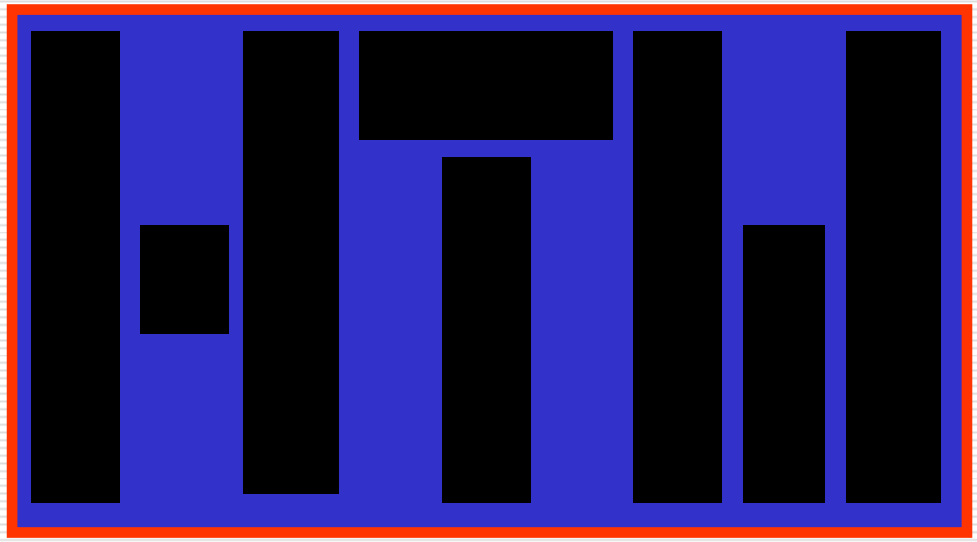
Ishikawa-Diagram



Structure

- Kaoru Ishikawa
- basic concept
- aim
- theoretical conversion
- practical example
- exercise

- born in Tokio 1915
- graduated University of Tokyo in 1939 with an Engineering degree in applied chemistry
- worked as a naval technical officer until 1941
- worked for Nissan Liquid Fuel Company
- associate professor at the University of Tokyo in 1947
- famous person in Qualitymanagement
- not only product quality
- but also e.g. quality of Management and assistant
- developed several quality-tools
- One of these tools is the **Ishikawa-Diagram** (also called Fishbone- or cause and effect diagram)

Kaoru Ishikawa
(1915 - 1989)

basic concept

The Idea:

think about possible causes and reasons leading to an effect or a problem

find solution for preventing those problems

basic concept

- one problem/effect
- 7 causes lead to the problem/effect
- the causes are divided into main- and sidecauses

The 7 causes are:

1. Methods
2. Machinery
3. Management
4. Materials
5. Manpower
6. Environment
7. Measurement

basic concept

individual problem/effect needs individual factors

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→not all 7 factors are needed in the diagram

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grade of influence

Branch of production: Manpower, Methods, Material und Machine

Branch of administration: Management, Environment

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e.g. Methods, Machinery, Management, Materials, Manpower

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→ 5 M‘s

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Branch of production: Manpower, Methods, Material und Machine

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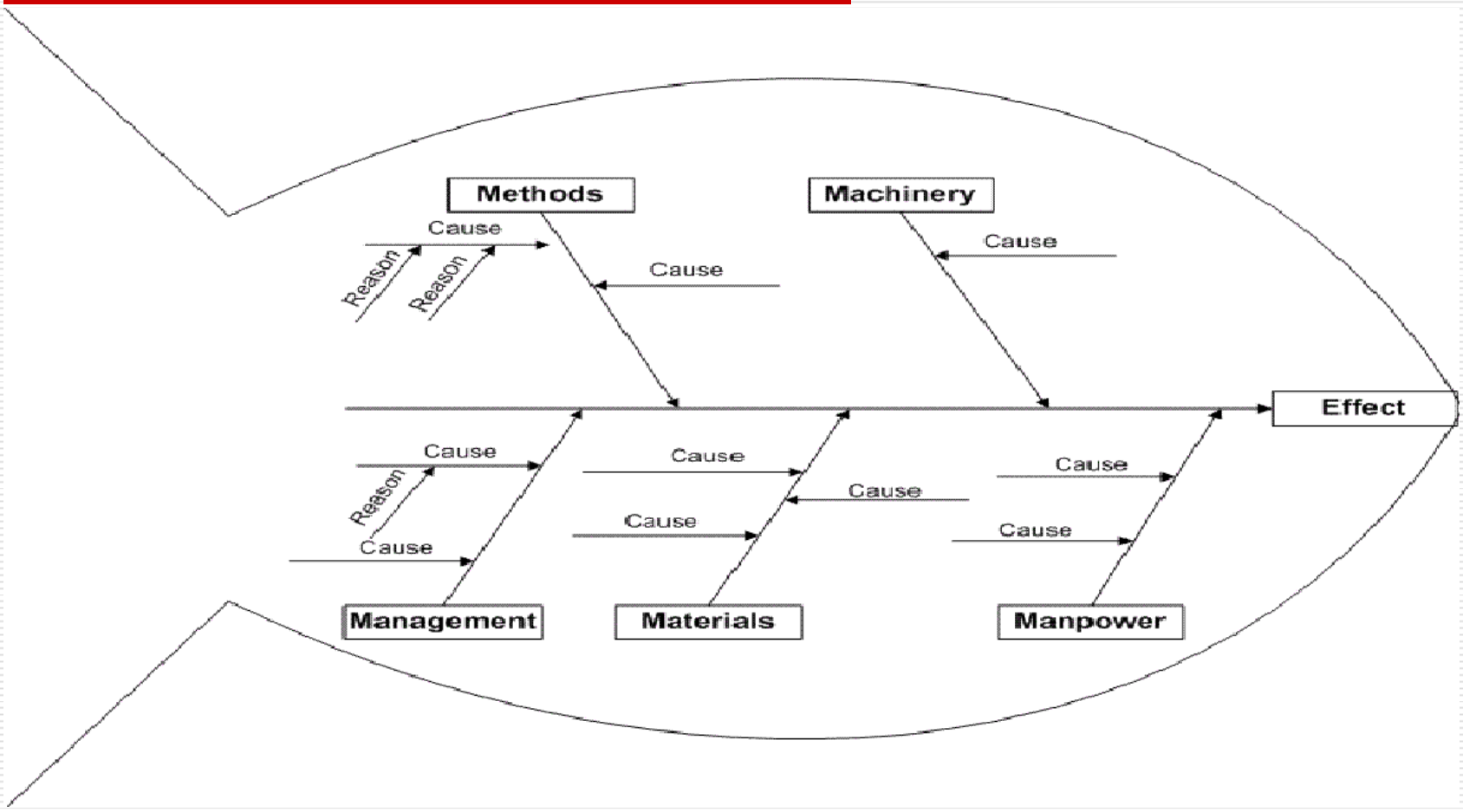
e.g. Methods, Machinery, Management, Materials, Manpower

