Name: _Class output_ TUid: _____ Date: __

Business Processes: Procure to Pay

After completing this activity you will be able to:

- Better understand one of the core businesses processes, purchase to pay (P2P or PtoP).
- Practice creating swim lane diagrams.
- understand the impact of installing an ERP system

Step 1: Individually

Read the following narrative: P2P is the core business process that is used by organizations to acquire the products and services they need to fulfill their mission. In this scenario you are the plant manager at FitterSnacker, a company that makes and sells snack bars. The plant manager is responsible for determining what they are going to make, when they are going to make it and acquiring the raw materials (oats, raisins, chocolate chips, etc.) that they need to make the snack bars. Once the plant manager determines what they need, they send a purchase requisition to the procurement department.

The procurement agent verifies that the plant manager is authorized to place the order. They then select the supplier and send a purchase order to the supplier.

The supplier receives the order and picks, packs and ships the order. After the order has been shipped they send an invoice to the customer.

The warehouse receives the order and posts a goods receipt to show this. The person in the warehouse notifies the plant manager that the items have been received.

The invoice is processed by the accounts payable team in accounting. They match up the invoice with the purchase order and the goods receipt. If we received what we ordered and are being charged what we were expecting to pay then we pay the invoice. If not, we must figure out where the problem is and resolve the problem.

Step 2: As a Group (2-3 in a group)

~~On a blank piece of paper create a swim lane diagram that documents the P2P process here at~~ FitterSnacker and answer the following questions:

1. How many swim lanes do you have and what are the roles of the people in each lane? 5 lanes
2. How many different functional areas are involved in this process? 3 : warehouse, procurement & Accounting
3. How much chaos can be involved when accounting must "figure out where the problem is and resolve the problem"? Can be very chaotic (need to understand where the issue resides, i.e. mismatch in what was received, versus charged for and what was ordered)

Step 3: Students called upon at random to discuss

Compare your diagram with the diagram displayed in class ~~and answer the following questions.~~

See next page

Step 4: As a Group (2-3 in a group) then as a class – Discuss the impact

1. FitterSnacker has just implemented an ERP which will dramatically improve the efficiency of the organization.
2. Based on historical sales and information entered into the system by the sales organization a forecast of what you plan to sell is automatically generated by the system.
3. The system also manages inventory (both raw materials and finished goods). Since the system knows what you have (inventory) and the since the forecast tells you what you need (demand) the plant manager doesn't need to figure out what you are going to make and when you are going to make it (a.k.a. the production plan). The system will create the production plan. With the production plan the system can automatically create purchase requisitions at the appropriate times to acquire the required raw materials and execute the production plan.
4. With the ERP we maintain a list of preferred suppliers for all raw materials. We also keep track of things like lead time (how long it takes to get a raw material) and pricing information for each supplier. Based on lead times and pricing, the system can automatically choose the optimal supplier and can send an electronic purchase order (PO) to the supplier. The electronic PO includes a unique PO number that we will use later on.
5. The items are received at the warehouse. The PO number for the order is included with the shipping documents. The person at the warehouse pulls up the PO using the PO number and ensures that everything that was ordered was received and posts the goods receipt.
6. The supplier sends FitterSnacker an electronic invoice. The invoice includes the PO number. The system can automatically perform the three-way match, matching up the original PO, the goods receipt and the invoice and it everything matches can send the payment electronically to the supplier.

What changes in the swim lane diagram? i.e. "After" ERP is installed
See next pages
⇓

· 2 lanes eliminated
· many activities automated

See next 2 pages

Step 5: Rate this activity (individually)

Ratings	1 Completely Disagree	2 Somewhat Disagree	3 Neutral	4 Somewhat Agree	5 Completely Agree

