

Concept 1 of 6: Business Processes

BBT 3104: Advanced Database Systems

Week 1 of 13

April 2020

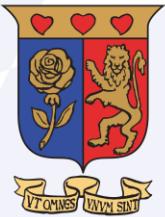
By Allan O. Omondi – aomondi [at] strathmore.edu
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Concept 1 of 6: Business Processes

BBT 3104: Advanced Database Systems
Week 1 of 13
April 2020

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Presentation Outline

✓ Value Chains

- Michael Porter
- Porter's Value Chain Diagram
- Primary Functions
- Support Functions
- Value Systems
- Activity 1: Business Idea Narrative based on Porter's Value Chain

✓ Business Processes

- Coordination
- Case Study of Zambikes Limited
- Class Discussion of Zambikes Ltd.
- Process Choreography
- SOP Constraints
- Activity 2: Business Process Identification

✓ Value-Added Analysis

– Value Classification

- Class Discussion on Value Classification of IT Troubleshooting
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✓ Root Cause Analysis

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- Activity 4: Identification of a -ve Effect related to NVA activities
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✓ IT-Enabled Business Transformation

✓ Problem-Based Learning: Group Project



Value Chains: Michael Porter

- The concept of a value chain was developed by Professor Michael Porter in 1985
- Click [here](#) to read Michael Porter's biography and [here](#) to see his research publications
- Value chains were developed to organize high-level business functions and to relate them to each other thus providing **an understanding of how a business operates**

Value Chains: Porter's Value Chain Diagram



- The value chain of a business subsumes (includes) all activities that the business conducts to fulfil its business goals. It can be represented in form of a diagram:

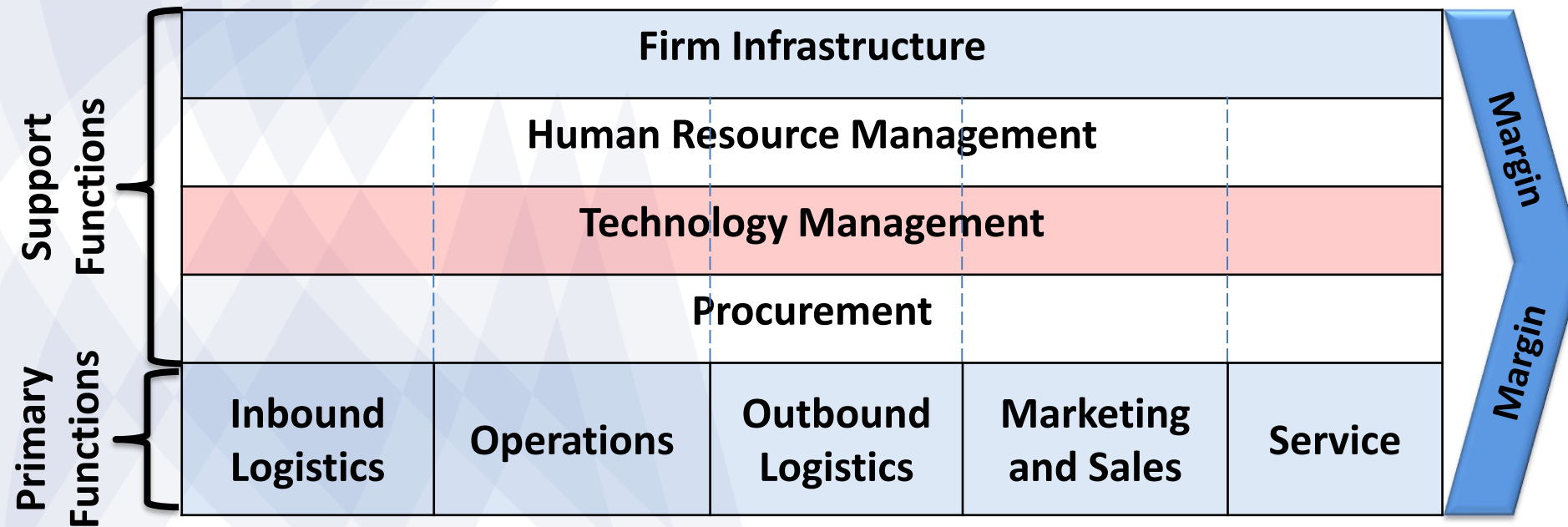


Figure 1: Porter's value chain diagram

Adapted from Johnson et al. (2008)

Value Chains: Porter's Value Chain Diagram



- The **primary functions** contribute directly to the competitive advantage of the business
- The **support functions** provide the environment in which the primary functions can be performed efficiently and effectively