→ 5 M‘s

4P (Place, Procedures, People, Policies)

4S (Surroundings, Suppliers, Systems, Skills)

basic concept



aim

- find the causes, main- and sidecauses
- clarity
- interdependence of the causes
- improve them for having the wanted effect

  or eliminate them for solving the problem

theoretical conversion

1. sketch the diagram and inscript the needed causes

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2. work the main- and sidecauses out

theoretical conversion

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theoretical conversion

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6. The team discusses about the solution

theoretical conversion

6. The team discusses about the solution

- causes that can be improved or eliminated easily will be finished first of all (no need to be weighted)

- The weighted causes are in a list of priority and will be finished in turn

theoretical conversion

It‘s important

theoretical conversion

It‘s important

that the team has skilled workers involved in discussion

theoretical conversion

It‘s important

that the team has skilled workers involved in discussion

e.g. supplier, clients etc

practical example

rise in productivity

practical example

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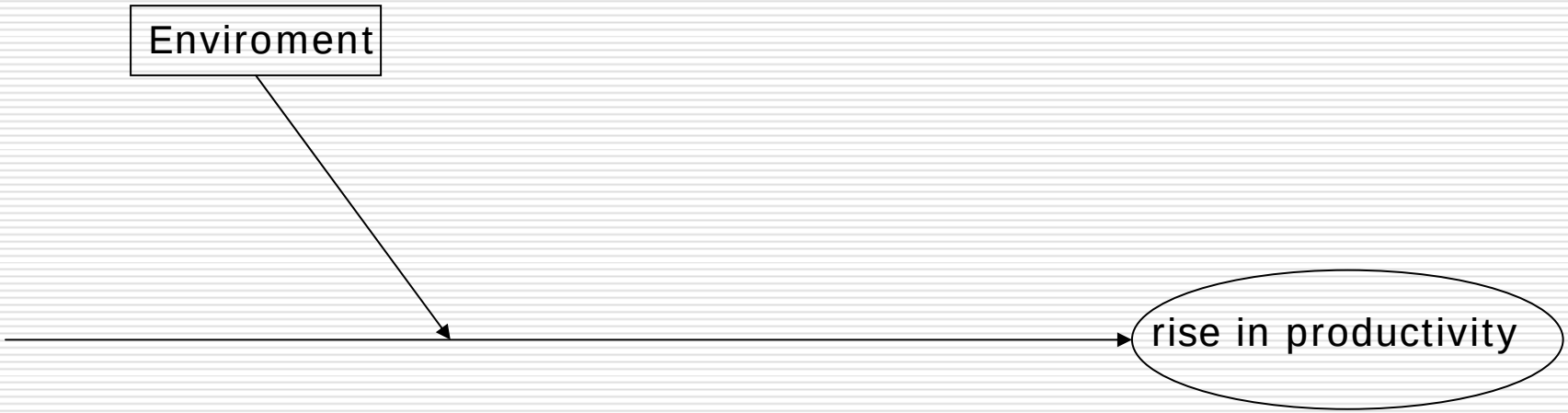

practical example

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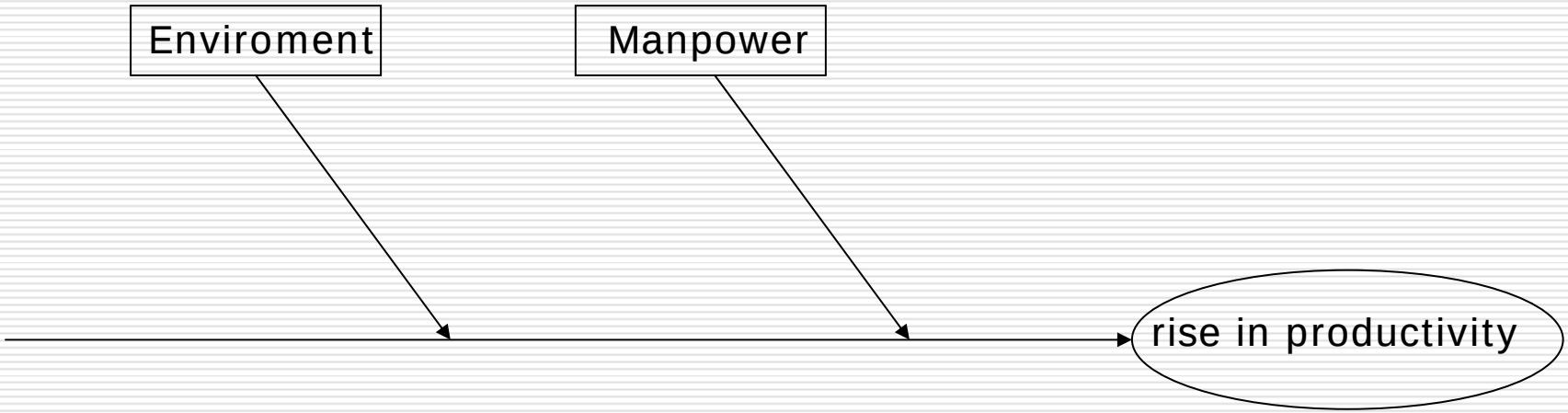

