EEI Project1

Web Design

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Directing Professor

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Outline

Scenario

Tasty is a company which sells baking ingredients, especially cake. Tasty has equity store around Taiwan, along with warehouse at Taipei, Taichung, Tainan and Kaohsiung.

Tasty now sells their products through store. But they've met some problems like the lead time from placing an order to the products finally arrived is way too long, and customers are not satisfied for they must to go out to the store to buy products.

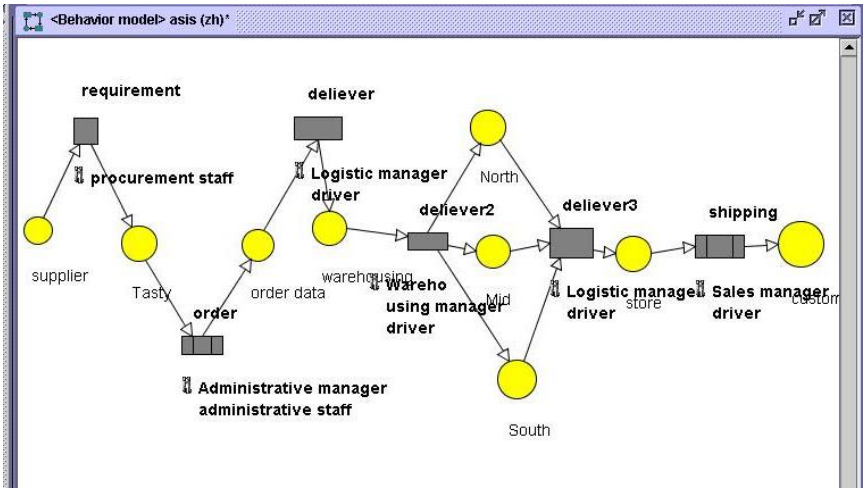
Hence, our duty is to using BPR techniques to better improve the process, and furthermore, we are going to develop a website to fulfill customers' need.

As-is model

According to the scenario we introduced in the part one, we construct the company's behavior model, organization model, and object model in "Income". And then we run simulation of these models to see where are the limitations(bottleneck/ problems/improving points) of the whole business progress.

The followings are introductions of what we construct in Income and simulation results：

1. Behavior model



The main behavior of Tasty, the company introduced in the scenario, is to purchase products from suppliers, transport them, and wholesale to customers (local bakers…etc.). So we construct the model of the behavior as shown above. Here are the explanations of it：

Tasty will place their requirement order to the supplier (■ requirement). And Tasty will deliver their goods to their warehouse(■ deliver, ●warehousing). The warehouse will distribute the goods to their storehouses located at Taoyuan, Taichung, and Kaohsiung. (■ deliver2, ●North, ●Mid, ●South). Then the storehouses will distribute the goods to the local stores. (■ deliver3). Finally the local stores will deliver the goods to the customers of Tasty. (■ shipping).

2. Two drill downs of behavior model

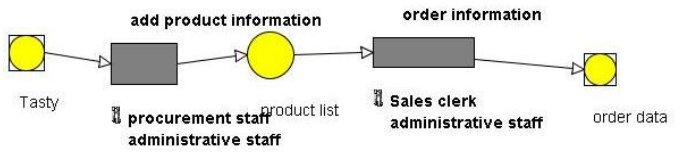


figure2.1

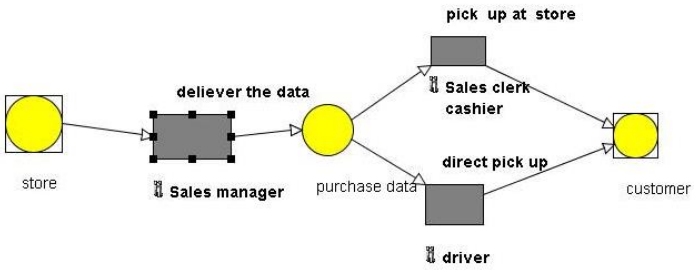
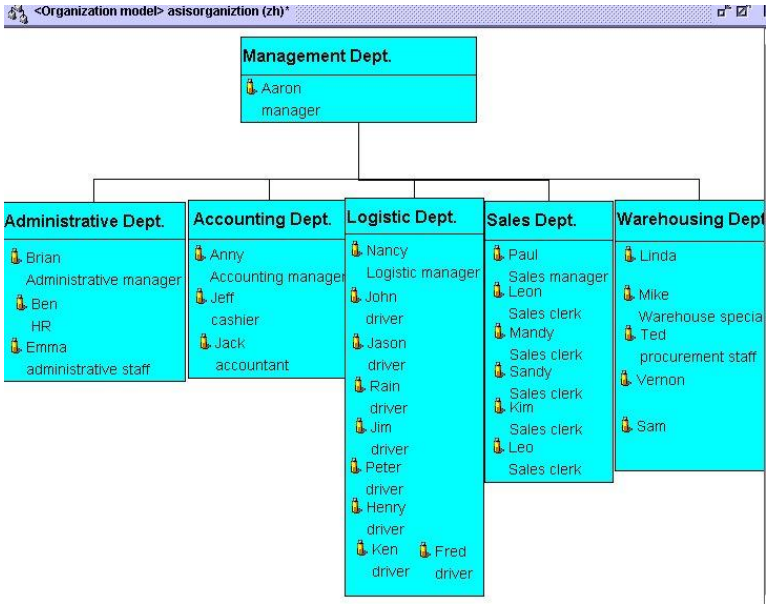


