- = **Earnings before taxes**

What productivity KPI
would YOU like to see?



Ideation II/II

What productivity KPI would YOU like to see?

Number of covers
per hour of service

Employee satisfaction versus
number of guest interactions

Employee education level
versus guest satisfaction

Willingness to pay versus
customer satisfaction

Factor costs for direct
booking versus
transaction costs in
third party distribution

Employee well-being
versus their productivity

Optimal business model based
on the share of various business
units' GOI of total GOI

GOI per FTE per
business unit

Quality or costs of furnishing
versus guest satisfaction

Number of arrivals and
departures per number of
hours allocated at reception

GOI per m2 per
business unit



Selection of feedback from the workshop

Conclusion

Take away and outlook

Presumption: in today's highly digitized (service) economy, it should be possible to resolve Solow's productivity paradox

As discussed, there is hardly any (academic) literature on **service productivity**.*

We suggest the following approach to close this gap:

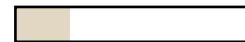
(1) Mapping digitization in a business process view to identify its economic relevance



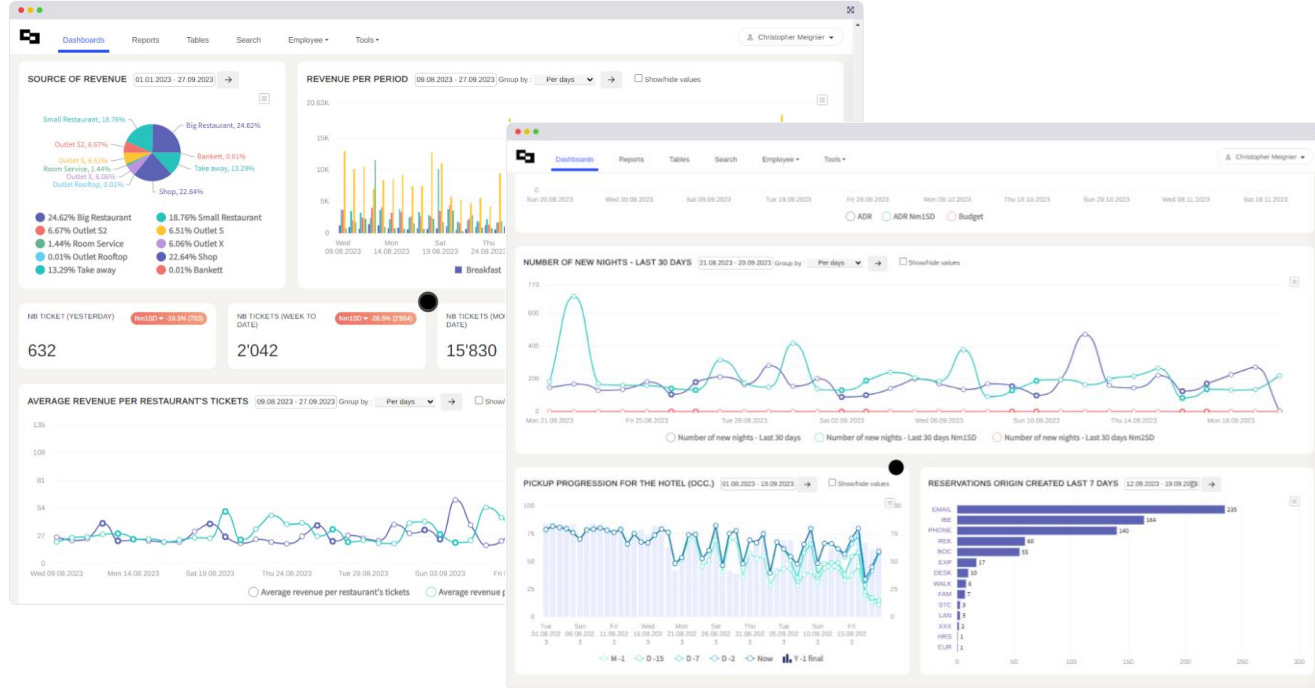
(2) Developing measures (KPIs) to identify productivity gains of digitized processes



(3) Provide conclusions on the (non-)productive potential of digitization of services



Business intelligence (BI) tools allow the real-time mapping of a wide range of systems and processes



work in progress

Goal: T&H productivity benchmarking tool with Thomann Hospitality AG, based on Blent.io

Thank you.

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