Project Title	**Business Process Re-Engineering Case Study – Easy Pace Logistics**
Team Size:	5-6 members per team
Due Date and Deliverables	Via eLearn by 12noon on Sunday 27th Oct (end of week 10) 1. **Softcopy Report** 2. **Exported Signavio project file**
	In Class during Week 11 1. **Hardcopy Report**
Percentage of Overall assessment: 25%	
Consultations	Email your Instructor to schedule consultations.

Learning Outcomes

This project will contribute towards the following learning outcomes

Learning Outcome	Sub-Skills	Comment
1. **Integration of business and technology in a sector context**	1.1 Business IT value linkage skills Ability to understand & analyse the linkages between As-Is and To-Be process	Analyse the current As-Is Process and develop the To-Be Process based on business objectives. Develop the IT solution to support the process.
2. IT architecture, design and development skills	2.1 System requirements specification skills	Apply the business process engineering methodology to derive IT solution requirements from business requirements
	2.2 Software and IT architecture analysis and design skills	Apply the business process engineering methodology to develop the concept solution architecture for automating a business process.
3. Learning to learn skills	3.1 Search skills	Search relevant information regarding the case study. The case study requires the students to search for relevant information in the domain to make appropriate assumptions, fill gaps in missing data, identify current IT solutions for the domain, etc.
4. Change management skills for enterprise systems	4.1 Skills to diagnose business changes	Ability to apply business process engineering methodology and diagnose the process changes for the case-study.
5. Collaboration (or team) skills	5.1 Skills to improve the effectiveness of a group processes and work products	Ability to develop leadership, communication, consensus and conflict resolution skills while working as a team.
6. **Communication skills**	6.1 Writing skills	Write a report that succinctly presents the content is structured and written well

1. Project Description

Business Process Reengineering - Easy Pace Logistics Case Study

Easy Pace Logistics (**EPL**) is a leading local provider of third-party logistics services that include freight forwarding and warehousing ranging from picking, packaging, and shipping. EPL has several warehousing facilities in Singapore with a turnover of around $65 million a year. EPL specializes in handling fast-moving consumer goods (FMCG) and has a large customer base locally that requires daily replenishment of goods.

In recent years, EPL management observed that their warehousing operations were not effectively managed with many instances of misplaced/missing good. Large quantities of outstanding backorders had also been on the rise with numerous complaints from customers of wrong goods delivered. Hence, a BPE Team (Business Process Engineering Team) task force was setup to conduct a study of operational practices in the warehouse, specifically the **RP (Receiving & Putaway) process** and the **PPS (Picking, Packaging and Shipping) process** warehouse operations processes and to find viable solutions to improve the productivity of the warehousing operations.

RP (Receiving & Putaway) Process – Brief Description

The arrival of a customer's delivery truck triggers the RP process. Upon receiving goods from the delivery truck, the goods will be putaway (moved) to EPL's warehouse. EPL's customers do not have their own warehouse storage, they will send their goods to EPL for storage whenever they received their goods.

EPL helps store the goods in their warehouse before being pickup for customer's clients' orders delivery.

PPS (Picking, Packaging & Shipping) Process – Brief Description

The PPS process is triggered upon receiving of an email order by a customer. Customers will send daily emails of their client's orders to EPL. The emails will contain information regarding the items and quantity that the customer's client has ordered, and client's details (Name, address, expected delivery date) for delivery. EPL will help to pick, pack, label the delivery details and ship the package to the customer's client.

Warehouse Operations & Terminologies

Receiving - the process of identifying that the correct goods in the correct quantity and condition are received.

Putaway – the process of placing received goods into the warehouse storage area

Picking – the process of selecting goods from warehouse storage to fulfill an order

Packaging – the process of packing goods of an order into boxes/pallets

Shipping – the process of printing labels, loading and dispatching the packages from warehouse to customer's clients

Visions and high-level 'wants'

A study was conducted with management stakeholders of EPL with regards to this initiative. The following are some visions and high-level "wants" that were expressed:

- To find out the issues with the existing RP process and PPS process.
- Reduce back orders and complaints from customers.
- To improve the relationship with customers and their clients.
- Seamlessly integrate information across the various systems.
- Most importantly, to improve the RP process and the PPS process efficiency and to deploy innovative technology to put EPL on the technology forefront of all third-party logistics company in Singapore.

EPL management has also shared the new vision and mission for 2019.

EPL Vision: Be the innovative leading third-party logistics company in Singapore

EPL Mission: Provide high service standards and excellence for our customers and their clients

Preliminary interviews were conducted with the different stakeholders involved in the processes and the following details were obtained.