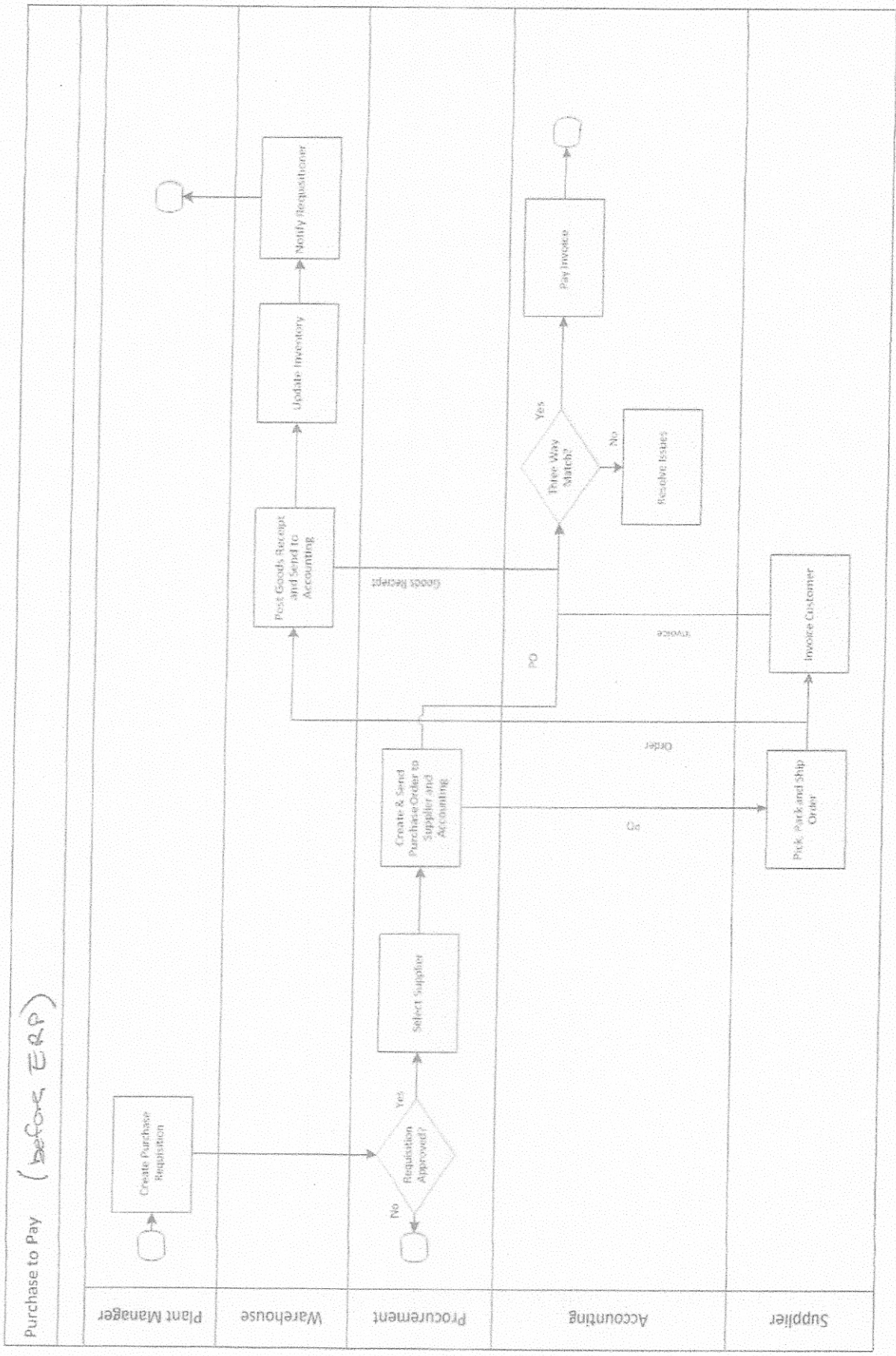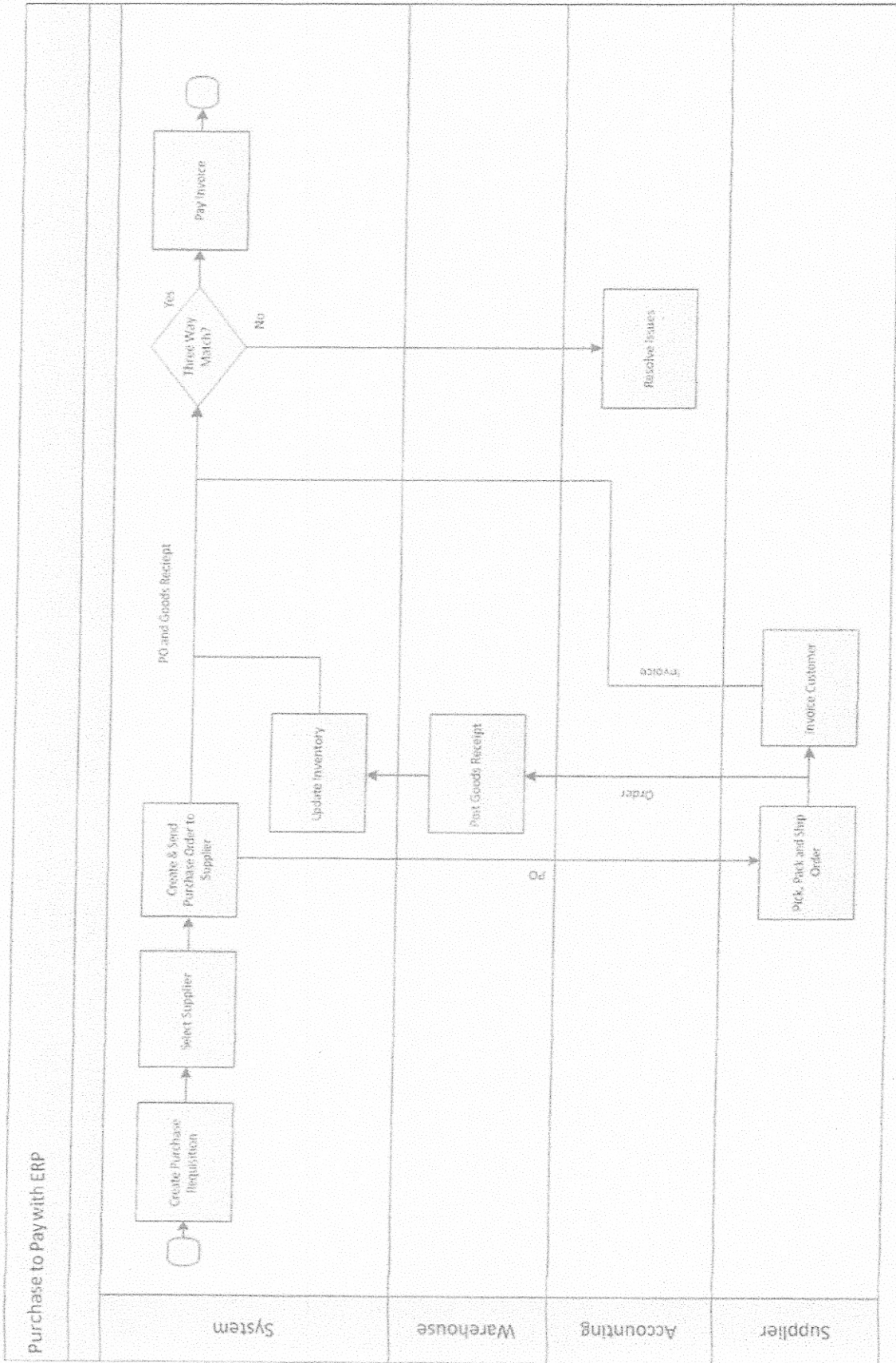| Statement	Rating (1 to 5)
This is an engaging activity.	
I learned a lot completing this activity.	
This activity should be included in future classes.	
Anything else you want the instructor to know?	