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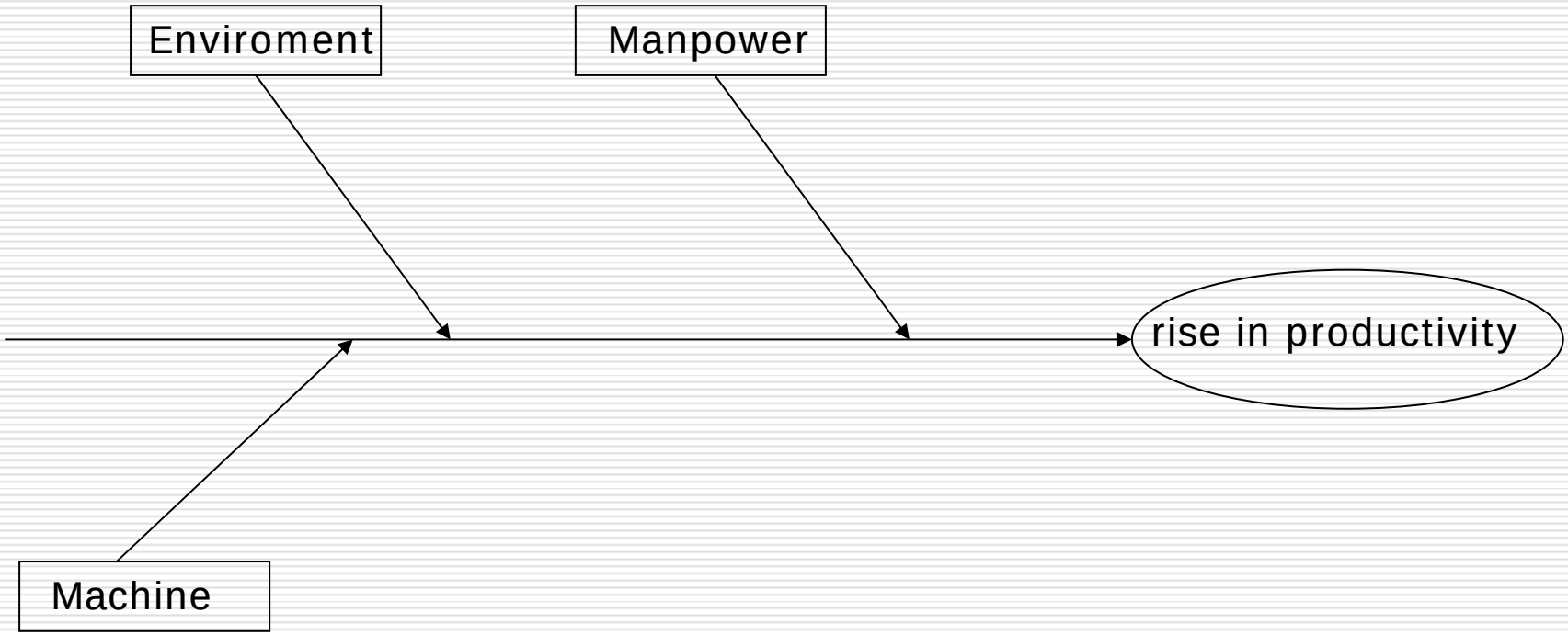

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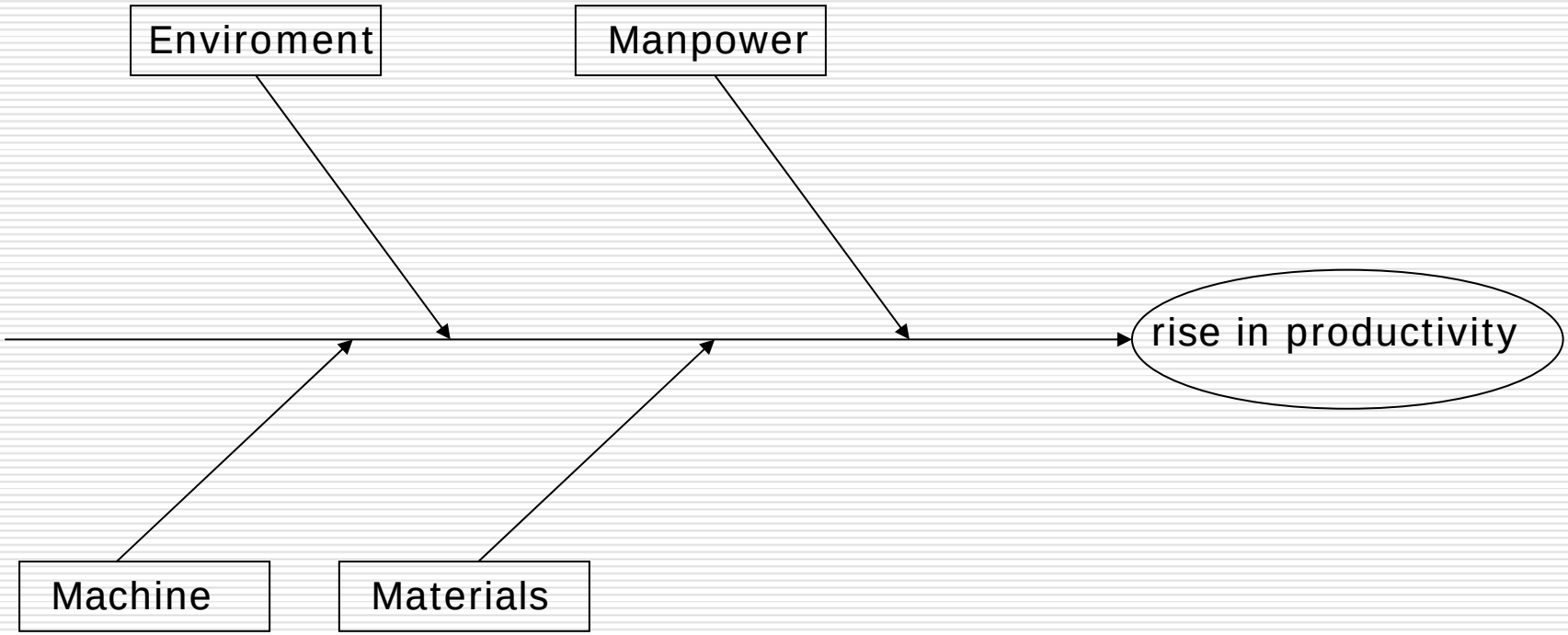