figure2.2

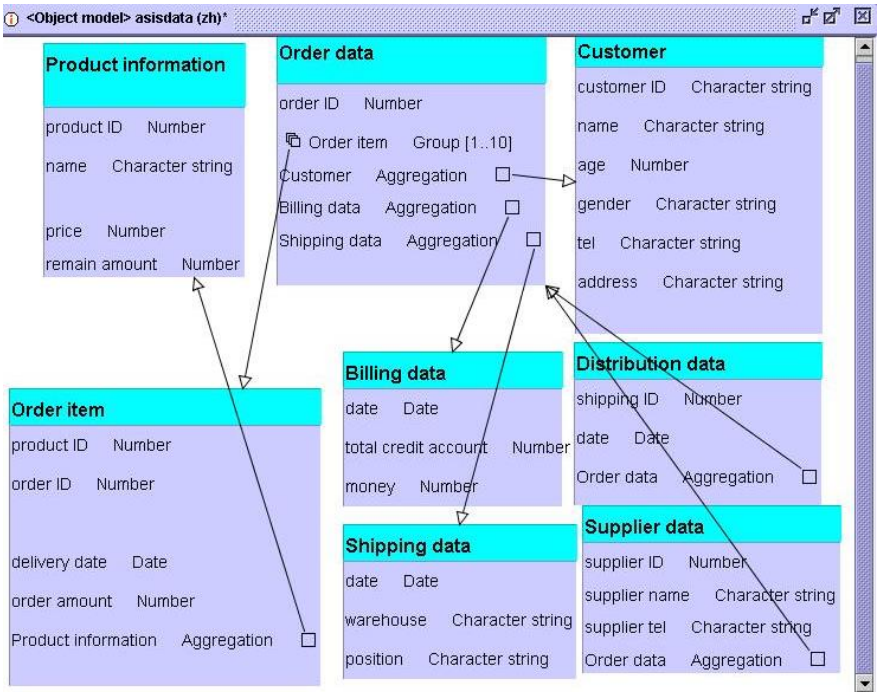
In order to elaborate the behavior of Tasty, we set two drill downs in the behavior model. One drill down is to break down ■order like figure2.1. The other one is to break down ■shipping like figure2.2.

3. Organization model



There are six departments of the company：management department, administrative department, accounting department, logistic department,sales department, and warehousing department.

4. Object model



The object model of Tasty is as shown above. It shows the data using in the whole progress.

5. Simulation results

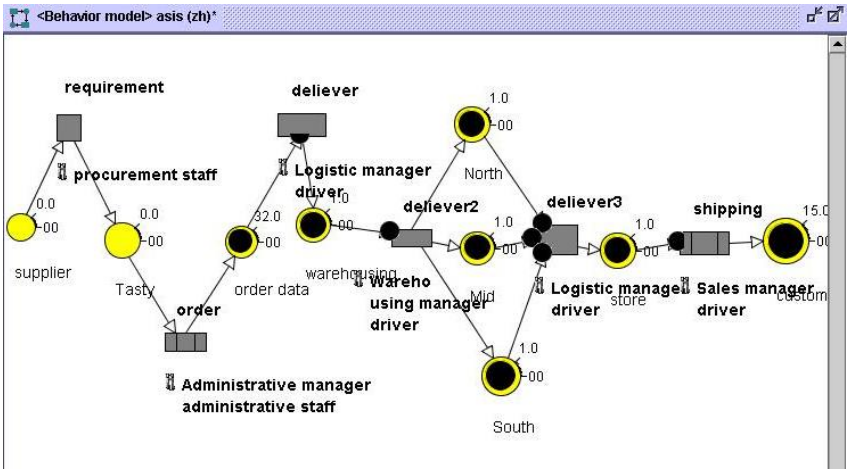
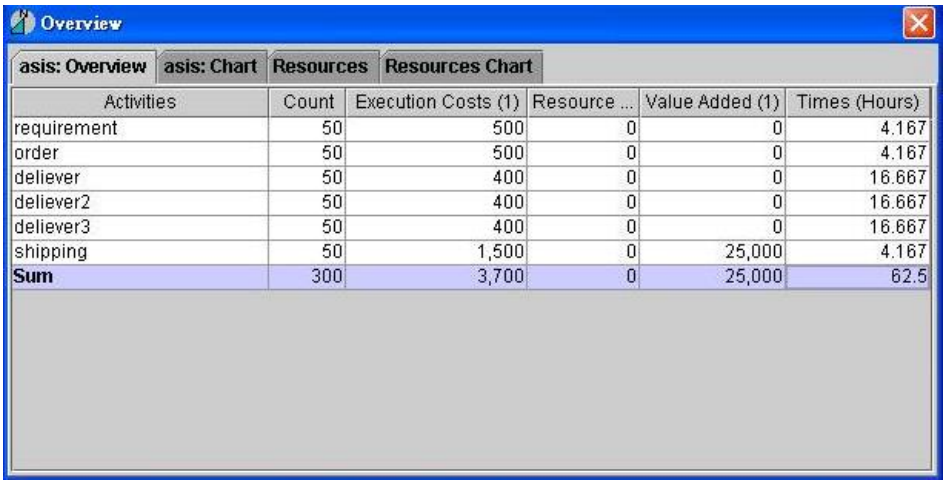