Step 5: Submit completed activity sheet

Purchase to Pay (before ERP)

Swimlanes: Plant Manager | Warehouse | Procurement | Accounting | Supplier

Plant Manager
- Create Purchase Requisition

Procurement
- Requisition Approved?
  - No
  - Yes → Select Supplier → Create & Send Purchase Order to Supplier and Accounting

Warehouse
- Post Goods Receipt and Send to Accounting → Update Inventory → Notify Requisitioner

Accounting
- Three Way Match?
  - Yes → Pay Invoice
  - No → Resolve Issues
- PO
- Goods Receipt

Supplier
- Pick, Pack and Ship Order → Invoice Customer
- Order
- PO
- Invoice

Create Purchase Requisition

Select Supplier

Create & Send Purchase Order to Supplier

Update Inventory

Post Goods Receipt

Invoice Customer

Pick, Pack and Ship Order

Three Way Match?

Yes

No

PO and Goods Receipt

Resolve Issues

Pay Invoice

Invoice

Order

PO

System

Warehouse

Accounting

Supplier

Lane eliminated: Plant manager & Procurement

Name: Class output   TUid: _____   Date: _____

After completing this activity you will be able to:

* Describe the financial impacts of investing in an ERP system.

Step 1: Individually

Review the following narrative:

FitterSnacker has reached the decision point regarding an investment in an ERP system. While they believe there will be lots of benefits, it is now time to start trying to identify the financial impacts of this investment before moving forward with the project.

The ERP system will be expensive. It will be <u>very expensive</u> for a small company like FitterSnacker. It will cost a total of $10,000,000! The ERP system will create value for FitterSnacker over an extended period of time so the Accounting department will depreciate this investment over a period of 10 years or $1,000,000 per year.

The integrated database with the ERP provides superior decision making. From which customers to target for sales to where to acquire raw materials, the superior decision making of the ERP will provide countless benefits to FitterSnacker. From the sales perspective we believe that we will increase sales by 10%. This will increase our shipping costs by 10%. While we will make and sell 10% more goods, our purchase and production costs as well as direct labor costs will only increase by 5% due to efficiencies introduced by the ERP.

The accounting function at FitterSnacker has been a mess! With separate systems for order processing, order fulfillment, accounts payable, procurement, accounts receivable, payroll etc., etc., etc., FitterSnacker has needed a small army of accountants to keep track of all of the relevant information. As a result of the increased efficiencies of the single integrated database, what once required a small army of accountants will now only require a handful of accountants. We are projecting that our accounting and legal costs will be reduced by 50%. It is not only the accounting department that will realize a dramatic improvement in efficiency but many other areas including order processing, order fulfillment, production planning, and others will also experience an improvement in efficiency and we are projecting that salaries and wages will be reduced by 20%.

Finally, we use ADP for payroll processing. With fewer employees, we project that our payroll expenses will drop by 35%

→ Automatic Data processing

Discuss the narrative and review the income statement displayed on the screen. Identify the line items that will be impacted by the implementation of the ERP system. *See next page*

1. Starting with ⊠Income⊠ what areas of the income statement will be impacted by the ERP. How will the ERP impact sales, cost of goods sold, gross profits and total income?
    - Sales ↗ 10%.   — shipping ↗ 10%.
    — Purchases and production costs ↗ 5%.   — labor ↗ 5%.

2. Working you way through ⊠Expenses⊠ what areas of the income statement will be impacted by the ERP?
    — Accounting and Legal ↘ 50%   — Payroll expenses ↘ 35%.
    — Depreciation ↗ 1M$/year   — Salaries & wages ↘ 20%.

3. In terms of ⊠Net Income⊠ what is the impact of the ERP?

    + 5.7 M$

1. A $10,000,000 investment in a computer system is a big investment for a small company like FitterSnacker. With $10,000,000 you could put a lot of new salespeople out in the field, expand manufacturing capacity or develop new products. Is a $10,000,000 a good investment or a bad investment for FitterSnacker? Explain?

    Good investment since pay back < 2 years
    Pay back period: 10 M$ ÷ 5.7 M$ = 1.75 years or 1 year & 9 months

Ratings	1 Completely Disagree	2 Somewhat Disagree	3 Neutral	4 Somewhat Agree	5 Completely Agree

Statement	Rating (1 to 5)
This is an engaging activity.	
I learned a lot completing this activity.	
This activity should be included in future classes.	
Anything else you want the instructor to know?	