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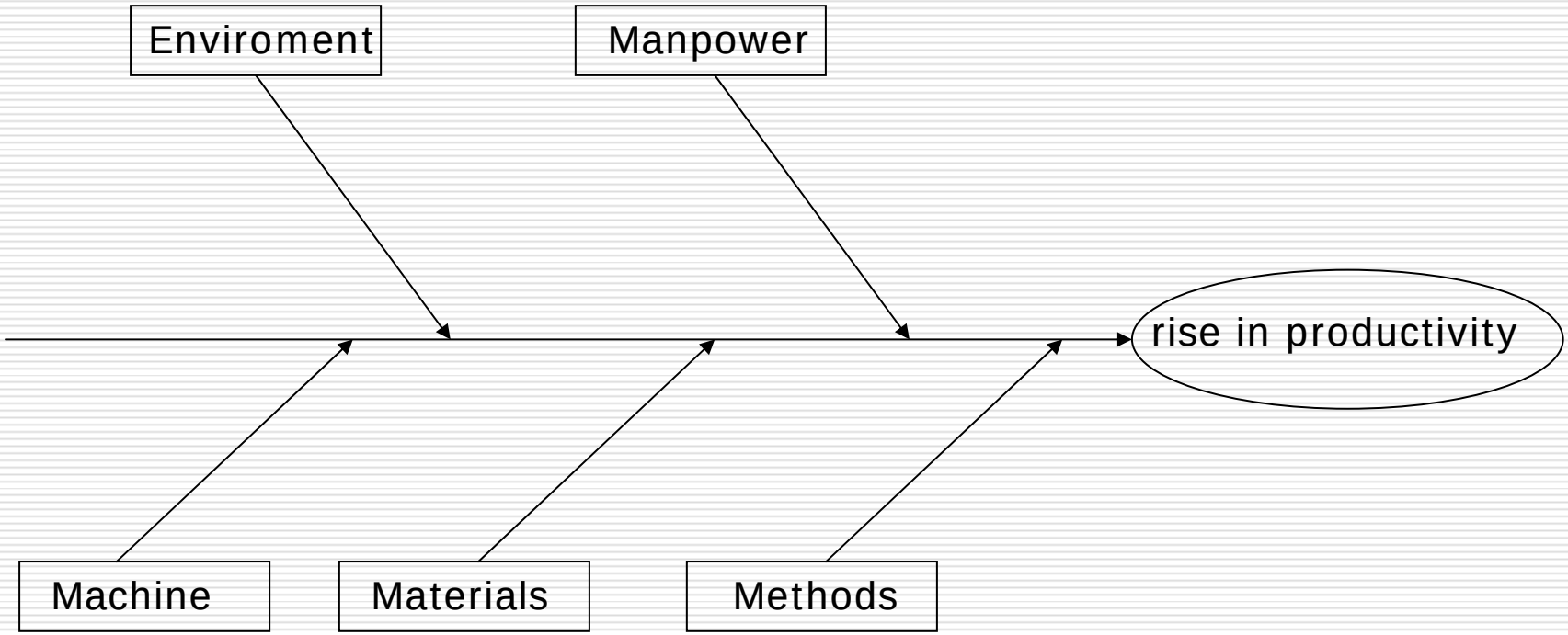
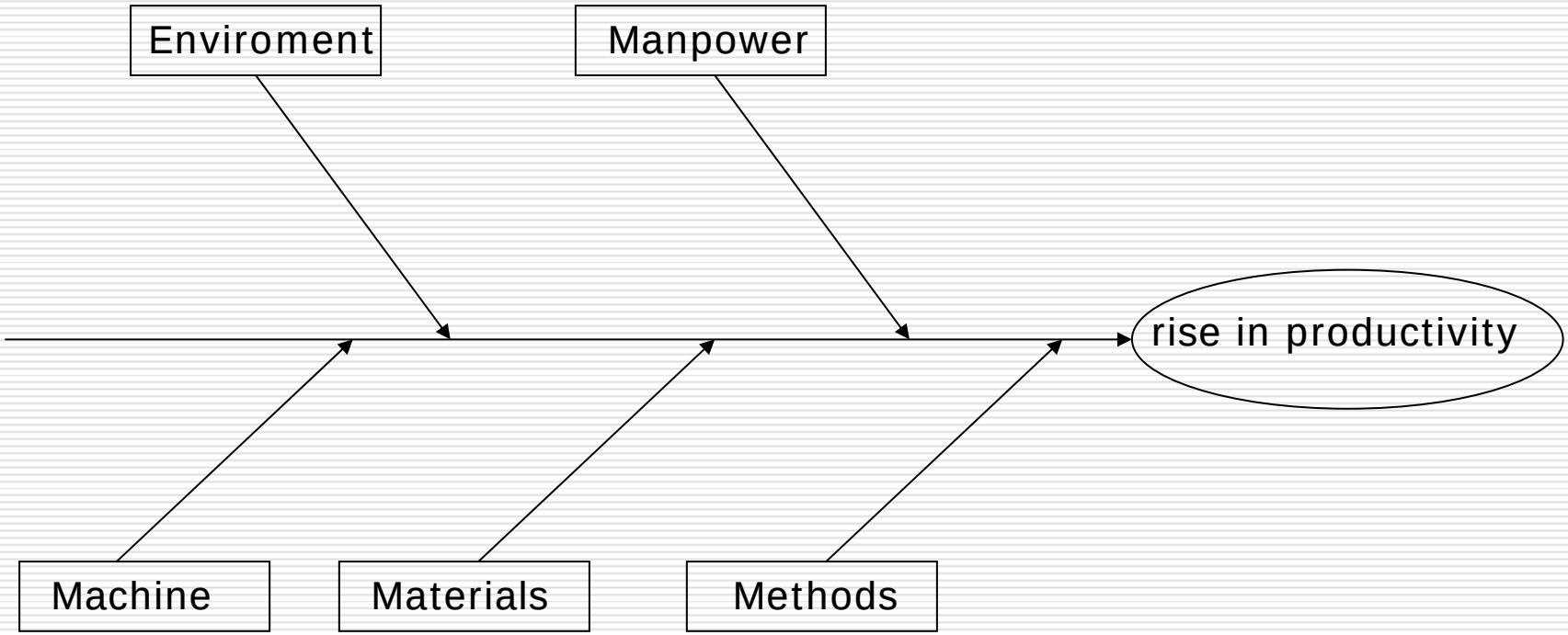


