CS3200 Project - Phase 2
For our project, we chose to study a local cafe chain (something like Tatte).

Business users and their expectations from the database:
The Firm HR department needs to track employees across all locations and utilize the database in order to maintain up-to-date information about employee contact information, pay rate, and primary store location. HR would also want the database to collect sale and shrinkage data to perform analysis on employee performance.

Firm financial department needs to collect information about the trend of inventory usage and purchases from suppliers to estimate how much the company should expect to spend on raw materials in the future.

Cafe chain executives would rely on the database to collect information to make strategic decisions for the firm with a holistic view of the data. One example would be tracking item popularity using point-of-sale data from the database to consider menu changes to add/ remove items, make alterations to prices, or offer seasonal goods. Information about each store's performance would allow executives to identify locations for future stores, make decisions about which stores to close, and compare shrinkage levels between stores. Additionally, executives would need inventory information to adjust supplier order levels to ensure each store is adequately prepared for customer demand on any given day/week/season without over-ordering (note: we assume store managers only keep the information such as inventory levels and delivery completion updated, but higher executives are the end users that ultimately rely on/use the data for business purposes).

How our solution supports or enhances new or existing business processes:
1. Inventory management
The company will have to record each piece of inventory that is used in production. Comparing the monthly inventory to sales can help managers to identify which products are using the most inventory. Furthermore, if some inventory or sales are not recorded, the difference between these two records will notify managers about the mistake, which can be corrected accordingly. Losses in inventory can also be attributed to human error during the production of food/drink, which can be acted upon to encourage employees to efficiently use the inventory. Keeping track of inventory depletion rates can also help management plan the next order of raw materials depending on the current usage.
2. Comparing online vs in-person ordering
Online ordering has become immensely popular in recent years and firms are having to decide how much of the firm's resources to dedicate to further developing online capabilities vs in-person functionalities. Using this database, store executives can compare rates of in-person vs online ordering, and perform analysis on which type of order is more likely to be associated with a customer account, which type of order is likely to be larger, and which type of order is more expensive for the firm to process (credit vs cash purchases).
3. How does store performance compare across the chain?
Executives will want to compare the total costs/revenues and the performance of various products across different store locations in order to inform decisions about budget distribution,

opening/closing locations, and restocking inventory (our assumption is that inventory going from suppliers to stores is planned by a subscription model where executives decide the frequency and amount of inventory going to the stores on a daily or weekly basis, and they only need to adjust their inventory order when they want to). For example, they may need to allot more of the budget to a store with much more business, in order for them to keep up or they may decide to close one location that is doing significantly worse than all the other locations.

Database requirements, including regular updates/modifications needed:

For our project, we are tracking a chain of coffeehouse stores, which are at different locations. For each store, we will track who its employees are and who the managers are. Stores must employ at least one employee. Managers must manage at least one employee to be a manager, but some employees may not have a manager (for example, if they are the highest manager). Some employees are not associated with stores because they are higher level management that don't work with any one particular store.

Each store will keep track of its inventory of raw materials. Raw materials are the items delivered directly to the store. A raw material provided by a specific supplier is uniquely identified by its product ID. For example, milk supplied by Clover farms is distinct from milk supplied by Darigold, as the unit costs and quantity possessed by the store of each may differ. The raw materials get to the store via deliveries, which occur at regular intervals (ie. weekly). Raw materials may either be sold as is (for example, bottled water, or other prepackaged items), or will be used as ingredients to make a menu item (for example, 6 oz milk, 3 tsp. sugar, 8 oz coffee grinds and 10 oz hot water make a coffee). We assume menu items are all drinks, so it has a size associated with it. Prepackaged items and menu items are both types of Items that may be purchased by customers, so they have a sell price associated with them. They also have a unit cost, which is the same as the raw material unit cost for prepackaged items and the cost of producing a drink (ie. combination of ingredients at various quantities) for the menu item.

We will also be tracking every order at each store. An order goes to exactly one store, may contain any amount of items (different or the same), and may either be bought by a loyalty customer whose information we have on file (so that we can give them points for their purchases), or an anonymous guest customer. For example, we would be able to model someone purchasing 1 bottle of orange juice, 8 mocha lattes, or someone purchasing both 1 bottle of orange juice and 8 mocha lattes at once.

Some regular updates and modifications are needed to maintain the database. Regular updates include Order entries after each transaction, Raw Materials entries after each delivery, and Raw Materials update at store close every day (to monitor shrinkage). Any other additions to Supplier, Employee, Store, Item, etc. should be updated as needed.

ER Diagram

Store
- store_id
- address
  - number
  - street
  - city
  - state
  - zip_code

Employee
- employee_id
- first_name
- last_name
- phone_number
- address
  - number
  - street
  - city
  - state
  - zip_code
- pay_rate

employs

manages

from

Customer
- customer_id
- first_name
- last_name
- phone_number
- reward_points

Order
- order_id
- date
- payment_type
- order_type

has

Raw Materials
- product_id
- name
- unit_cost
- quantity

supplied by

Supplier
- supplier_id
- name
- address
  - number
  - street
  - city
  - state
  - zip_code

Order Item
- quantity

Delivery
- date

Item
- item_id
- name
- unit_cost
- sell_price

made of

d

Menu Item
- size