FitterSnacker — ERP Investment P&L Projection

	Pre-ERP	% of TS	Post-ERP	% of TS	Notes
INCOME					
Sales					
Sales - Qtr 1	15,000,000	17.9%	16,500,000	17.9%	Better decision making increases sales by 10% each quarter
Sales - Qtr 2	25,000,000	29.9%	27,500,000	29.9%	Better decision making increases sales by 10% each quarter
Sales - Qtr 3	25,000,000	29.9%	27,500,000	29.9%	Better decision making increases sales by 10% each quarter
Sales - Qtr 4	18,000,000	21.5%	19,800,000	21.5%	Better decision making increases sales by 10% each quarter
Other	675,000	0.8%	742,500	0.8%	Better decision making increases sales by 10% each quarter
Total Sales (TS)	$ 83,675,000	100.0%	$ 92,042,500	100.0%	
Cost of Goods					
Beginning Inventory	12,000,000	14.3%	12,000,000	13.0%	
Purchases and Production Costs	20,000,000	23.9%	21,000,000	22.8%	Making/Selling 10% more product but costs only up 5% due to increased efficiencies
Shipping and Delivery	375,000	0.4%	412,500	0.4%	Shipping 10% more product
Labor (wages and payroll)	8,750,000	10.5%	9,187,500	10.0%	Making/Selling 10% more product but costs only up 5% due to increased efficiencies
Other	329,000	0.4%	329,000	0.4%	
Less Ending Inventory	10,000,000	12.0%	10,000,000	10.9%	
Total Cost of Goods Sold	$ 31,454,000	37.6%	$ 32,929,000	35.8%	
Gross Profit	$ 52,221,000	62.4%	$ 59,113,500	64.2%	
Non-Operating Income					
Interest Income	480,000		480,000		
Rental Income	272,000		272,000		
Other	372,000		372,000		
Total Non-Operating Income	$ 1,124,000		$ 1,124,000		
Total INCOME	$ 53,345,000	63.8%	$ 60,237,500	65.4%	
EXPENSES					
Operating Expenses					
Accounting and Legal	1,200,000	1.4%	600,000	0.7%	Reduce accounting costs by 50%
Advertising	450,000	0.5%	450,000	0.5%	
Depreciation	4,000,000	4.8%	5,000,000	5.4%	$1,000,000 in additional depreciation every year
Dues and Subscriptions	175,000	0.2%	175,000	0.2%	
Insurance	280,000	0.3%	280,000	0.3%	
Interest Expense	250,000	0.3%	250,000	0.3%	
Maintenance and Repairs	685,000	0.8%	685,000	0.7%	
Office Supplies	32,000	0.0%	32,000	0.0%	
Payroll Expenses	92,000	0.1%	59,800	0.1%	Reduce payroll processing costs by 35%
Postage	4,000	0.0%	4,000	0.0%	
Rent	500,000	0.6%	500,000	0.5%	
Research and Development	400,000	0.5%	400,000	0.4%	
Salaries and Wages	2,400,000	2.9%	1,920,000	2.1%	Reduce payroll costs by 20%
Taxes and Licenses	45,000	0.1%	45,000	0.0%	
Telephone	30,000	0.0%	30,000	0.0%	
Travel	45,000	0.1%	45,000	0.0%	
Utilities	60,000	0.1%	60,000	0.1%	
Web Hosting and Domains	2,000	0.0%	2,000	0.0%	
Other	4,500	0.0%	4,500	0.0%	
Total Operating Expenses	$ 10,654,500	12.7%	$ 10,542,300	11.5%	
Non-Recurring Expenses					
Furniture, Equipment and Software	25,000	0.0%	25,000	0.0%	
Gifts Given	13,000	0.0%	13,000	0.0%	
Other	12,000	0.0%	12,000	0.0%	
Total Non-Recurring Expenses	$ 50,000	0.1%	$ 50,000	0.1%	
Total EXPENSES	$ 10,704,500	12.8%	$ 10,592,300	11.5%	
Net Income Before Taxes	$ 42,640,500		$ 49,645,200		
Income Tax Expense	7,675,290		8,936,136		18% Income Taxes
NET INCOME	$ 34,965,210		$ 40,709,064		
Owner Distributions / Dividends					Impact of ERP
Adjustment to Retained Earnings	$ 34,965,210		$ 40,709,064		$ 5,743,854

Name: Class output   Date:

Organizational Systems: Decision Making with Neural Networks

After completing this activity you will be able to:
- Describe how neural networks can aid in decision making.