practical example

2. work the main- and sidecauses out



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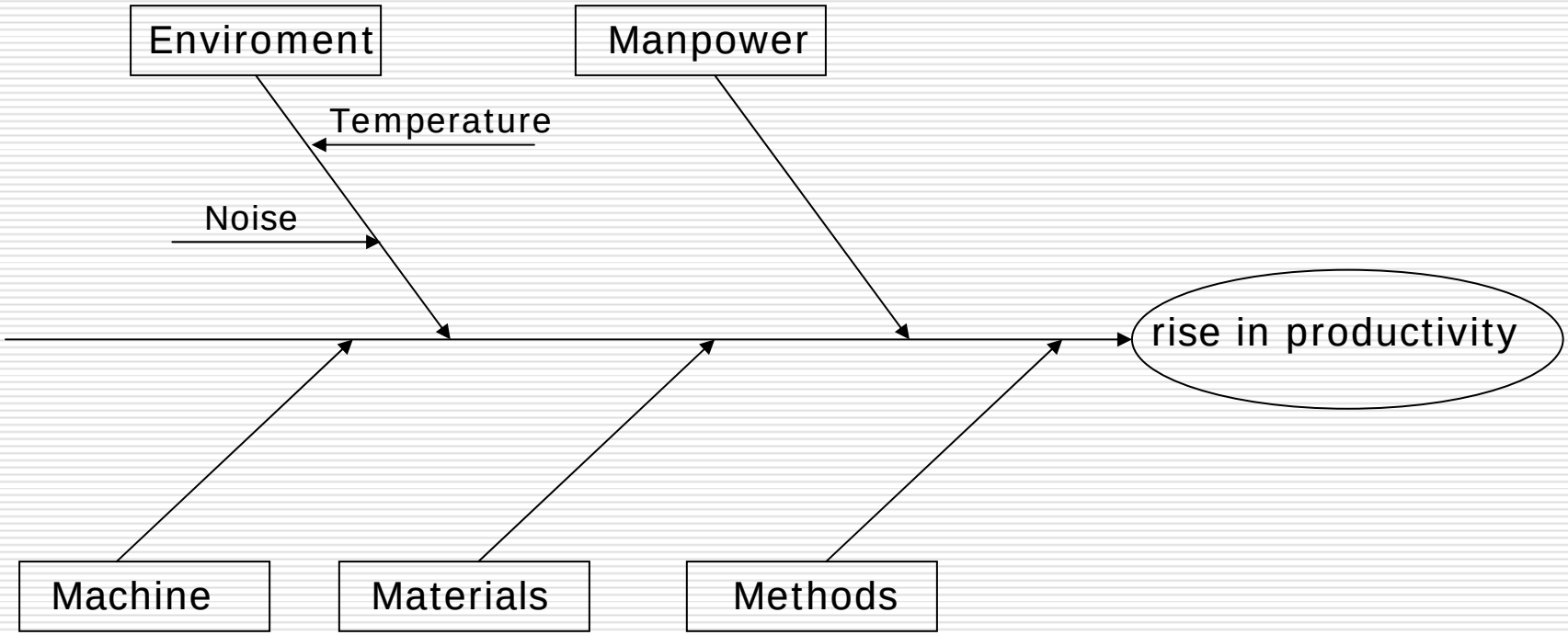

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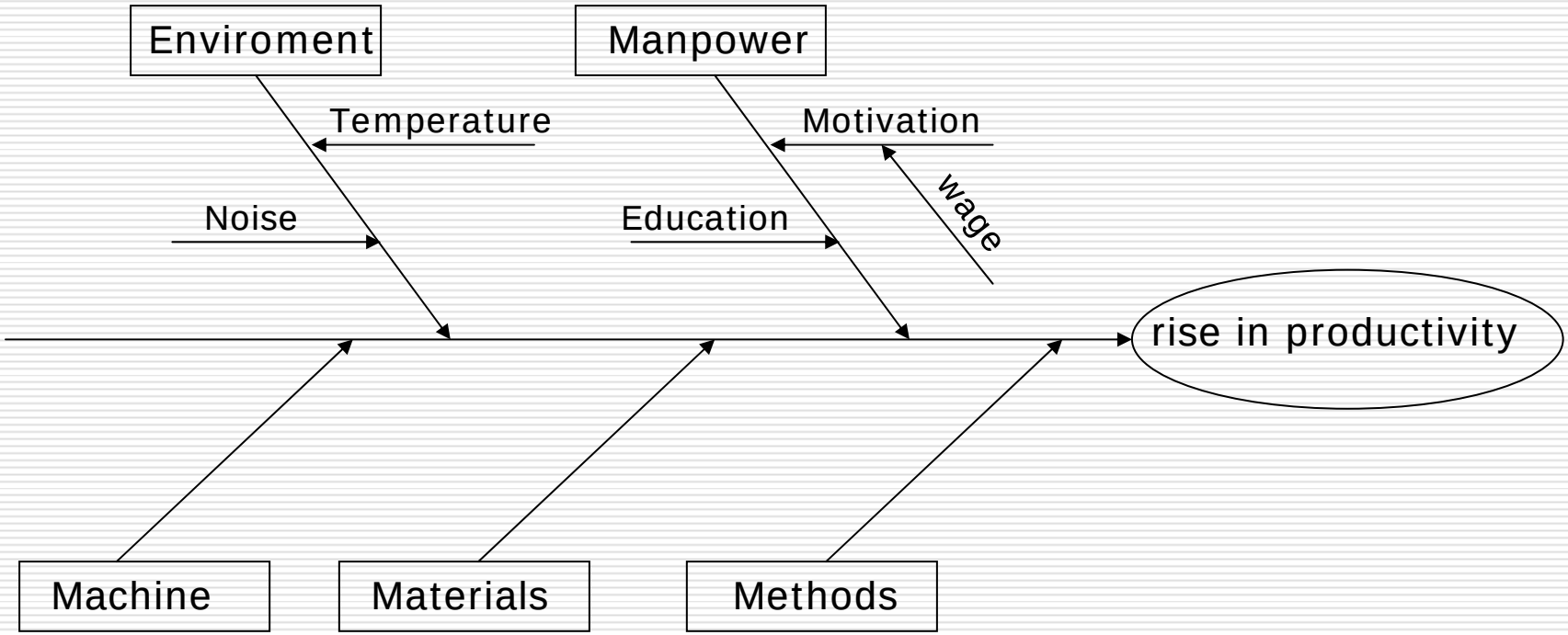