figure5.1

After constructing all the models mentioned above, we run the simulation of Tasty. And we see the scene as shown in figure5.1. There is a bottleneck at ■deliver.



Activities	Count	Execution Costs (1)	Resource ...	Value Added (1)	Times (Hours)
requirement	50	500	0	0	4.167
order	50	500	0	0	4.167
deliever	50	400	0	0	16.667
deliever2	50	400	0	0	16.667
deliever3	50	400	0	0	16.667
shipping	50	1,500	0	25,000	4.167
Sum	300	3,700	0	25,000	62.5

figure5.2

We also get the simulation result as shown in figure5.2. The total execution costs are $3700. The total value added is $25000. And the total using time is 62.5 hrs.

The following is the simulation result chart. We can figure out that the value added progress is shipping however its execution cost is the highest, too.

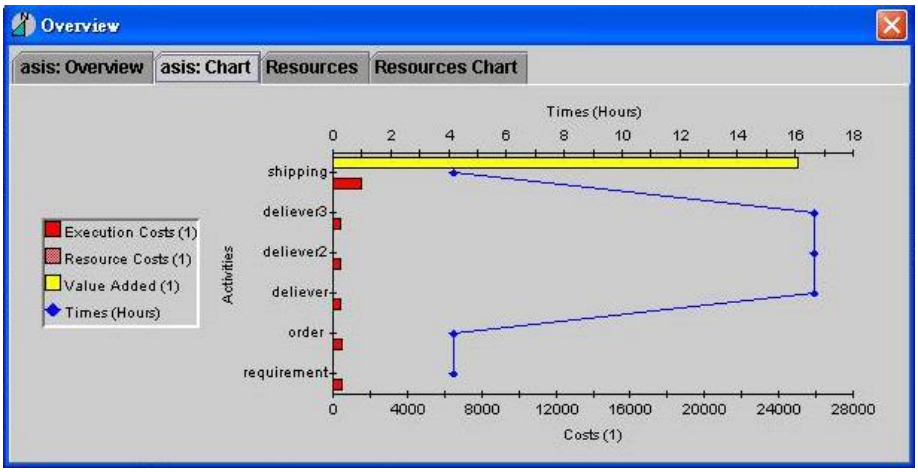


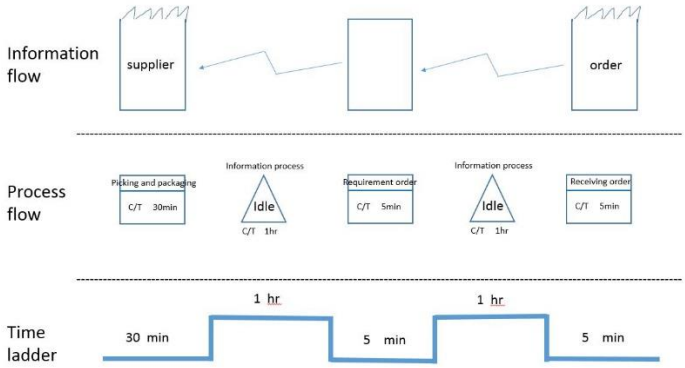
figure5.3

BPR techniques

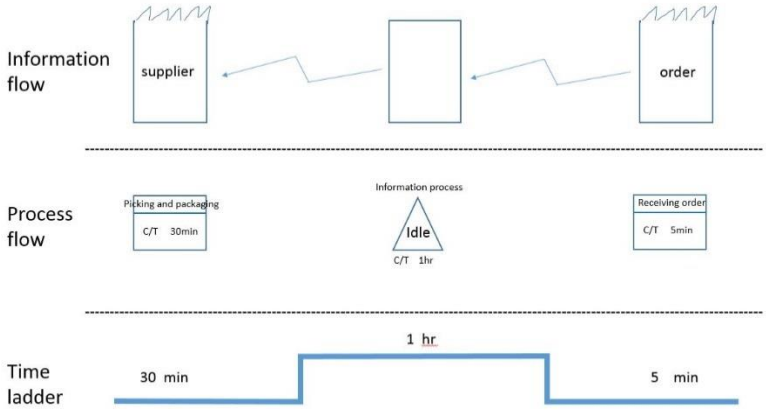
1. Value Stream Mapping

The steps of applying VSM on order-to-supplier process.

