

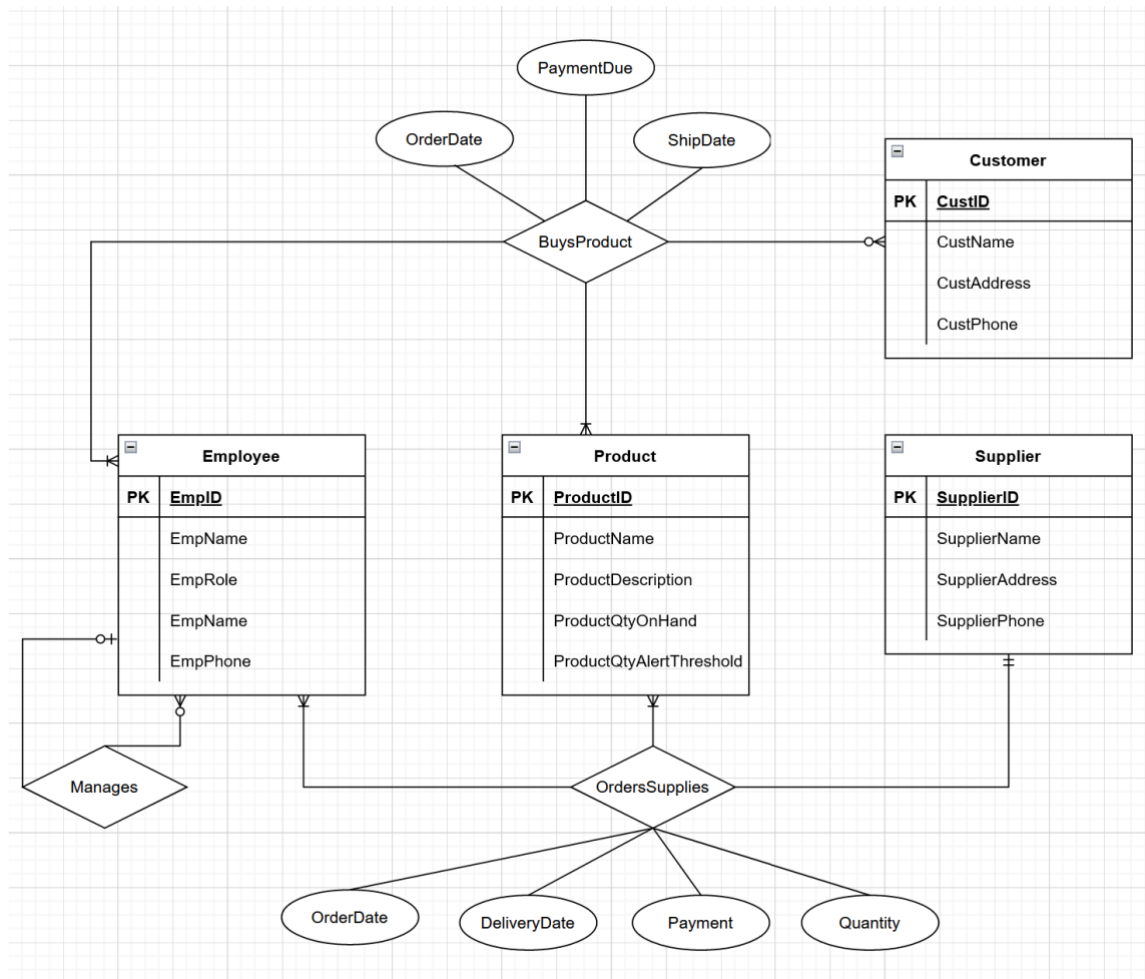
SLF Company Report

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Assumptions

1. Each entity will have a unique ID
2. Standard information on some entities needs to be tracked (name, address, phone) even if not explicitly listed
3. A supplier may supply more than one product. Suppliers without products are not tracked.
4. Since a product has only one supplier, it would also just have one entry in the product table. This allows for keeping track of the product quantity on hand (inventory) on the same entity as the product itself
5. A supplier is not entered into the system until an order is placed. While the purchasing officer may place several orders with a supplier over time. The notes mentioned that a product only had one supplier.
6. A customer is only entered in the system if they have placed at least one order. An employee may handle 0 customers (accounting, mgrs, etc.) or may handle many.
7. Based on this sentence, external, untracked processes would lead the purchasing officer to generate an order and only the order details would be tracked: "Instead, the purchasing officer will try to combine different orders for products from the same supplier into a single supplier order."