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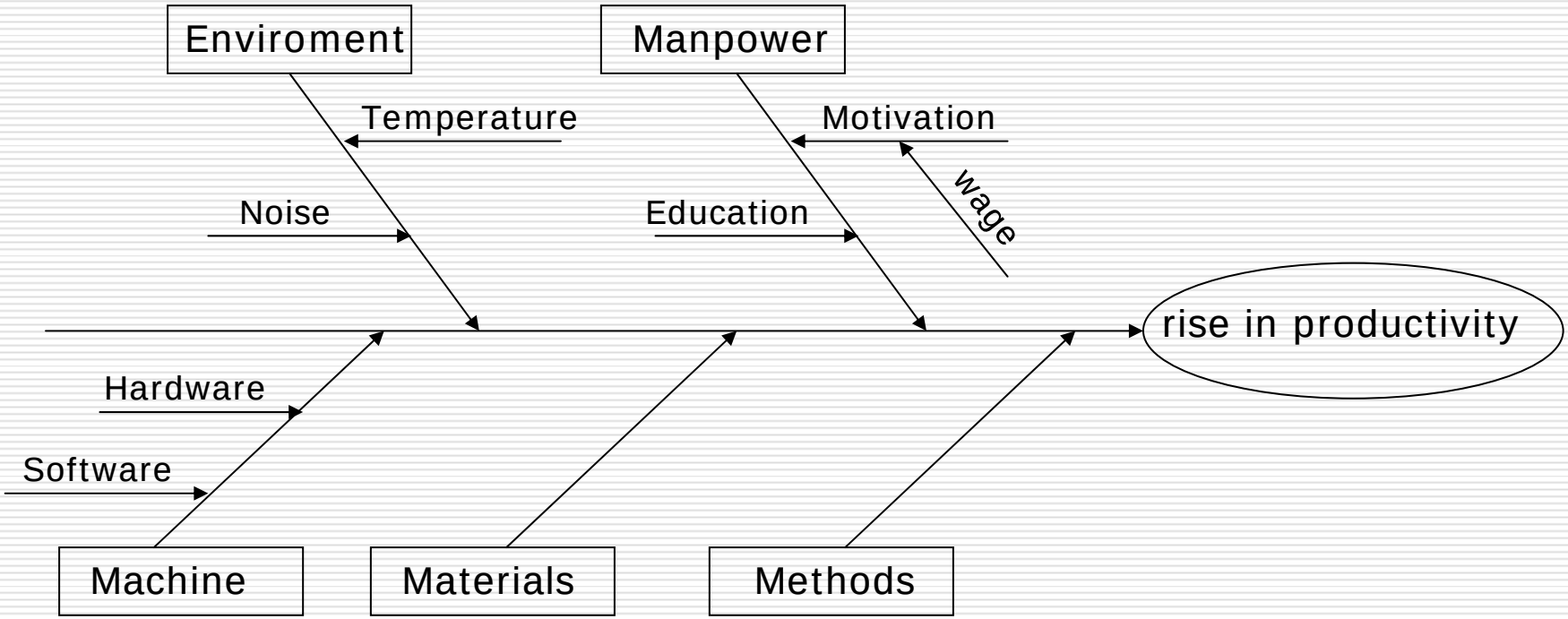

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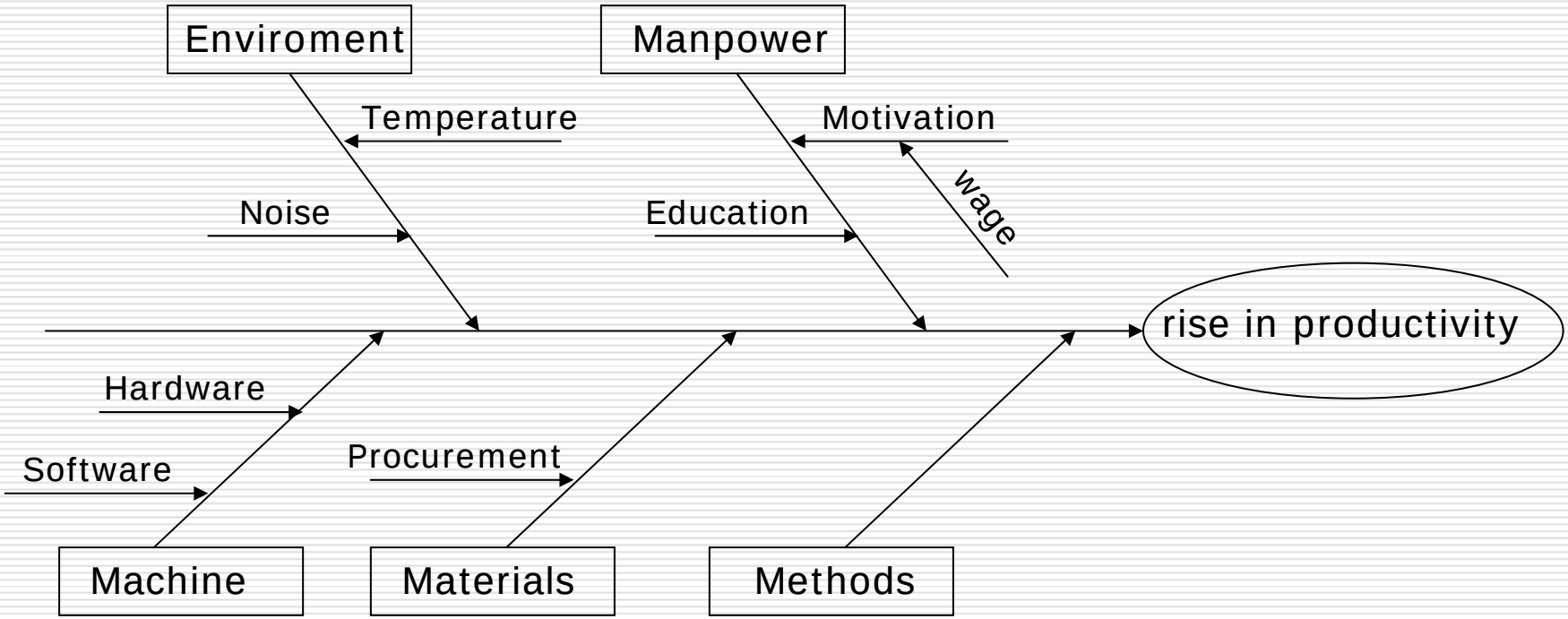