Step 1: Individually Complete

Neural network (formally called artificial neural networks (ANNs)) fall under the category of artificial intelligence (AI) and can be used to help business professionals make better decisions. What makes a neural network valuable is its ability to learn and adapt over time. It does this by consuming large quantities of data pertaining to a problem and then seeing how every possible combination and permutation of each data element correlates to an outcome. As the system consumes more and more data, it learns and can better predict outcomes. Being a computer system, a neural network can examine much more data in a very short period of time and can look at the relationships between every combination and permutation of data elements, not just the relationships that are intuitively obvious to a person.

Step 2: Discuss as Teams (3-4)

You are a loan officer at a new bank. Your job is to create the process the bank will use to review loan applications and make approval/rejection decisions about each loan application. When you make good decisions about loans the bank makes money. When you make bad decisions about loans the bank loses money.

C ✓ 15 Purpose of the loan

C ✓ 16 Assets / collateral

Prepare a list of the pieces of information you will want to know about each loan application (i.e. age, gender, loan amount, income) and explain why each piece of information is important to you:

C ✓ 17 Business plan if SBA + conditions of industry
C ✓ 1. First name, Last name,
C ✓ 2. income and current + past employers
C ✓ 3. Credit report
C ✓ 4. Date of birth
C ✓ 5. SSN
N ✓ 6. Current and previous addresses
C ✓ 7. loan amount
C ✓ 8. type of loan (home loan, car loan, etc.)
N ✓ 9. Appraisal or inspection (for home loan)
N ✓ 10. Names of cosigners or co-borrowers
N ✓ 11. References

✓ 12. Terrorist list / criminal record Step 3: As a class

N ✓ 13. Marital status

Compile a shared list on the board.

N ✓ 14. Bank statements → C for mortgage
C ✓ 18. Tax return

C = critical
N = Not critical

Step 4: In groups

1. Are there any individual pieces of information that are a "make or break" for the application?

   ↳ C : critical

2. Are there any pieces of information that alone are not "make or break" but depending on the combination of these pieces of information may be "make or break" for the application?

Step 5: As a class

Discuss.

Step 6: In groups

In addition to using neural networks for making decisions on bank loans, neural networks are also used to detect credit card fraud. Make a list of the things that these types of neural networks might monitor and describe how these things, alone or in combination, might indicate fraudulent activity:

1. Amount of purchase (ex: more then 1k$)
2. Location of Purchase (ex: another country)
3. A large number of online purchases in a short period of time
4. Habits to build profile, then monitor
5. transactions that falls outside of the parameters of profile
6. Multiple purchases in rapid succession (not necessarily on line)
7. _____
8. _____
9. _____
10. _____

Step 7: As a class

Discuss.