Operation Hours and Cost

Role	Cost (SGD)	Work Hours	Number
Customer Admin	$12 per hour	8.30am - 6pm	5
Goods Mover	$9 per hour	9am – 7pm	3
Receiver Admin	$10 per hour	8.30am - 6pm	2
Shipping Operator	$9 per hour	10pm – 8pm	8
Warehouse Mover	$9 per hour	9am – 7pm	3
Warehouse Operator	$9 per hour	9am – 7pm	16
Warehouse Supervisor	$12 per hour	8.30am - 8pm	4

Truck Arrival Information	
Number of customer's delivery trucks arriving	15 per day
Forecast for the next 1 to 3 years	30 per day

Order Information	
Number of email orders received	100 per day
Forecast for the next 1 to 3 years	200 per day

IT Applications Involved

Following are the core IT applications that are used at EPL for the **RP process** and the **PPS process.**

1. **Warehouse Inventory System (WIS)** controls the storage of materials within the warehouse and processed the associated transactions, including receiving, putaway and picking. This system was developed in-house some years ago with limited functionalities and documentation.

2. **Order Taking System (OTS)** maintains customers' order information. This is a macro visual basic system built in-house using Excel spreadsheet.

Issues Faced by Stakeholders

Issues shared by the various stakeholders of the RP process and the PPS process

- Labor-intensive tasks and workforce shortage for the moving, picking and packing tasks
- WIS is slow and hard to use. Features and functions are limited to support warehousing needs
- Instances of multiple-entry and duplicate information in various forms (paper & systems)
- Complains of goods received with shortage and damaged from arrival truck
- Frequent mismatch of WIS system and physical inventory status, many instances of goods being misplaced and gone missing in the warehouse
- Too much time spent going to pick location, searching for goods and picking
- Customers complained that their clients are not receiving the correct goods and quantity ordered, in addition the goods received are also damaged due to improper packaging

Step By Step Sequence for the As-Is RP (Receiving and Putaway) Process

Triggered by Arrival of customer's delivery truck

Cur Step	Prev Step	Activity	Time (mins)	Role
1	-	Check goods against delivery note	15	Receiver Admin
2a	1	Sign and update short items on driver sheet & carbon copy (Goods shortage - Yes 10%)	5	Receiver Admin
2b	1	Sign driver sheet & carbon copy (Goods shortage - No 90%)	1	Receiver Admin
3	2a, 2b	Unload goods from truck for checking	30	Goods Mover
4	2a, 2b	Check condition of goods, amend delivery note with description of damaged goods [as it is being unloaded by Goods Mover]	30	Receiver Admin
5	3, 4	Update goods received in WIS	8	Receiver Admin
6	5	Print blank putaway sheet using WIS and attach it to goods together with respective delivery note	3	Receiver Admin
7	6	Move goods to putaway zone	15	Goods Mover
8	7	Pass delivery note & putaway sheet to warehouse supervisor	2	Goods Mover
9	8	Review delivery note and putaway sheet	5	Warehouse Supervisor
10a	9	Assign empty location for new goods and write new and existing goods location in putaway sheet and update WIS (Consist of new goods - Yes 20%)	10	Warehouse Supervisor
10b	9	Write location in putaway sheet for all goods and update WIS (Consist of new goods – No 80%)	5	Warehouse Supervisor
11	10a, 10b	Move goods to assigned location with reference to putaway sheet	30	Warehouse Mover
12	11	Inform Warehouse Supervisor of goods location that has insufficient storage space and return putaway sheet (Any existing goods location full – Yes 15%)	5	Warehouse Mover
13	12	Assign and write new location for existing goods with no storage space in putaway sheet and update WIS	5	Warehouse Supervisor
14	13	Move existing goods to new location with reference to putaway sheet	10	Warehouse Mover
15	11, 14	Return putaway sheet to Warehouse Supervisor	2	Warehouse Mover
16	15	File delivery note and putaway sheet in folder [End - Goods putaway to storage]	5	Warehouse Supervisor

Step By Step Sequence for the As-Is PPS (Picking, Packaging and Shipping) Process

Triggered by Arrival of email order from customer

Cur Step	Prev Step	Activity	Time (mins)	Role
1	-	Create order in OTS	5	Customer Admin
2	1	Create and print pick sheet in WIS	5	Customer Admin
3	2	Pass pick sheet to warehouse supervisor	3	Customer Admin
4	3	Assign and pass pick sheet to warehouse operators	5	Warehouse Supervisor
5	4	Review pick sheet and select equipment for picking	5	Warehouse Operator
6	5	Go to pick location	5	Warehouse Operator
7	6	Search surrounding location (Goods found – No 25%)	5	Warehouse Operator
8	6,7	Pick required quantity	15	Warehouse Operator
9	8	Write shortage on pick sheet (Quantity available - No 20%)	5	Warehouse Operator
10	9	Pass shortage pick sheet to Warehouse supervisor	3	Warehouse Operator
11a	10	Update WIS of shortage	5	Warehouse Supervisor
11b	11a	Inform Customer admin via phone of shortage	5	Warehouse Supervisor
11c	11b	Update shortage backlog in OTS delivery manifest [End – Order delivery backlogged]	5	Customer Admin
12	10	Move picked goods onto backlog shelve [End – Order delivery backlogged]	10	Warehouse Operator
13	8	Pack goods onto package (Quantity available – Yes 80%)	10	Warehouse Operator
14	13	Move package to loading area and pass pick sheet to Shipping operator	10	Warehouse Operator
15	14	Review pick sheet with WIS and enter order number into OTS to view delivery manifest	10	Shipping Operator
16	15	Print delivery label and manifest from OTS	5	Shipping Operator
17	16	Paste delivery label to package	1	Shipping Operator
18	17	Dispatch delivery manifest and package to driver	5	Shipping Operator
19	18	Print invoice from OTS and prepare mail to customer for dispatch to mail outbox [End - Package Dispatched]	5	Shipping Operator