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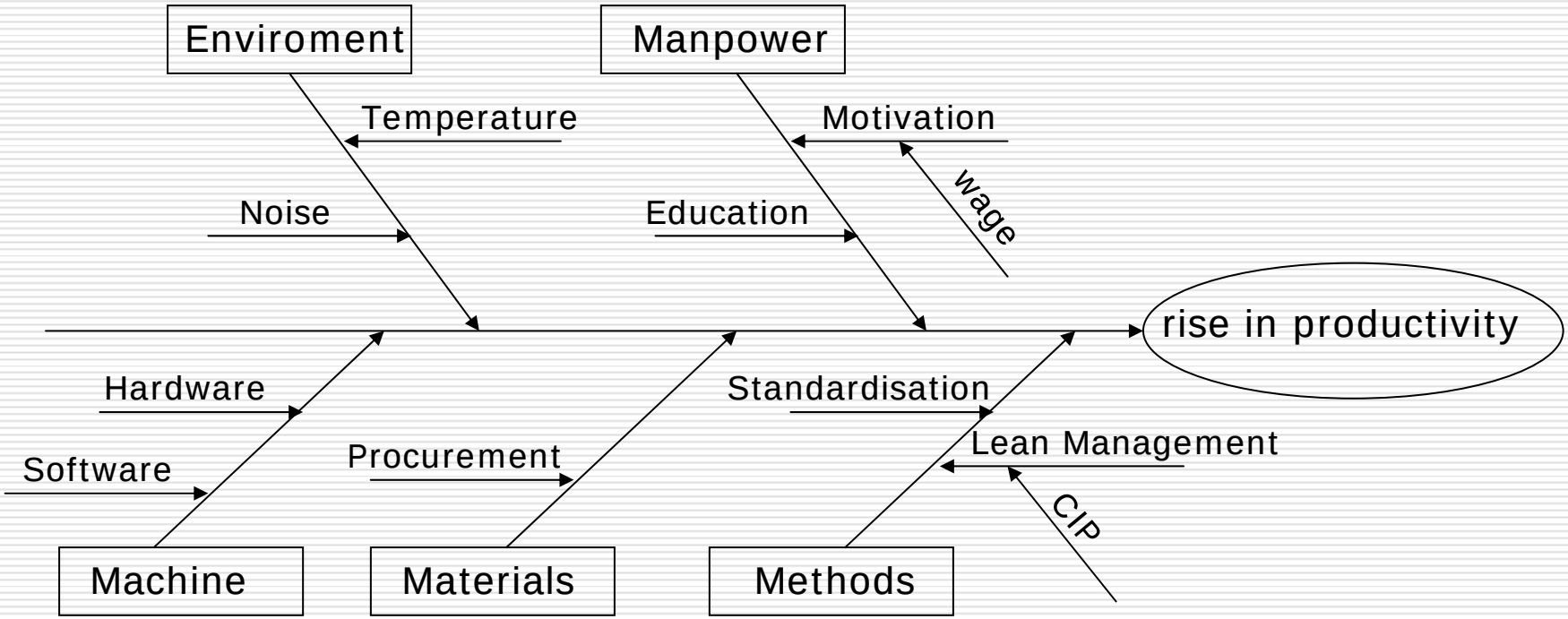
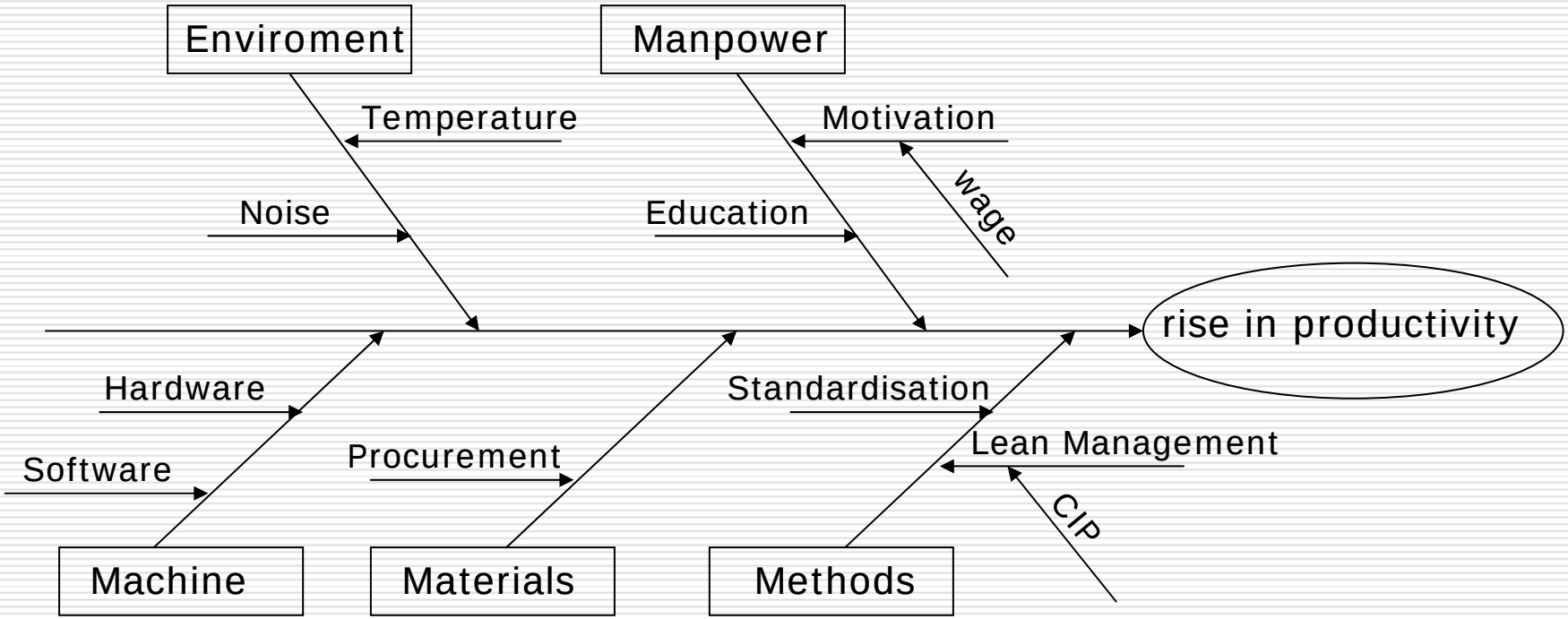