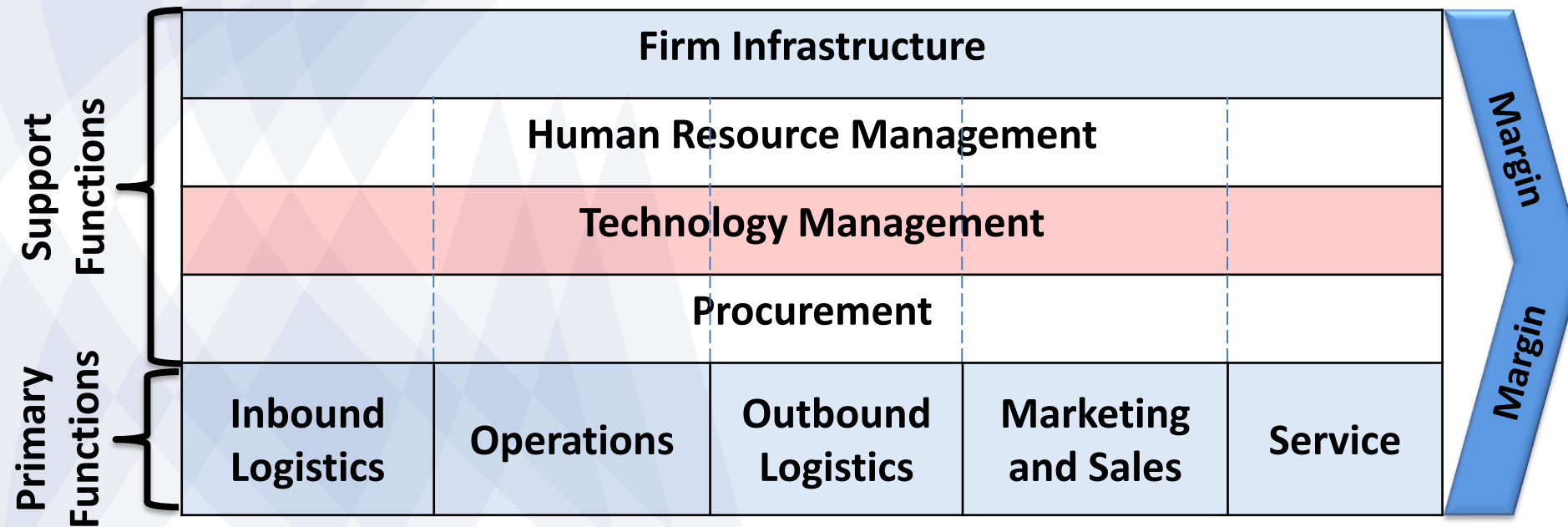


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Value Chains: Primary Functions

- **Inbound Logistics** – involve relationships with suppliers and include all the activities required to receive, store, and disseminate inputs
- **Operations** – all the activities required to transform inputs into outputs (products or services)
- **Outbound Logistics** – all the activities required to collect, store, and distribute the output
- **Marketing and Sales** – activities that inform buyers about products or services, induce buyers to purchase them, and facilitate their purchase
- **Service** – includes all the activities required to keep the product or service working effectively for the buyer after it is sold and delivered



Value Chains: Support Functions

- **Procurement** – the acquisition of inputs, or resources, for the business
- **Human resource management** – consists of all activities involved in recruiting, hiring, training, developing, compensating and (if necessary) dismissing or laying off personnel
- **Technological development** – pertains to the information technology (hardware, software, **database**, procedures, and networks) and technical knowledge acquired to support the business' transformation of inputs into outputs
- **Firm Infrastructure** – serves the business' needs and ties its various parts together. It consists of functions/departments such as accounting, legal, finance, planning, public affairs, quality assurance and general management



Value Chains: Value Systems

- **Businesses cooperate with each other in order to fulfil their business goals**
- **The ecology of the value chains of cooperating businesses is called a **value system****
- **Value systems provide a high-level characterization of the **relationship of a particular enterprise to its business environment****
- **A value system consists of a number of value chains, each of which is associated with 1 business**

Value Chains: Value Systems

- An example of a value system:

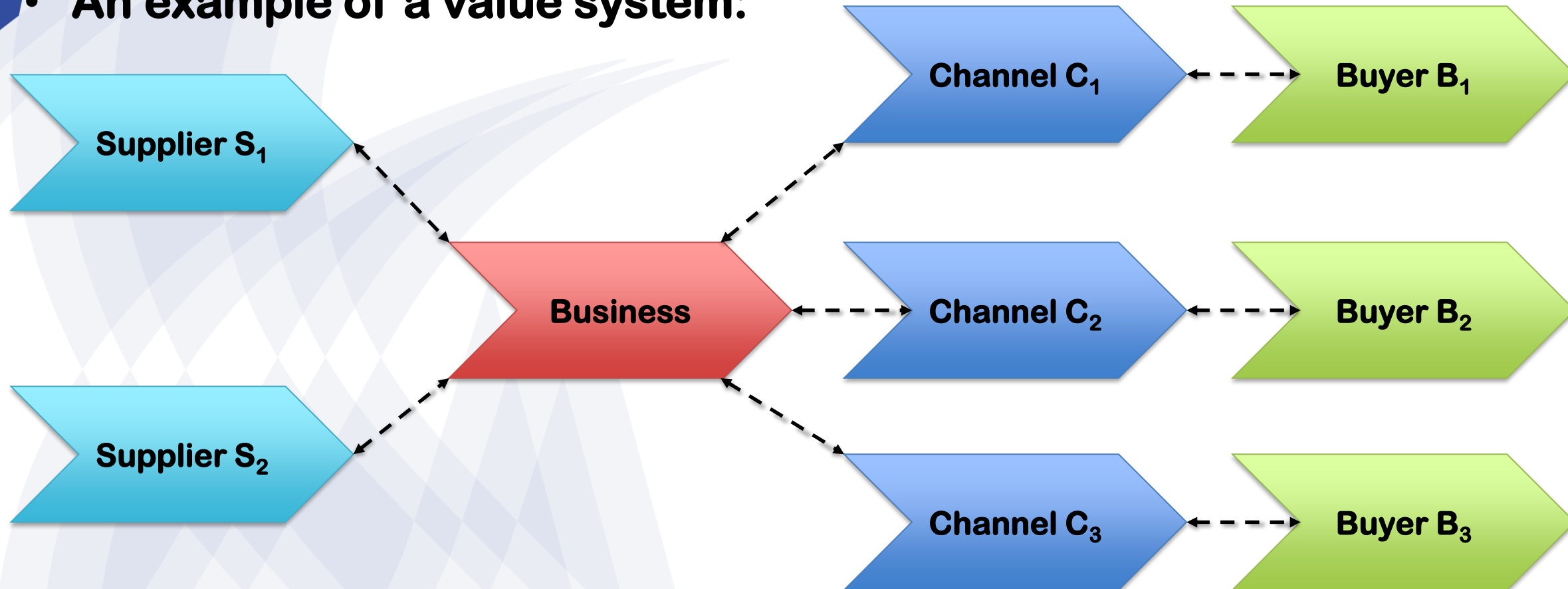


Figure 2: A value system
Adapted from Weske (2007)