- Selecting the product to map, VSM symbols, Defining the process boundaries, The process steps, Information flows, Process data, Calculating the time line, Interpreting the data, Next step (ideal and future state)



From the picture above, we can notice that the PCE of this process equals to (30+5+5)/120*100%=**33.33%**, which is totally an unsatisfying result for stakeholders.



By realizing that information exchange between order, Tasty, suppliers are non-value-added, we decided to learn from Dell Inc. (benchmarking), let the order information directly deliver to suppliers. And the PCE of this new process is (30+5)/60*100%=**58.33%**, which is still not perfect but it's better than original process.

2. Theory of Constraints

The steps of applying VSM on distribution process.

1) **Identifying the constraint**

   We noticed that Tasty is doing the distribution process by themselves from the as-is model. Due to there're 3 warehouses located at totally different place, so trucks and drivers are sometimes in short, and make the process inefficient.

2) **Decide how to exploit the constraint**

   There're many ways to improve this problem like working with a TPL company, hiring more drivers, etc. And we need to evaluate which method would be better.

3) **Subordinate everything else to the decision that in step 2**

   We decided to work with a TPL company, in addition, we'll let the supplier contact them directly to shorten the process time.

4) **Elevate the constraint**

   To develop an integrated system to support the information flow between supplier, Tasty, and TPL.

5) **Go back to step 1, but avoid inertia**

3. Conclusion of BPR

(1) The order data no longer need to go through Tasty, but directly pass to the supplier (like Dell Inc.), which reduce a lot of idle time.

(2) Working with a TPL company to better improve the constraint of being lack of trucks and drivers.

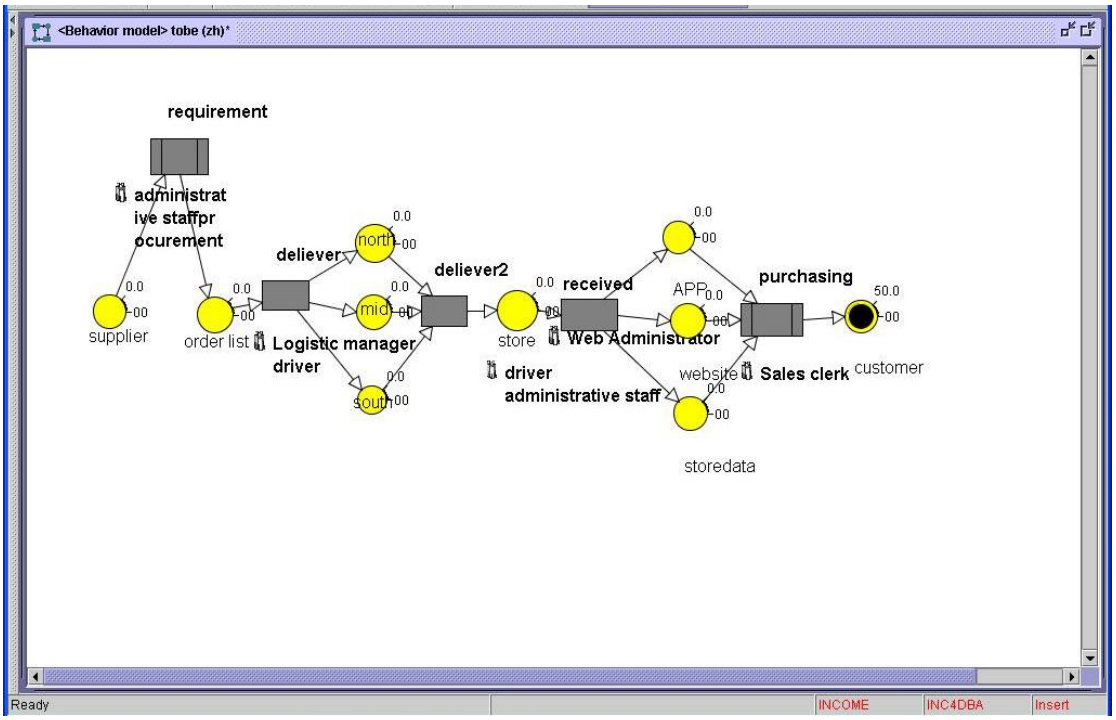
(3) In addition, we want to implement some method to make customers' acquisition to product information more easily. In that case, we develop a web and APP for customers (the concept of Omni-channel).

To-be model

After applying BPR techniques, we found out some problems and limitations of the process, which concluded in the last paragraph. To assess the improvment depicted above, we construct Tasty's to-be model as follow, then run the simulation to compare with former process.

The followings are introduction of the new supply chain relationship. and simulation results：

Behavior model



We construct the improved behavior model as shown above. Here are the explanations of it (only mention the different parts comparing to as-is model)：

First, the order list will not go through Tasty but directly pass down to suppliers. Second, to eliminate the constraint and save time, we work with a TPL to help with the distribution work and make them contact suppliers directly. Third, to better satisfy customers, we developed web and app for making customers more convenient buying products (as a concept of Omni-channel).