practical example

3. check the completeness



practical example

4. weight the the main- & sidecauses in terms of meaning & influence

- Lean Management
- Standardisation
- Motivation
- Education
- ...

practical example

5. check the selected causes for rightness

- Lean Management
- Standardisation
- Motivation
- Education
- ...

practical example

6. The team discusses about the solution

causes that can be improved or eliminated easily:

- Hardware
- Software
- Temperature
- Noise

practical example

6. The team discusses about the solution

weighted causes

- Lean Management
- Standardisation
- Motivation
- Education

exercise

excessive drop of paper

Henner Graubitz

October 23rd 2006

exercise

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2. work the main- and sidecauses out
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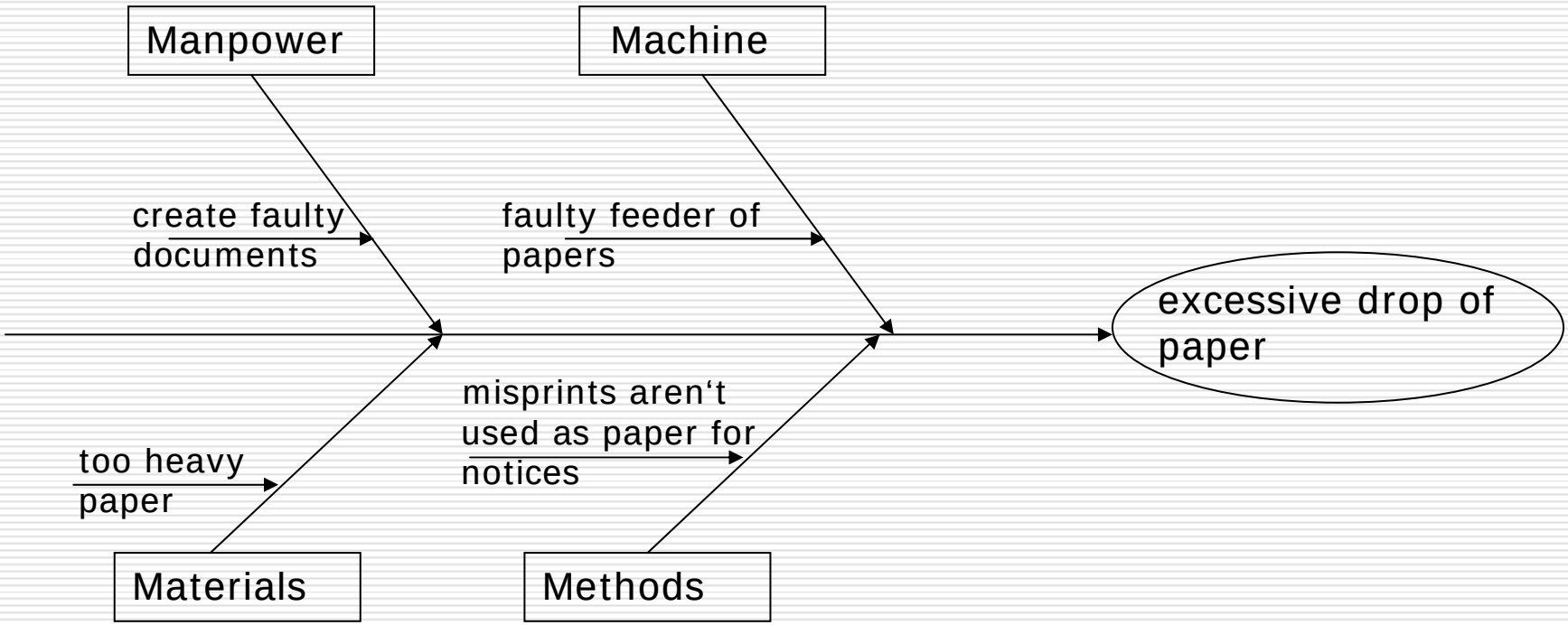
exercise

solution



Advantage:

- different opinions by teamwork
- easy to apply
- little effort to practise
- better understanding for causes and effects

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- easy to apply
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Disadvantage:

- No clarity in very complex problems
- Interactions and chronological dependence can’t be displayed