Activity 1: Business Idea Narrative based on Porter's Value Chain



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- [Click here](#) to fill in a form specifying the members of your group
- In groups of 3, identify a business idea and collaborate to create a narrative explaining each section of the business' individual value chain involved in producing its most valuable product or service.
- **Post** the following on [this](#) eLearning class discussion forum as **one post** per group:
 - The name of the business
 - The name of the team members and their positions in the business
 - A narrative explaining each section of the business' individual value chain. Use Porter's value chain diagram as a guideline.
- **Approximate time required (outside class activity): 30 minutes**



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Business Processes

- The creation of products or services **that are of value** involves the execution of a number of activities that can be grouped together to form a **business process**



Figure 3: Sample business processes



Business Processes: Coordination

- A business process consists of activities that are performed in **coordination** in an organizational environment
- These activities jointly realize a **business goal**
- The ordering of activities in a business process can be **controlled** by a business process management system as a **centralized** software component

Business Processes: Coordination

- The centralized control is similar to a conductor who controls musicians in an orchestra



Figure 4: Orchestra conductor
Adapted from Santos (2019)

Business Processes: Case Study of Zambikes Limited



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- **Case Study of Zambikes Limited produced by Enterprise Systems Education for Africa (ESEFA)**



Video 1: Case Study of Zambikes Limited

URL: <https://www.youtube.com/watch?v=cm-PhEliyIQ>

Adapted from Enterprise Systems Education for Africa (ESEFA) (2015)

Class Discussion of Zambikes Ltd.

- What products/services of value does Zambikes Ltd. produce?
- Describe the value chain for the products that Zambikes Ltd. produces
- What are the business processes involved in the value chain of Zambikes Ltd.?
- What are the potential causes of poor performance?
- What are the possible interventions that can be implemented to benefit the customers and the business?
- **Approximate time required: 25 minutes**

Business Processes: Case Study of Zambikes Limited



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- **Ordering process to process incoming orders at Zambikes Limited**

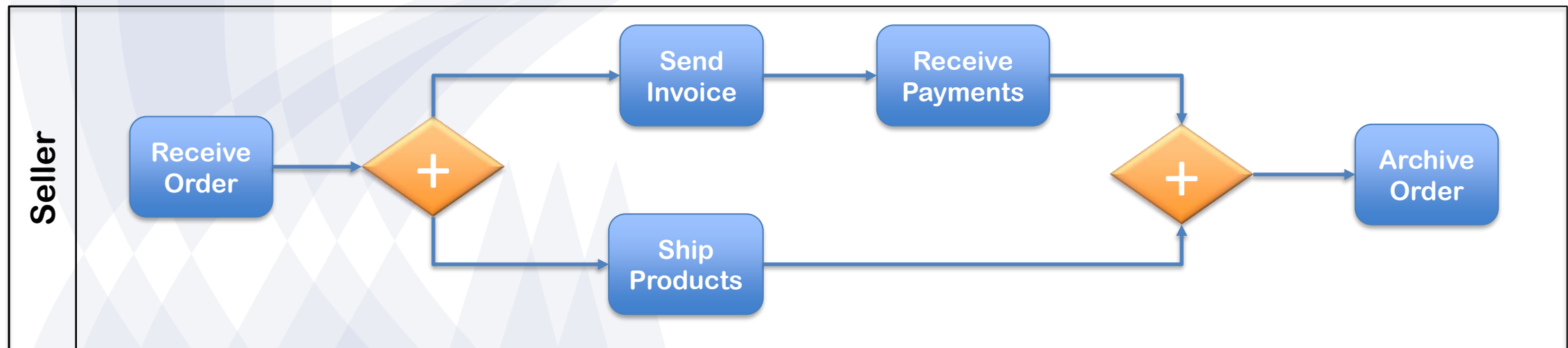


Figure 5: Ordering process of a seller

Adapted from Weske (2007)

Business Processes: Case Study of Zambikes Limited



- **Buying process of a buyer buying from Zambikes Limited**

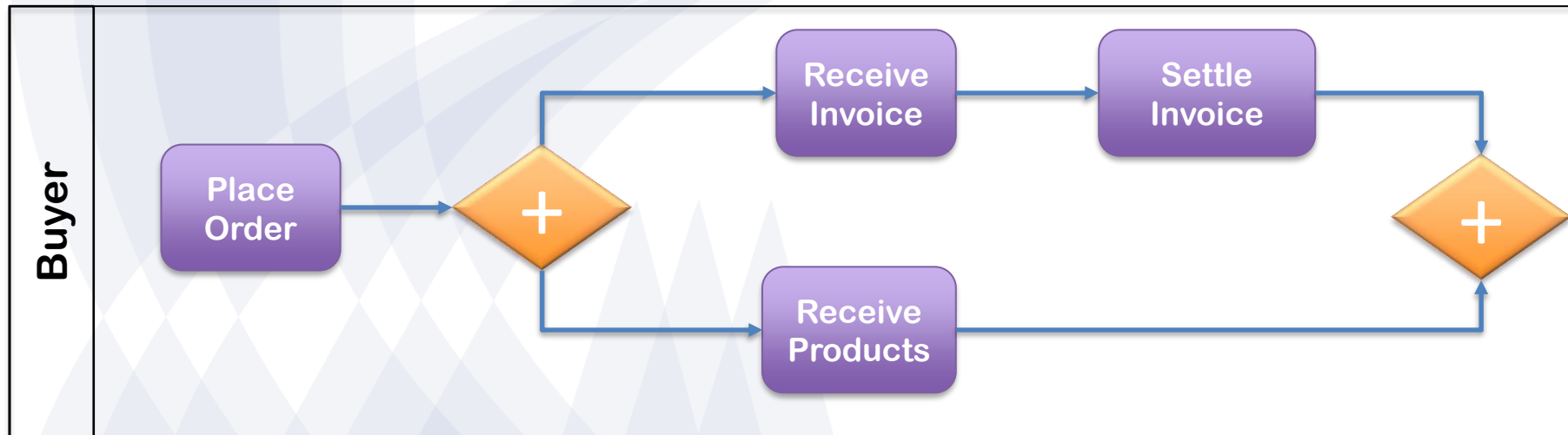


Figure 6: Buying process of a buyer

Adapted from Weske (2007)