Two drill downs of behavior model

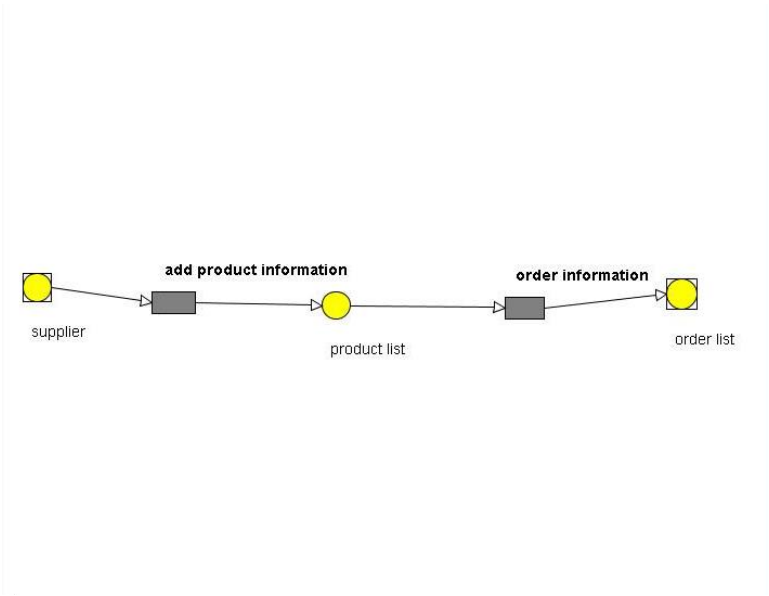


figure2.1

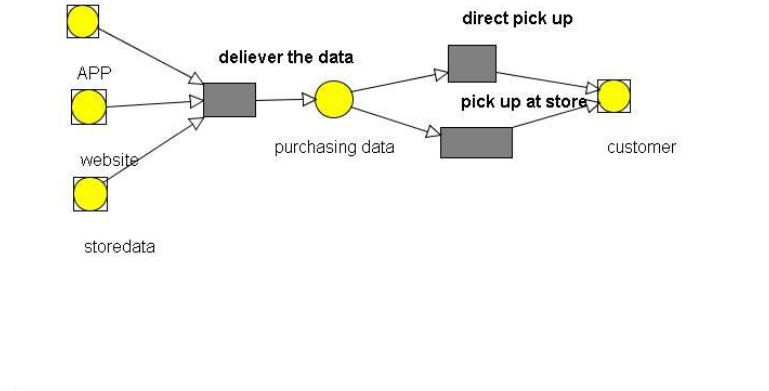
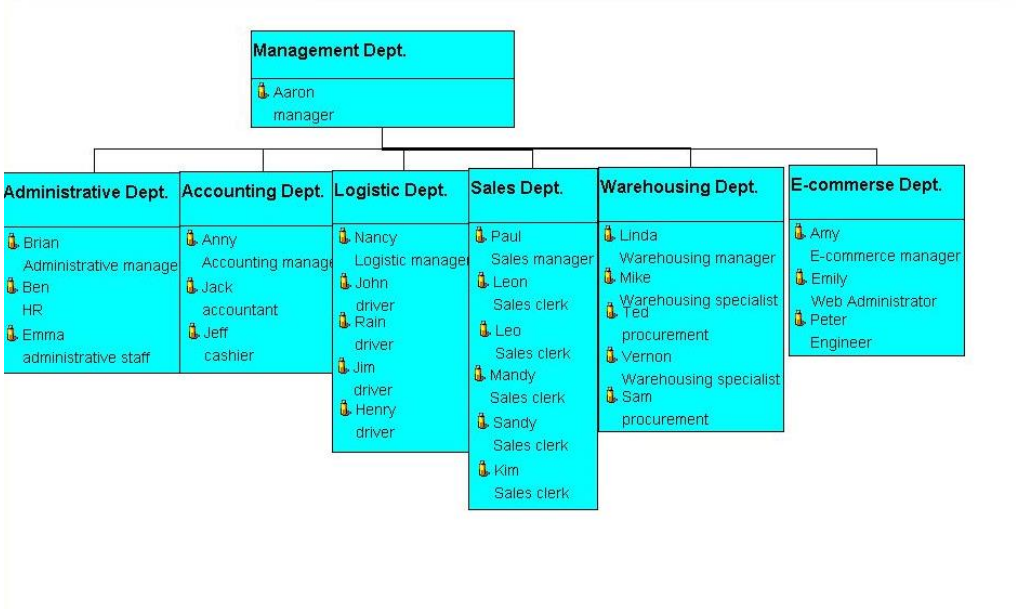