Step 8: Rate this activity (individually) and submit completed activity sheet

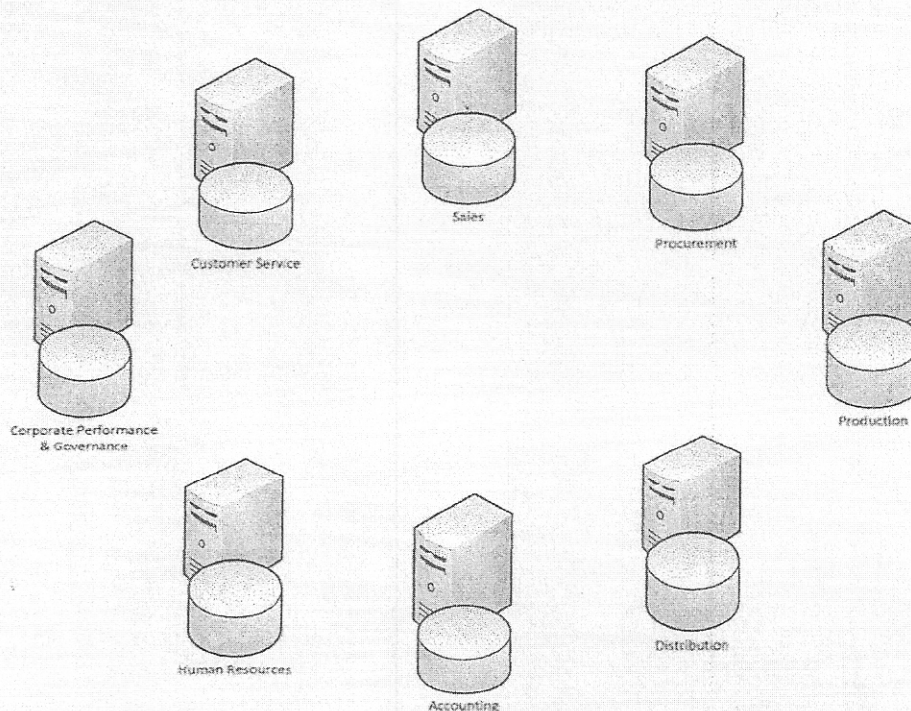| Ratings	1 Completely Disagree	2 Somewhat Disagree	3 Neutral	4 Somewhat Agree	5 Completely Agree
Statement				Rating (1 to 5)	
This is an engaging activity.					
This activity helped me learn more about today's topic.					
This activity should be included in future classes.					
Anything else you want the instructor to know?					

Name: Class output   TUid: _____   Date: _____

Organizational Systems: Filling in the Income Statement

After completing this activity you will be able to:

- Discuss how ERP systems dramatically improve the efficiency of the accounting organization.
- Discuss how ERP systems can improve the decision making of a company.

Step 1: Individually Complete

Read: You are an accountant with FitterSnacker. You are responsible for creating the income statement. The data that you need to create the income statement is spread out across a variety of systems. Here are the systems:

Customer Service

Sales

Procurement

Corporate Performance & Governance

Production

Human Resources

Accounting

Distribution

Step 2: Discuss as a Group (2-3)

1. Which systems will you need to get data from to complete each line of the income statement? Feel free to ask questions about what each of the systems do.

Gross Sales: _Sales / Accounting_

Cost of Goods Sold: _Procurement, Production, Distribution, Accounting_

Expenses: _Accounting / all department_

Personnel: _Human Resources / Accounting_

Rent: _Corporate Performance & Governance, Accounting_

Operating Expenses: _Accounting / Most department_

2. How often is the same piece of information captured in more than one place, and when it is, which place should you get this information from?

Multiple occurence, from the "owning" dept.

3. What are the odds that information that is stored in multiple locations is always identical or can this information get out of synch? If it is not identical how can this impact your ability to make decisions?

*Can easily get out of synch
Can greatly impact decision making*

4. FitterSnacker receives a call from a prospective customer. This could be the first of many large orders from this customer! The customer is asking for a price of $1.00 per snack bar. It looks like your cost for making a snack bar is $0.90. However, due to the time and resources it takes to calculate the cost of making each snack bar it is only calculated once per quarter and this cost of $0.90 is two months old. You also know that the price or oats, a key raw material, has been going through the roof over the past few months so you're really not sure how much each snack bar costs to make. You don't want to turn away a prospective large customer but you don't want to lose money on the deal. Do you take the order at $1.00 per snack bar or walk away?   *90% of class would walk away*

*- New company?
- key client?
- cash balance?
- profit?*

5. How do things get more complicated if you are the parent company for a collection of companies and you need to put together the income statement for the parent company?

Much more complex

6. How can an ERP system with a single integrated database improve the efficiency of the accounting organization?   *Extremely!*

7. How can an ERP system with a single integrated database improve the decision making of the organization?   *Extremely!*

Step 3: As a class

Discuss the answers to these questions.

Step 4: Rate this activity (individually) and submit completed activity sheet					
Ratings	1 Completely Disagree	2 Somewhat Disagree	3 Neutral	4 Somewhat Agree	5 Completely Agree
Statement				Rating (1 to 5)	
This is an engaging activity.					
This activity helped me learn more about today's topic.					
This activity should be included in future classes.					
Anything else you want the instructor to know?					