Business Processes: Process Choreography



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- Each business process is enacted in a single organization however, it may **interact** with business processes performed by other organizations
- **For example**, the ordering business process and the buying business process can interact as follows:

Business Processes: Process Choreography



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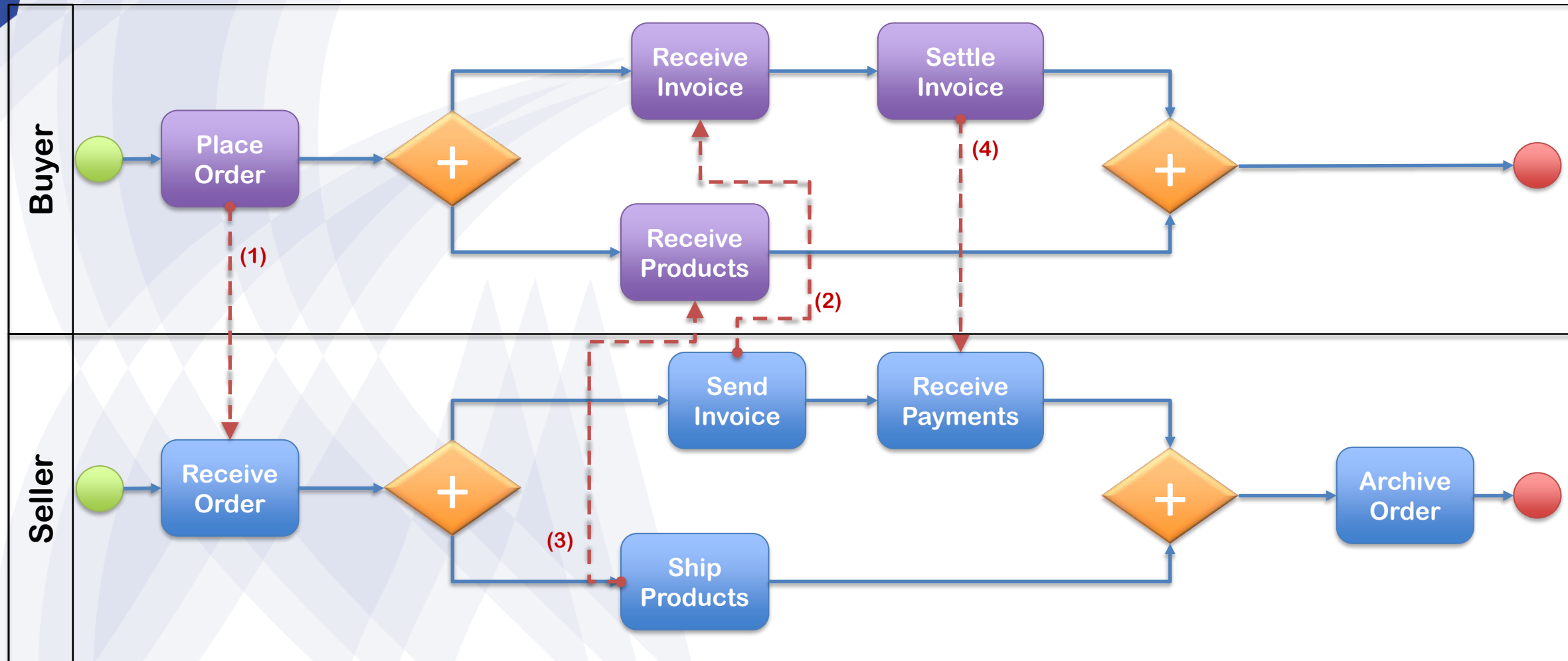


Figure 7: Integrated business processes of a buyer and a seller

Adapted from Weske (2007)

Business Processes: Process Choreography



- The interactions of a set of business processes are specified in a **process choreography**
- The term choreography indicates the absence of a central agent that controls the activities in the business process involved
- In order to realize correct interactions, the interacting business processes need to agree on a common choreography **before** they start interacting
- **Analogy:**
 - Acrobats agreeing on a common choreography before the performance starts
 - During the performance, each acrobat behaves autonomously but in line with his/her part in the choreography

Business Processes: SOP Constraints

- Different businesses also have different pre-determined rules specified in a **Standard Operating Procedure (SOP)** document
- **For example**, a different seller may decide not to ship products before they receive the client's full payment for the product
- The business process of such a seller can be represented as follows:

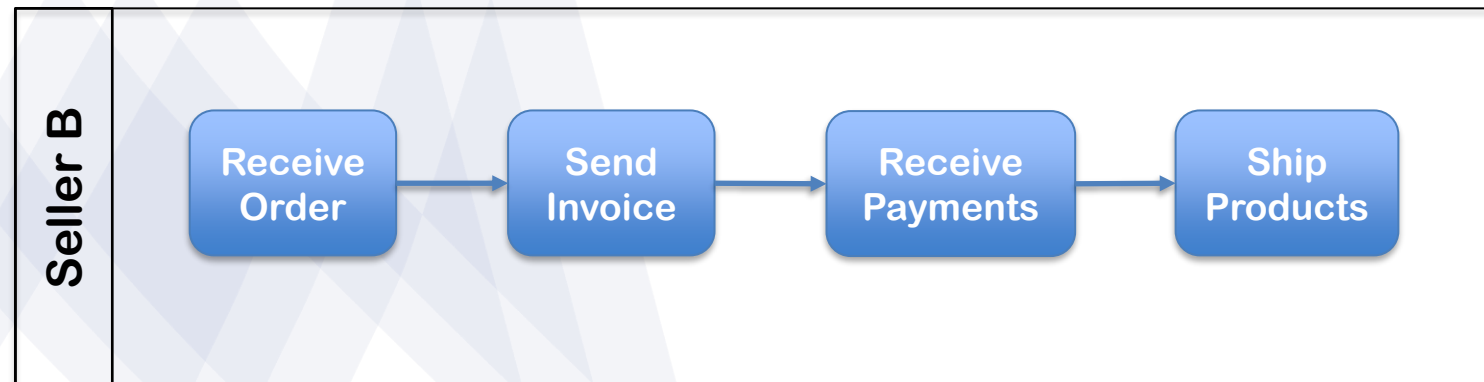


Figure 8: Business process constrained by an SOP

Adapted from Weske (2007)

Activity 2: Business Process Identification



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- In groups of 3, identify all the business processes involved in the value chain of your business idea
- Represent each individual business process in form of a diagram (one diagram per business process)
- Represent the interactions between the business processes in form of a single diagram
- **Post** (one post per group) the individual business processes and the interacting business process on this eLearning class discussion forum as a reply to your previous post on the business idea narrative
- **Approximate time required (outside class activity): 45 minutes**



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Value Added Analysis

- Value-Added analysis involves decomposing business processes into specific activities with the aim of identifying unnecessary steps (**value classification stage**) to eliminate them (**waste elimination stage**)

Value-Added Analysis: Value Classification



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- **Value classification involves:**
 - **Step I:** Identify specific activities in a business process by observation and **interviewing**
 - **Step II:** Identify the beneficiary of the process and the **positive outcomes** that the beneficiary seeks from the business process
 - **Step III:** Analyse each activity in terms of the value it adds for the beneficiary by **classifying** it into specific categories

Value-Added Analysis: Value Classification



- The category can be either one of the following:
 - **Value-Adding (VA)**: Produces **value for the customer**. The key questions to ask is “Would the customer be willing to pay for this activity?”
 - **Business Value-Adding (BVA)**: These are required for the **business to run smoothly** or due to the regulatory environment of the business, **e.g.** legal requirements, control steps, steps imposed by accounting, etc.
 - **Non-Value Adding (NVA)**: When the step cannot be classified as VA or BVA, then it is a non-value adding step, **e.g.** handover steps
- **Note** that classification into either VA, BVA, or NVA is, to some extent, subjective and depends on the context

Class Discussion on Value Classification of IT Troubleshooting



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- **Classify each of the following activities involved in an IT Troubleshooting process as either VA, BVA, or NVA:**
 - ☐ **Step 1: Transport the IT practitioner to the client's workstation in the company's branch**
 - ☐ **Step 2: Transport the IT practitioner and the client's device to the IT workshop at the company's HQ**
 - ☐ **Step 3: Identify the problem with the client's device**
 - ☐ **Step 4: Establish a theory of probable cause**
 - ☐ **Step 5: Test the theory to determine the cause**
 - ☐ **Step 6: Establish a plan of action**
 - ☐ **Step 7: Wait for approval from the IT manager at the HQ before implementing the proposed plan of action**
 - ☐ **Step 8: Implement the solution**

Class Discussion on Value Classification of IT Troubleshooting



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- ☐ Step 9: Verify full system functionality and, if applicable, implement preventive measures
- ☐ Step 10: Document the findings, actions, and outcomes
- ☐ Step 11: Install the latest version of VLC Media Player
- ☐ Step 12: Transport the client's device back to his/her workstation at the company's branch
- [Click here](#) to submit your answer
- Approximate time required (inside class activity): 10 minutes

Value-Added Analysis: Waste Elimination



- NVA steps (wastes) should be **minimized or eliminated**
- Sources of waste in a business process include:
 - Unnecessary transportation
 - Too much inventory (large work-in-process) → High cost of warehousing
 - Waiting time between activities
 - Over-processing: Performing what is not yet needed or might not be needed
 - Over-production
 - Defects: [Link](#) to example
 - Resource underutilization: idle resources

Value-Added Analysis: Waste Elimination



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- There are various ways to eliminate waste in a business process.

For example:

- Eliminating the need for approvals
- Eliminating the need for transportation by ensuring the manufacturing plant has all the resources it needs nearby in one place
- Implementation of Computer-Based Information Systems: **This is where the Advanced Database Systems unit finally comes in for a BBIT student!**

It can involve the development of a computer-based information system which requires the storage of the right data and the retrieval of the right information by the right employee and at the right time

Value-Added Analysis: Case Study on Qantas Freight



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Video 2: Case Study of Qantas Freight

URL: <https://www.youtube.com/watch?v=M6qMni7dEDo&feature=youtu.be>

Adapted from IBM Australia and New Zealand (2014)



Activity 3: Value Classification

- In groups of 3, pick one business process from your business idea and outline all the activities involved in the business process
- Classify each activity as either VA, BVA, or NVA
- **Post** (one post per group) the name of the business process chosen, the list of activities in the business process and the value classification of each activity on this eLearning class discussion forum as a reply to your previous post on the business process diagram
- **Approximate time required (outside class activity): 15 minutes**



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✓ Problem-Based Learning: Group Project



Root Cause Analysis

- Root cause analysis is a critical component of problem solving
- If you do not treat the root cause(s) of a problem, it is likely that **the problem will not go away**
- By treating symptoms, the problem often manifests itself differently, offering a new set of symptoms
- **For example**, taking paracetamol (only) to stop the headache caused by malaria. Too much paracetamol can cause nausea and vomiting.