figure2.2

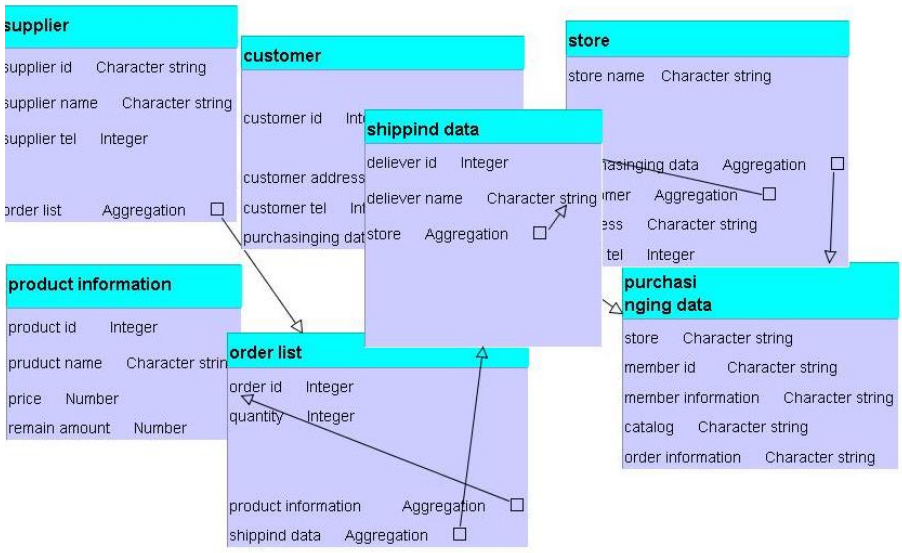
In order to elaborate the behavior of Tasty, we set two drill downs in the behavior model. One drill down is to break down ▒order like figure2.1. The other one is to break down ▒shipping like figure2.2.

Organization model



We add an E-commerse Dept. to help managing the web and app. And also improve the commucation system between customers, Tasty, and suppliers.

Object model



The object model of Tasty is as shown above. The only thing differ to as-is object model is the data of e-commerce.

Simulation results

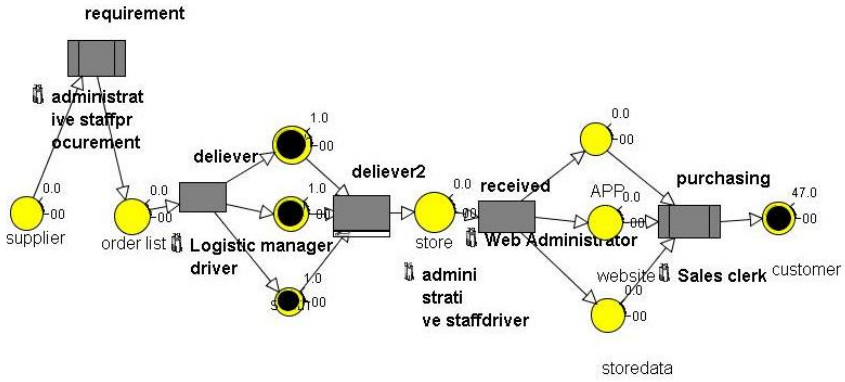
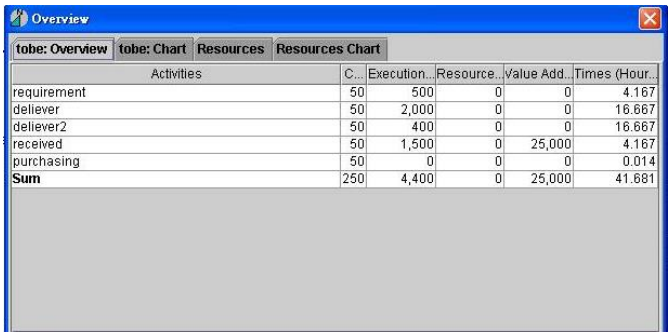


figure5.1

After constructing all the models mentioned above, we run the to-be model of Tasty.



Activities	C...	Execution...	Resource...	Value Add...	Times (Hour...
requirement	50	500	0	0	4.167
deliever	50	2,000	0	0	16.667
deliever2	50	400	0	0	16.667
received	50	1,500	0	25,000	4.167
purchasing	50	0	0	0	0.014
Sum	250	4,400	0	25,000	41.681

figure5.2

We also get the simulation result as shown in figure5.2. The total execution costs are $4400, a bit higher than as-is model. The total value added is $25000. And the total using time is 41.681hrs, which is way lower than before.