ERD



SLF Logical Design

EmployeeType (EmpTypeID, EmpType)

Assumption: Some Job Types are fulfilled by more than one employee and are repeated.

Employee (EmpID, EmpLName, EmpFName, *EmpTypeID*, EmpStreetNo, EmpStreet, EmpCity, EmpState, EmpZip, EmpPhone, EmpEmail, EmpDOB, *SupervisorID*)

Supplier (SupplierID, SupplierName, SupplierStreetNum, SupplierStreetName, SupplierCity, SupplierState, SupplierZIP, SupplierTelNumber, SupplierMobileNumber, SupplierEmail)

Product (ProdID, ProdName, ProdListPrice, ProdCostPrice, ProdOnHand, ProdReorder, *SupplierID*)

SupplierOrder (SupOrderID, SupOrderSendDate, SupOrderRecdDate, SupOrderAmount, *SupplierID*, *EmpID*)

SupplierOrderLineItem (SupOrderLineID, *SupOrderID*, *ProdID*, SupOrderQuantity, ProdOrderPrice)

Assumption: The price needs to be stored at the supplier order line-item level in case the price changes between the order time and current time.

Customer (CustID, CustLName, CustFName, CustStreetNo, CustStreet, CustCity, CustState, CustZip, CustPhone, CustEmail)

CustomerOrder (CustOrderID, CustOrderRecdDate, CustOrderShipdate, CustPmtAmtReceived, CustPaymentRcvdDate, *CustID*)

Assumption: the order is paid in full at the time of the order

CustOrderLineItem (CustOrderLineID, *CustOrderID*, *ProdID*, CustOrderQuantity, ProdSalePrice)

Assumption: The price needs to be stored at the customer order line-item level in case the price changes between the order time and current time.

SLF Physical Design

```
CREATE TABLE EmployeeType (EmpTypeID CHAR(5) PRIMARY KEY,  
                             EmpType VARCHAR(30) NOT NULL UNIQUE)
```

```
CREATE TABLE Employee (EmpID CHAR(5) PRIMARY KEY,  
                        EmpLName VARCHAR(40) NOT NULL,  
                        EmpFName VARCHAR(40) NOT NULL,  
                        EmpTypeID CHAR(5) NOT NULL,  
                        EmpStreetNo VARCHAR(10) NOT NULL,  
                        EmpStreet VARCHAR(30) NOT NULL,  
                        EmpCity VARCHAR(20) NOT NULL,  
                        EmpState CHAR(2) NOT NULL,  
                        EmpZip VARCHAR(10) NOT NULL,  
                        EmpPhone CHAR(12) NOT NULL,  
                        EmpEmail VARCHAR(40),  
                        EmpDOB DATE NOT NULL,  
                        SupervisorID CHAR(5),  
                        FOREIGN KEY (SupervisorID) REFERENCES Employee(EmpID),  
                        FOREIGN KEY (EmpTypeID) REFERENCES EmployeeType(EmpTypeID))
```

Assumptions: Employees cannot be deleted if they are set as someone's supervisor. The employee type cannot be deleted as long as it is in use for an employee.

```
CREATE TABLE Supplier (SupplierID CHAR(5) PRIMARY KEY,  
                        SupplierName VARCHAR(40) NOT NULL,  
                        SupplierStreetNum VARCHAR(10) NOT NULL,  
                        SupplierStreetName VARCHAR(40) NOT NULL,  
                        SupplierCity VARCHAR(40) NOT NULL,  
                        SupplierState CHAR(2) NOT NULL,  
                        SupplierZIP VARCHAR(10) NOT NULL,  
                        SupplierTelNumber CHAR(12) NOT NULL,  
                        SupplierMobileNumber CHAR(12),  
                        SupplierEmail VARCHAR(30))
```

```
CREATE TABLE Product (ProdID CHAR(5) PRIMARY KEY,  
                       ProdName VARCHAR(40) NOT NULL,  
                       ProdListPrice DECIMAL NOT NULL,  
                       ProdCostPrice DECIMAL NOT NULL,  
                       ProdOnHand INT NOT NULL,  
                       ProdReorder INT NOT NULL,  
                       SupplierID CHAR(5) NOT NULL,  
                       CONSTRAINT FK_SupplierID FOREIGN KEY (SupplierID) REFERENCES  
                        Supplier(SupplierID))
```