Root Cause Analysis

- Even “good” business processes can be made better. There is **ALWAYS** room for improvement.
- Root-Cause analysis presents a family of techniques designed to help analysts **identify and understand the root cause(s) of problems or undesirable events**
- Two techniques used to document the ideas generated during root cause analysis interviews and workshops are:
 - Cause-and-Effect/Fishbone/Ishikawa Diagrams
 - Why-Why Diagrams

Root Cause Analysis: Cause-and-Effect Diagrams



- Cause-and-Effect diagrams depict the relationship between a given negative effect and its causes
- These causes can be either:
 - **Causal**: Causes that, if corrected, eliminated, or avoided, would prevent the issue from occurring
 - **Contributing**: These increase the chances of a given issue occurring. For example, an inefficient user-interface (UI) with no date-picker can contribute towards the effect of inaccurate data

Root Cause Analysis: Cause-and-Effect Diagrams



- The steps to be followed when conducting root cause analysis include:
 - **Step I:** Brainstorming – Each member is asked, “What is the cause?”
 - **Step II:** Classify the causes into categories
 - **Step III:** Discussion continues based on classification of causes into categories
- The categories can be presented in form of the 4 Ps or 4 Ms (or both) or in form of what makes sense for the problem under discussion

Root Cause Analysis: Cause-and-Effect Diagrams



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4 Ps

- **People**
- **Procedure**
- **Policy**
- **Plant (Equipment)**

4 Ms

- **Man**
- **Machinery**
- **Method**
- **Material**

Root Cause Analysis: Cause-and-Effect Diagrams



- Start with the problem (effect) you are addressing near “the eye of the fish” when drawing a fishbone diagram. **For example:**
- In this example, “no training” and “poor quality inputs, e.g. bad sugar, dirty cups, etc.” appear to be common themes that require further investigation

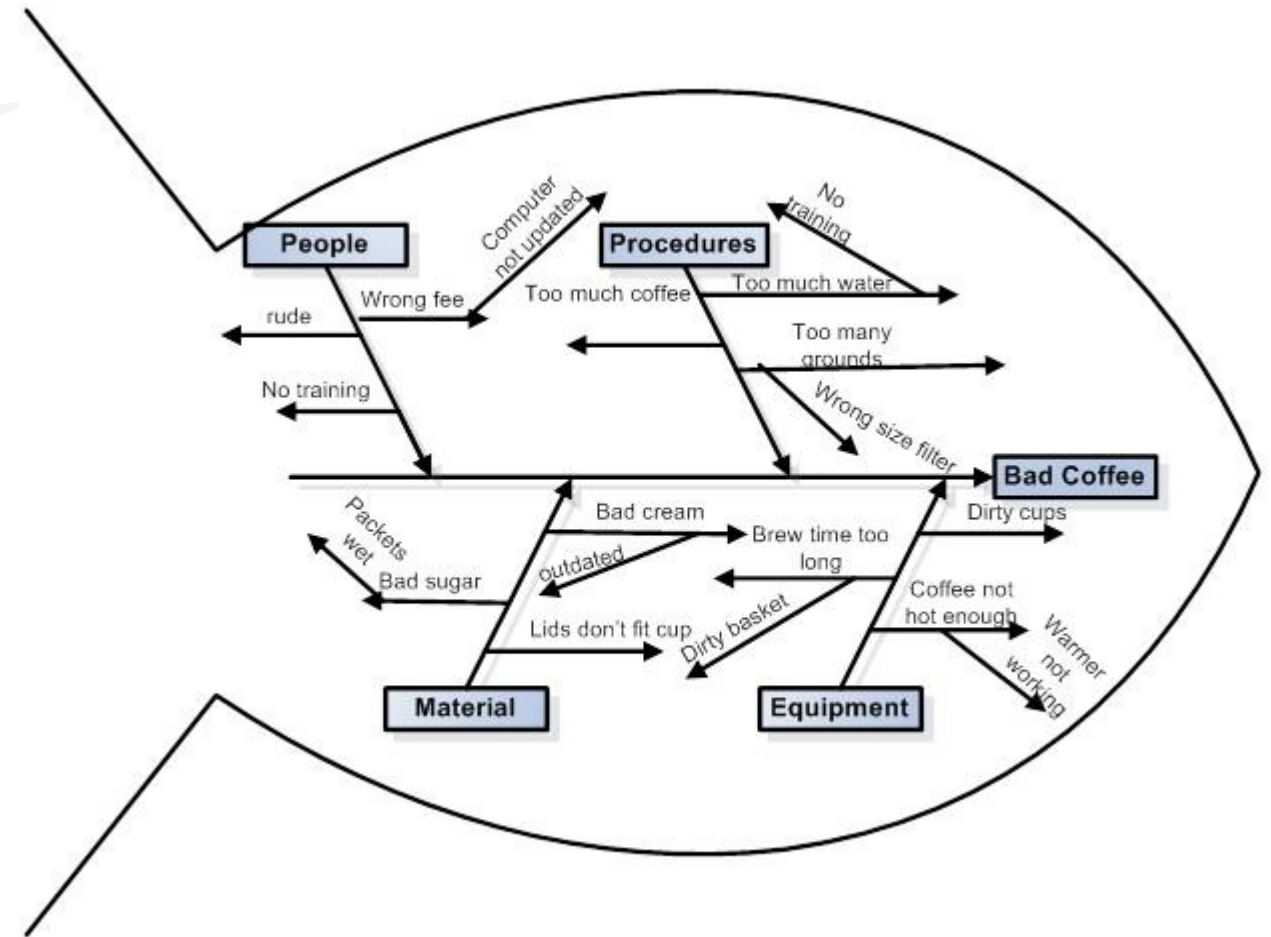


Figure 9: Fishbone diagram

Adapted from Wikimedia
Commons Contributors (2016)