The following is the simulation result chart

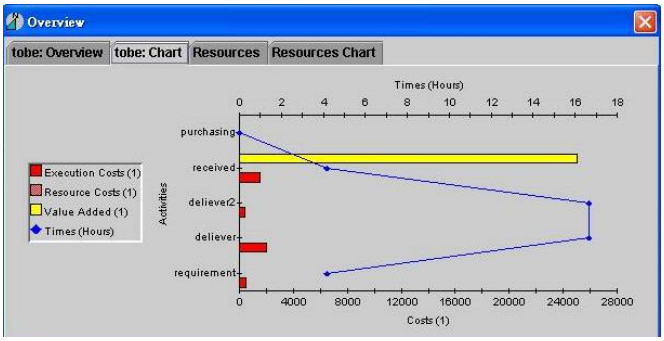
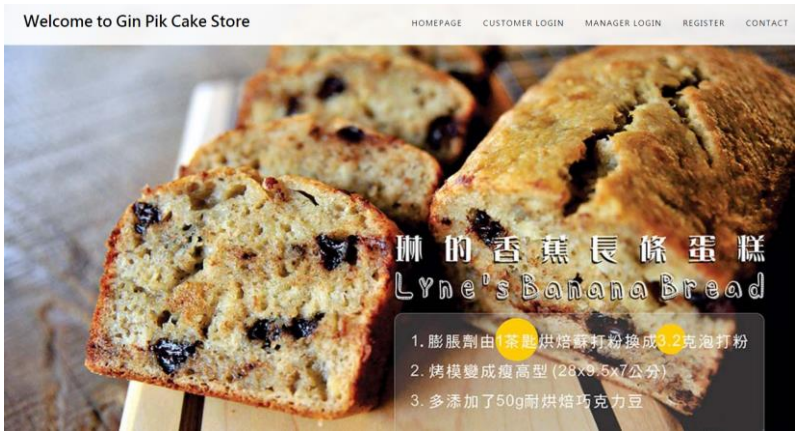
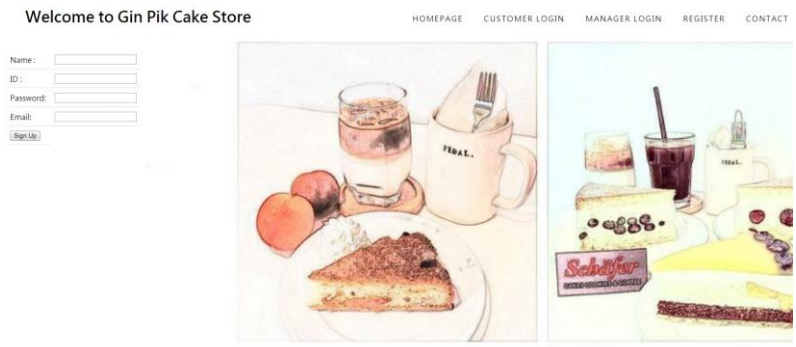