2. Deliverables

Submission

- Zip file (GXTeamYY_BPAS.zip) via eLearn Week 10, 27th Oct Sunday 12 noon containing
  1. Project Report (GXTeamYY_BPAS.pdf)
  2. Signavio BPMN project files
     - As-Is RP.bpmn
     - As-Is PPS.bpmn
     - To-Be RP.bpmn
     - To-Be PPS.bpmn

- Printed Hardcopy of Project Report (Week 11 class)
- For your Report, please ensure the following
  1. The texts on diagrams or models are not truncated and are visible in terms of size
  2. The font must be of at least size 10
  3. Reasonable margin such that they are printable
  4. Consistency of names and solution across the report(s)
  5. Workflow diagrams can be in A2, A3 or A4 paper format and must be visible when printed

The report must not exceed 35 pages. It must represent a formal proposal to the company on your proposed process and the concept solution blueprint. The report must include

1. EPL Company Introduction and purpose of the BPE Team
2. Process Redesign Goals, Management Decisions or Policies, Performance Targets
3. One As-Is Resource Model to depict both the RP process and PPS process
4. One As-Is Collaboration Model to depict both the RP process and PPS process
5. One As-Is Process Package Model to depict RP process and PPS process Segments
6. Two As-Is workflow diagrams, one for RP process and one for PPS process. Display the timing of each task, decision gateway description, and each decision path's percentage and description in your diagram. Text descriptions in image must be visible with either A4 or A3 print
7. As-Is static analysis
   a. RP Process - RCI Model with 2 issues having different root causes and different issue category. RCR Model with 2 alternative recommendations for each root cause from the RCI Model
   b. PPS Process - RCI Model with 2 issues having different root causes and different issue category. RCR Model with 2 alternative recommendations for each root cause from the RCI Model
8. Tool Based Static Analysis of the As-Is processes – relevant resources & cost excel table reports and analysis description write up of the excel data

9. Recommendations and proposed To-Be solution write up
10. One To-Be Resource Model to depict both the RP process and PPS process
11. One To-Be Collaboration Model to depict both the RP process and PPS process
12. One To-Be Process Package Model to depict RP process and PPS process Segments
13. RP process and PPS Process To-Be scenario details
    a. Roles information – include roles names, cost, working time table and numbers available
    b. RP process and PPS process trigger information
    c. Existing and new IT applications descriptions
    d. Step by step activity tables - include current step, previous step, activity description with IT applications used, execution time, and roles involved
14. Two To-Be As-Is workflow diagrams, one for RP process and one for PPS process. Display the timing of each task, decision gateway description, and each decision path's percentage and description in your diagram. Text descriptions in image must be visible with either A4 or A3 print
15. Tool Based Static Analysis of the To-Be processes – relevant resources & cost excel table reports and analysis description write up of the excel data
16. Summary analysis of the To-Be processes in comparison with the As-Is business processes.
17. The Concept Solution Blueprint for the proposed To-Be processes. (i) Use Case Model, (ii) Function Model, (iii) Solution Overview Model, and (iv) Application Model.
18. Proposal justification with details on how your proposed To-Be business processes is of value to the company. Conclusion to tie the company's performance targets with the proposed To-Be solution

3. Marking scheme

Here are some (but not restricted to) of the criteria that may determine your grade:

Report

- Is the report well structured (including professionalism)?
- Is there a logical flow of thoughts? Are the diagrams clear and consistent?
- Does the report contain the required models?
- Are there discrepancies between the different sections of the report?

Technical Depth

- Is there sufficient analysis of the As-Is and To-Be processes?
- Is the proposed solution feasible? How innovative is the proposed solution?
- How convincing are the arguments for the executives of the company with your proposed To-Be processes and solution?

Rubrics

Grade	Details
E	Report is sloppy. Bare minimum technical depth.
D	Report is of reasonable standard. Reasonable technical depth.
C	Report is good. Good technical depth.
B	Report is very good. Very good technical depth.
A	Report is exceptional. Exceptional technical depth.

Other grading factors

In addition, we will consider the following:

- Intra-team evaluation if any team issues are being raised

  Intra-team peer evaluation is optional and is open to all team members. You can send the feedback of your intra-team peer evaluation to the faculty and/or instructor via email. Please do so early if you are facing teaming issues

- Punctuality in submission

within 1 hour	10% marks deductions off the total marks you would have received
each subsequent hour	Penalty will double (i.e. 20%, 40%, 80% and finally 100%)

- You are strongly encouraged to submit early