Root Cause Analysis: Cause-and-Effect Diagrams



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- A small subset of causes are likely responsible for the largest share of a given effect
- **The 80-20 rule:** 20% of causes are responsible for 80% of effects

Activity 4: Identification of a -ve Effect related to NVA Activities



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- In groups of 3, identify the most significant negative effect related to NVA activities in your chosen business process
- Place this effect near “the eye of the fish” in your fishbone diagram
- Conduct a root cause analysis to identify all the potential causes of the negative effect
- **Post** (one post per group) the fishbone diagram on [this](#) eLearning class discussion forum as a reply to your previous post on value classification of activities
- **Approximate time required (outside class activity): 30 minutes**

Root Cause Analysis: Why-Why Diagrams



- While it is easy to jump to a solution, it is often more difficult to pinpoint WHY something occurred
- Pinpointing the cause can be done by **recursively asking the question “WHY?”** i.e. “Why has something happened?”
- A general guideline in the quality management field is to apply the 5 WHYs principle: **Ask why at least 5 times**
- This makes the assumption that by the time you are asking the 5th WHY, you should have identified the root cause of a given negative effect
- **For example,** “Why are you late?”, “Why was there traffic?” “Why did you oversleep?” “Why did you go to bed late?” and so on

Root Cause Analysis: Why-Why Diagrams



- A diagram can be used to represent the answers to the WHY questions. **For example:**

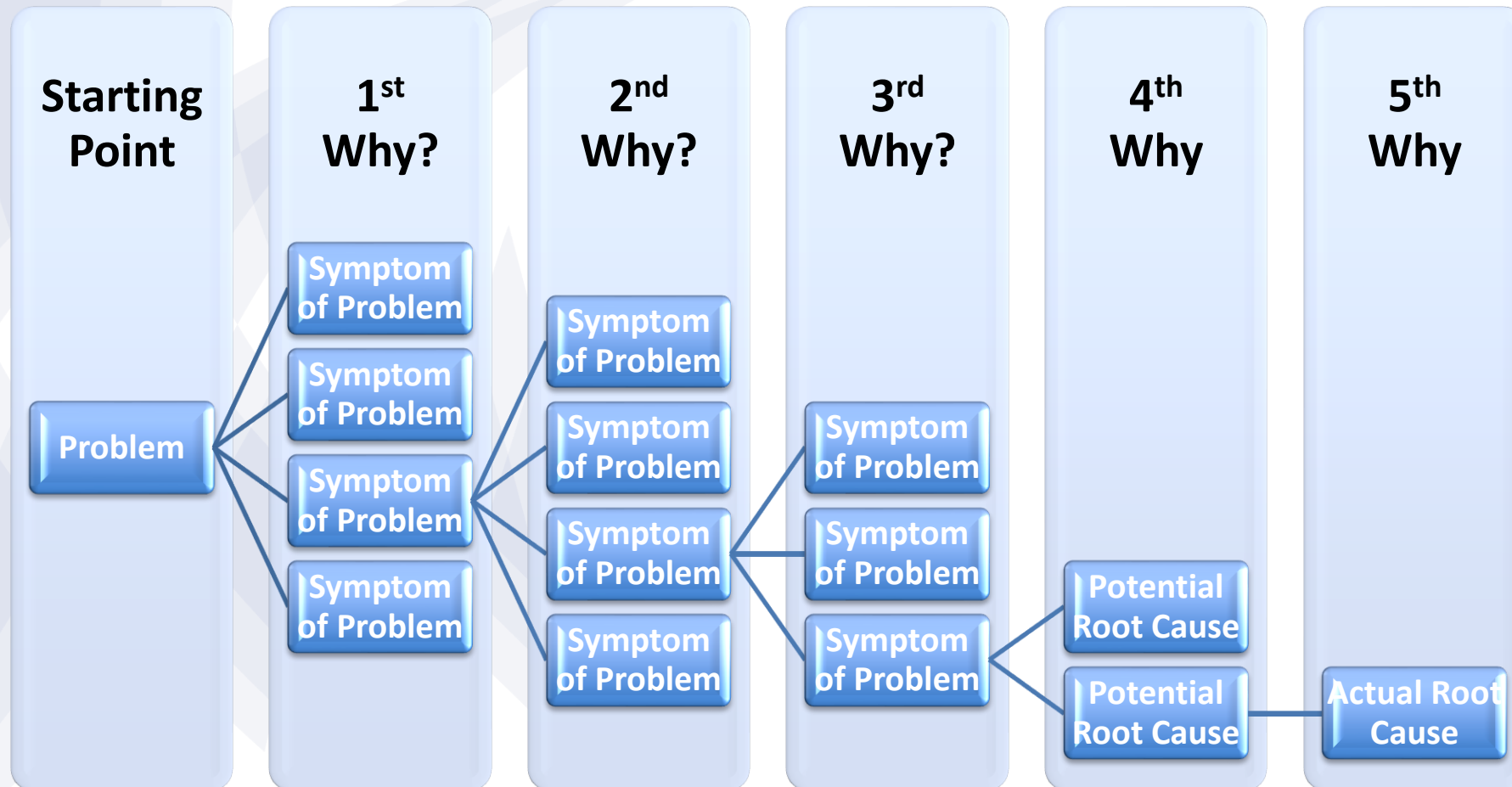


Figure 10:
Why-Why Diagram
Adapted from
Dumas (2013)

Activity 5: An IT-Based Solution to Reduce/Eliminate the Root Cause



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- In groups of 3, out of all the potential causes of the negative effect, identify the actual root cause using a why-why diagram
- Identify a possible IT-based solution that can eliminate or reduce the negative effect by addressing the root cause
- Specify the data that the IT-based solution needs to store and the information it needs to retrieve
- **Post** (one post per group) on [this](#) eLearning class discussion forum a description of the IT-based solution and the data and information it requires as a reply to your previous post of the fishbone diagram
- **Approximate time required (outside class activity): 30 minutes**



