

Newark Sausages (NS)

**There are two things in life that most people are better off not knowing how they are made:
sausages and national tax legislation.**

Otto von Bismarck, 1815-98

NS is a sausage factory in Newark, Delaware. Business is booming and NS needs (a) a better understanding of its business operations, and (2) an information system that mirrors its business operations and provides accurate and relevant information for decision-making purposes. Jason Anchill (JA), CEO of NS, asks you for help. We have asked Brandy Peters (BP), one of our employees, to go interview JA and to ask him numerous questions about their business operations related to the acquisition and storage of sausage ingredients. Questions asked by BP and answers given by JA are given below.

BP. Is your business supply-driven or demand-driven?

JA. Supply-driven!

BP. Please, explain!

JA. Our main challenge is to find things we can put in our sausages – the raw materials or ingredients. Although pork and chicken are the main ingredients for most of our sausages, we consider almost anything else. We have made sausages that contain bison, kangaroo, herring, blueberries, etc. Actually, we have been using tofu a lot lately; it is cheap and hard to recognize. We buy all our materials at so-called meat markets – a misnomer since you can buy poultry, fish, vegetables, etc. at meat markets as well.

BP. Let's get more specific – where do you buy raw materials, who do you buy raw materials from, and who at NS is accountable for buying raw materials? Let's look at meat markets first (where).

JA. Again, we buy all our raw materials at so-called meat markets. Currently, we buy materials at 23 different meat markets in Delaware, Maryland, and Pennsylvania. Meat markets are scary places. Anyone can show up and sell anything We therefore have a policy to buy from certified vendors only. A certified vendor is a vendor who (1) is approved by NS, (2) is USDA certified, and (3) sells materials at (at least) one of the meat markets we buy raw materials from. For each certified vendor, we record at which meat markets they sell their ingredients. Most certified vendors sell at a number of meat markets. More than ten of our certified vendors sell at the Elkton meat market (Maryland). There is a new meat market in Chadds Ford (PA) that we have entered in our database (code: CFMM). However, we have not bought anything yet from CFMM and we thus have not recorded any vendors for CFMM yet.

BP. Let's talk more about vendors (who do you buy from).

JA. We actually keep information for (a) certified vendors, (b) non-certified vendors, and (c) vendors that are going through the certification process. We record a vendor's status in the certification-status attribute. Remember that we can only buy raw materials from certified vendors. About 75% of the vendors in our database are certified vendors. It is hard to find new vendors and we therefore ask our current vendors to help us out. About 25% of our vendors have

been referenced by other vendors. Obviously, we only accept references from certified vendors. A vendor can be referenced only once (by another vendor). However, a vendor can reference many (potential) vendors. For example, “Wilmington’s Exotic Animals Farm” provided us seven new vendor references last month.

BP. What do you want to know about purchase transactions?

JA. A purchase transaction is called an “acquisition” at NS. We buy repeatedly from most of our certified vendors. There is exactly one vendor per acquisition transaction. We record at what meat market a transaction takes place. We buy (acquisition) all our raw materials at meat markets. We can only record one meat market for an acquisition transaction. We have hundreds of transactions for the “Fox Chase” meat market every year. However, we haven’t bought anything yet at the “Jennersville” meat market (PA). We recorded the “Jennersville” meat market in our database last week.

BP. Who is “accountable” for the acquisitions?

JA. Exactly one buyer is accountable for each acquisition. Obviously, most buyers are accountable for many acquisition transactions. We actually assign buyers to vendors in order to maintain and improve the relationship with our vendors. We assign one “main” buyer to each (certified) vendor. In addition we assign two “assistant” buyers to each (certified) vendor. The same buyer can be a “main” buyer for one vendor and an “assistant” buyer for another vendor. Jimmy Rodriguez is exclusively assigned as a “main” buyer to “Hockessin Meat Supply”, one of our biggest vendors. Stated differently, Jimmy works with (is assigned to) only one vendor as a “main” buyer and he does not work as an “assistant” buyer with any other vendors. We hired Suzy Petroni as a buyer last week. Currently, she is assigned as an “assistant” buyer to one vendor only: “Wilmington Meat and Poultry.” She (Suzy Petroni) has not acquired any raw materials yet. Skip Pollack is a main buyer for four different vendors and an assistant buyer for three different vendors.

BP. What exactly do you buy?

JA. We buy (acquisition) “lots” of raw materials. We can buy (acquisition) multiple lots at the same time. For example, the acquisition with number “2345C12” has 2 lots; lot 1: 1700 pounds (quantity) of pork (raw material type), and lot 2: 2500 pounds (quantity) of chicken (raw material type); the acquisition with number “6385P08” has 3 lots; lot 1: 200 pounds (quantity) of beef (raw material type), lot 2: 100 pounds (quantity) of pork (raw material type), and lot 3: 150 pounds (quantity) of tofu (raw material type). There is at least one lot per acquisition. There is exactly one acquisition for each lot and there is exactly one raw material type per lot. We would actually like to put raisins in our sausages – small amounts of raisins make the color of sausages darker and their taste sweeter. We have entered raisins as a raw material type in our database. However, we haven’t bought any raisins yet.

BP. What do you do with the materials once you have bought them?

JA. An important part of our business operations (and thus our information system) is the storage of raw materials in our warehouse. Our warehouse is divided into a number of areas. Each area has a unique code. We record explicitly what raw material types can be stored in each of the areas (our storage policy) – for example, we never store pork and chicken in the same area. At least one raw material type can be stored in each area and a raw material type can be stored in more than one area. We haven’t decided yet in which areas we can store raisins. Each area is further subdivided into a number of shelves. Each shelf belongs to exactly one area. For each lot

we record the shelves where the materials are stored. At least one shelf is needed to store the materials that are part of a lot. The same shelf can contain materials from more than one lot – as long as we don't violate the storage policies. We have empty shelves all the time. Actually, some of our shelves have not been used yet.

BP. How do you pay vendors?

JA. We use the same payment policy for all vendors. We pay the full amount (for an acquisition transaction) within thirty days; no installments. For most vendors, we have multiple acquisition transactions during the month and we pay for all of them with one check (cash disbursement) at the end of the month. Not all payments pay for acquisitions.

BP. Any additional information regarding payments (cash disbursements) that is relevant?

JA. Obviously, we record exactly one vendor and exactly one account for each payment (cash disbursement). We have two accounts. We use the same account for all our payments (cash disbursements). We made payments to “Wilmington's Exotic Animals Farm” this month and last month.

ASSIGNMENT

1. DRAW AN ENTITY-RELATIONSHIP DIAGRAM

Note: Do NOT draw the attributes

2. DEFINE A RELATIONAL DATABASE STRUCTURE FOR THE FOLLOWING ENTITIES AND FOR ALL (!) RELATIONSHIPS BETWEEN THEM: MeatMarket, Vendor, Acquisition, Buyer, Lot.

List of attributes.

Vendor-code
Vendor-name
Lot-quantity
CashDisbursement-check#
CashDisbursement-date
Vendor-certification-status
Acquisition-date
Area-code
RawMaterialType-code
MeatMarket-code
Lot-number

Buyer-ssn
Shelf-number
MeatMarket-location
RawMaterialType-name
Buyer-name
Area-description
CashDisbursement-amount
Cash-number
Cash-balance
Vendor-phone
Acquisition-number