figure5.3

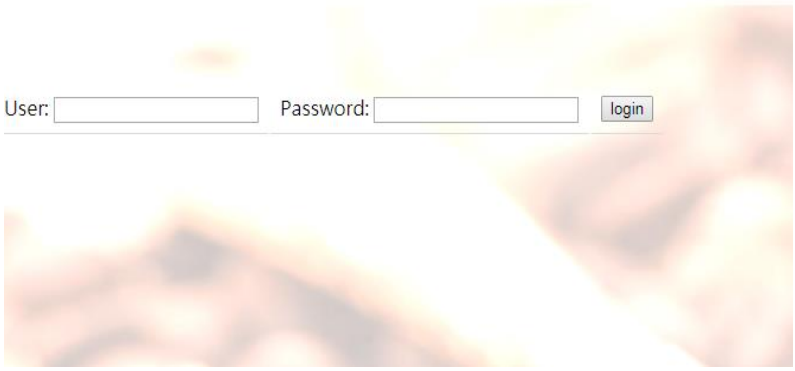
Web design



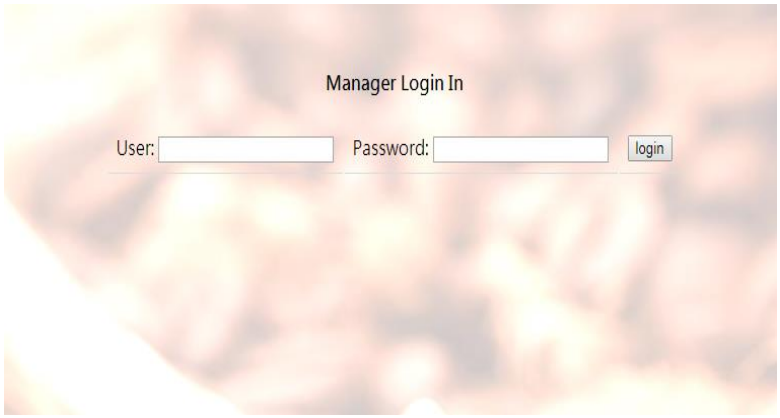
Main page



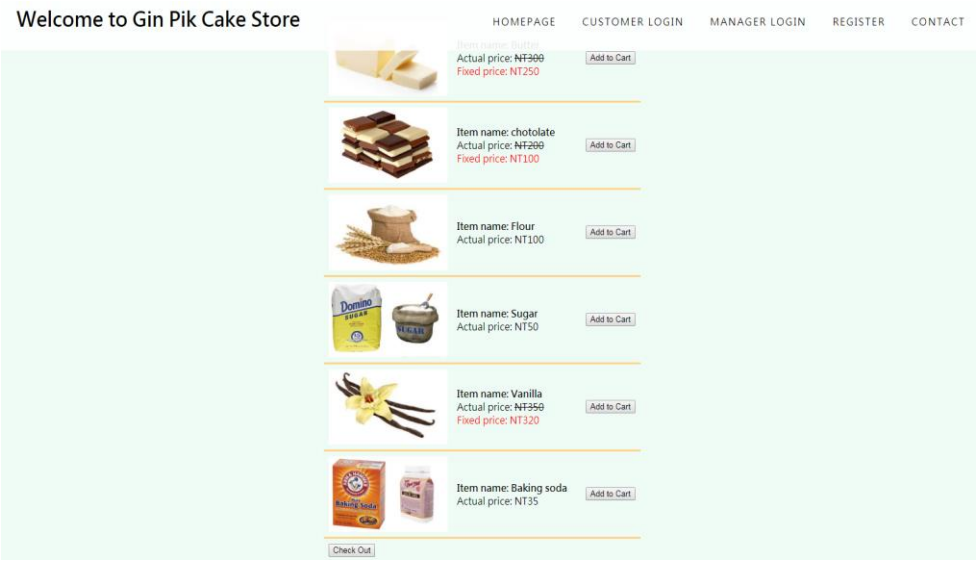
Register page



Customer login



Manager login



Product and shopping cart

Production	Price	Amount	
Flour	100	1	Delete Prodcution
Sugar	50	1	Delete Prodcution

[Customer Information]

==========

Customer Name :

Sex : Male

Phone Number :

Resident Address :

==========

total sum ： NT 150

Menu

Confirm purchase

Here is your booking number #**8437321** Mr. **Fred** , your booked ingredients are in below menu, after reviewing 2-3 working days, we would like to send them to your address, your contact information as below:

Address is 7F., No.2, Ln. 3, Yongchun St., Zhongzheng Dist., Taipei City 100, Taiwan (R.O.C.)
Phone number is 0912345678

Menu		
Production	Price	Amount
Flour	NT 100	1
Sugar	NT 50	1

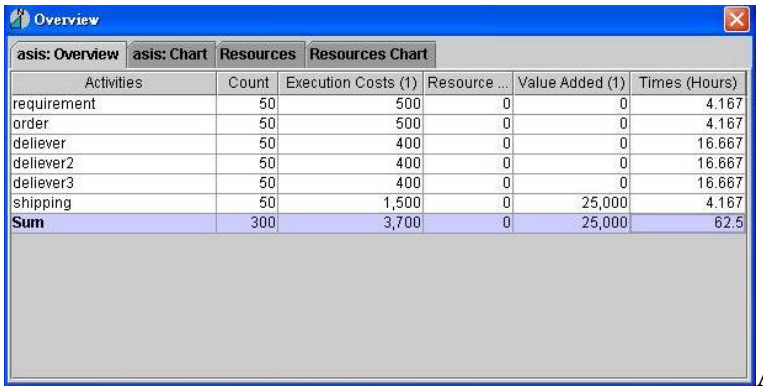
[database Information message]
database connection sucessful.....
group6 table is connection.....
booking information is recording to database....

Final order

Conclusion

The manufacturing process of Tasty may seems okay at the very first, however, processes become complex & inefficient with passage of time. Additionally, technological advances also expand the possibilities of how a company benefit. From the reasons above, we're going to apply 2 BPR techniques to improve the process and develop Omni-channel concept into the process.

And to better realize how these improvements working out, we use a simulation software (Income) to prove it.



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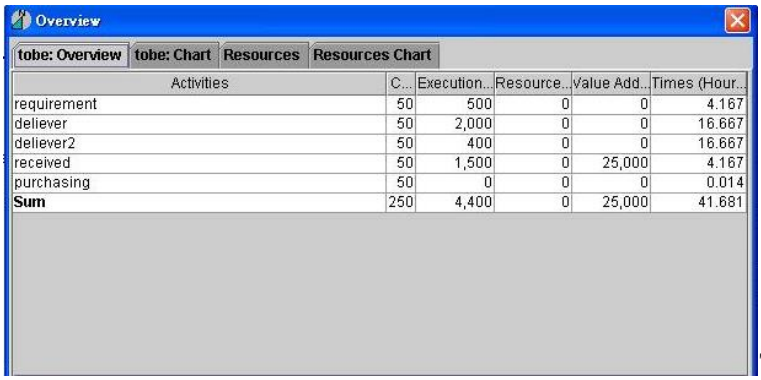
AS-is model



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purchasing	50	0	0	0	0.014
Sum	250	4,400	0	25,000	41.681

To-be model

From the overview chart of both as-is and to-be models, we can tell that:

1. The process become short but efficient after we make the order data directly pass to the supplier.
2. After working with a TPL company, the deliver time decreased about 20hrs.
3. The cost of to-be model do increased because of additional managing fee for the

TPL.

4. We apply Omni-channel techniques for improvement. However, we didn’t change the value-added parameter in Income, so the profit between as-is and to-be seems the same. But don’t worry, we believed that it’ll attract more potential customers and expand the benefit in the future.