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✓ IT-Enabled Business Transformation

✓ Problem-Based Learning: Group Project



IT-Enabled Business Transformation

- **IT is a mandatory strategic weapon for any business**
- **IT is capable of changing the way we do business as stipulated in Venkatraman's (1994) 5 levels of IT enabled business transformation**
- **A crucial part of the IT is the computer-based information systems (CBISs) which rely on storing the right data and retrieving the right information**



IT-Enabled Business Transformation

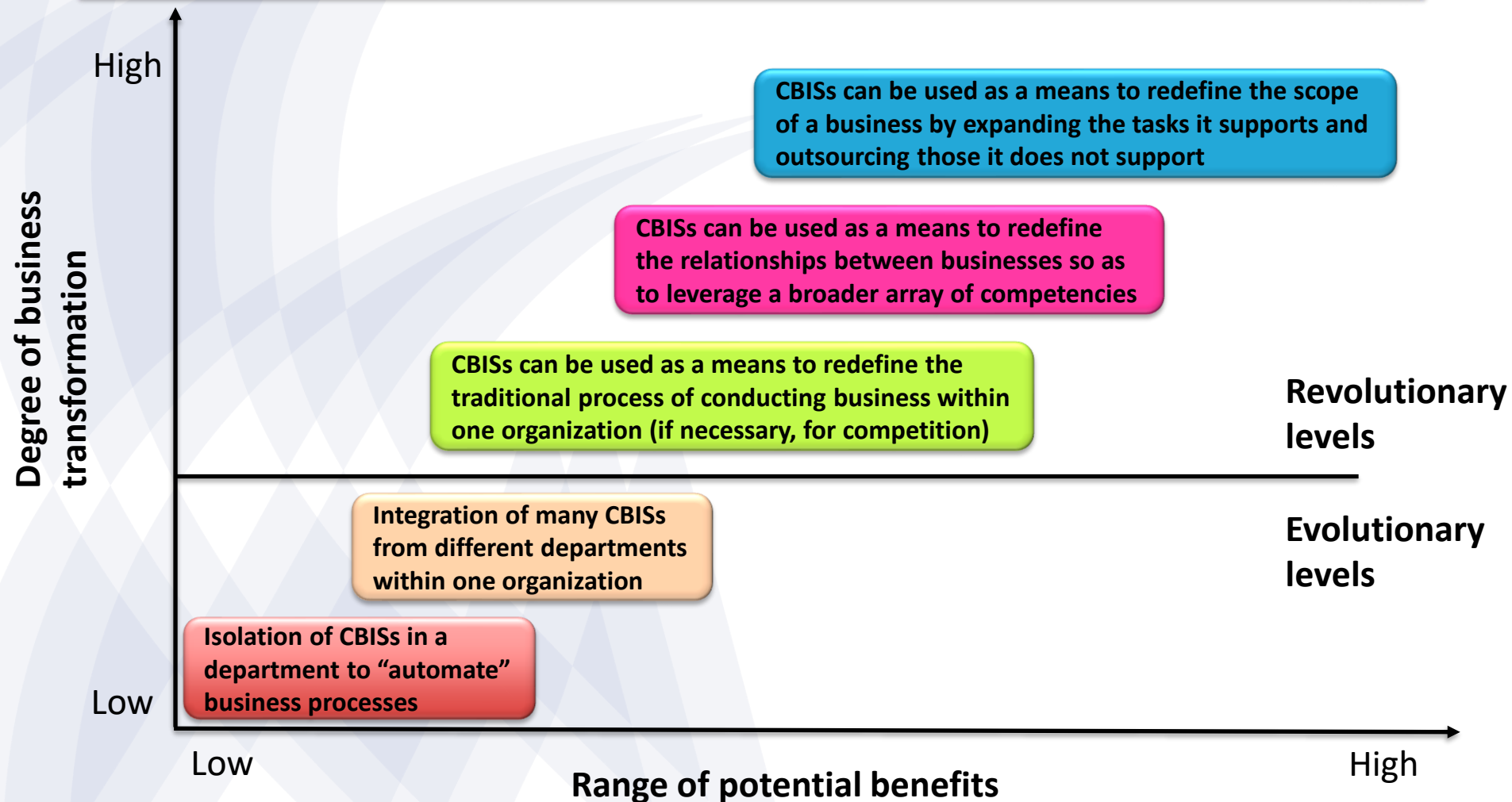


Figure 11: The 5 levels of IT-enabled business transformation
Adapted from Venkatraman (1994)



IT-Enabled Business Transformation

- A common phrase today is **“information is the intellectual capital of a business”**
- A business cannot function efficiently without high quality management of information



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Problem-Based Learning: Group Project



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- **Part 1:** In groups of 3, choose any case study from the list provided under Concept 1 of 6 on the eLearning page
- Create a flowchart that represents the business process involved in producing the business' main product/service
- Upload your work as part of the System Requirements Specification (SyRS) document via the eLearning link provided under Concept 1 of 6.
- **Approximate time required (outside class activity): 30 minutes**

Problem-Based Learning: Group Project



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- **Part 2:** In groups of 3, create a Data Flow Diagram that represents the flow of information through the business organization in the case study
- **Upload** your work as part of the System Requirements Specification (SyRS) document via the eLearning link provided under Concept 1 of 6
- **Approximate time required (outside class activity): 30 minutes**



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Recap

- 20% of causes are responsible for 80% of effects
- If you do not **treat the root cause(s)** of a problem, it is likely that the problem will not go away
- A business can be **transformed** by implementing IT-based solutions
- However, **do not rush** to implement IT solutions before you identify the root cause
- An IT-based solution can contain hardware, software, **a database**, procedures (algorithms), or even a computer network
- The focus of this unit is the database component of an IT-based solution
- The database component should **store** the right data and support **retrieval** of the right information



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Further Reading and References

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