Assumptions: The supplier record cannot be deleted as long as a product is still linked to that supplier. Quantity Info can be set to 0 instead of NULL.

```
CREATE TABLE SupplierOrder (SupOrderID CHAR (5) PRIMARY KEY,  
                             SupOrderSendDate DATE NOT NULL,  
                             SupOrderRecdDate DATE,  
                             SupOrderAmount FLOAT (4) NOT NULL,  
                             SupplierID CHAR(5) NOT NULL,  
                             EmployeeID CHAR(5) NOT NULL,  
                             CONSTRAINT FK_SupplierID2 FOREIGN KEY (SupplierID) REFERENCES  
                             Supplier(SupplierID),  
                             CONSTRAINT FK_EmployeeID FOREIGN KEY (EmployeeID) REFERENCES  
                             Employee(EmpID))
```

```
CREATE TABLE SupplierOrderLineItem (SupOrderLineID CHAR(5) PRIMARY KEY,  
                                      SupOrderID CHAR(5) NOT NULL,  
                                      ProdID CHAR(5) NOT NULL,  
                                      SupOrderQuantity INT NOT NULL,  
                                      ProdOrderPrice FLOAT NOT NULL,  
                                      CONSTRAINT FK_SupOrderID FOREIGN KEY (SupOrderID)  
                                      REFERENCES SupplierOrder (SupOrderID),  
                                      CONSTRAINT FK_ProdID FOREIGN KEY (ProdID) REFERENCES  
                                      product (ProdID))
```

Assumption: The Product Price at time of order needs to be tracked in case the product cost price changes in the Product table overtime. This way, it saves keeping a Product Price History table and the Supplier Payment Received amount would be proofable in case of a dispute.

```
CREATE TABLE Customer (CustID CHAR(5) PRIMARY KEY,
                        CustLName VARCHAR(40) NOT NULL,
                        CustFName VARCHAR(40) NOT NULL,
                        CustStreetNo VARCHAR(10) NOT NULL,
                        CustStreet VARCHAR(30) NOT NULL,
                        CustCity VARCHAR(20) NOT NULL,
                        CustState CHAR(2) NOT NULL,
                        CustZip VARCHAR(10) NOT NULL,
                        CustPhone CHAR(12) NOT NULL,
                        CustEmail VARCHAR(40) NOT NULL)
```

Assumption: Phone and emails are required to be able to ship the order and communicate with the customer.

```
CREATE TABLE CustomerOrder (CustOrderID CHAR(5) PRIMARY KEY,
                              CustOrderRecdDate DATE NOT NULL,
                              CustOrderShipdate DATE,
                              CustPmtAmtReceived FLOAT NOT NULL,
                              CustPaymentRcvdDate DATE NOT NULL,
                              CustID CHAR(5) NOT NULL,
                              CONSTRAINT FK_CustID FOREIGN KEY (CustID) REFERENCES Customer
(CustID) ON DELETE CASCADE)
```

Assumptions: The record is created when the order is placed by the customer and the date, quantity ordered, and payment due have to be present. So are the prodID and CustID foreign key columns. The customer pays in full at the time of the order.

The ship date will be logged when the product is shipped to the customer

When Customers are deleted, all their orders will be deleted

```
CREATE TABLE CustOrderLineItem (CustOrderLineItemID CHAR(5) PRIMARY KEY,
                                  CustOrderID CHAR(5) NOT NULL,
                                  ProdID CHAR(5) NOT NULL,
                                  CustOrderQuantity INT NOT NULL,
                                  ProdSalePrice FLOAT NOT NULL,
                                  CONSTRAINT FK_CustOrderID FOREIGN KEY (CustOrderID)
REFERENCES CustomerOrder (CustOrderID),
                                  CONSTRAINT FK_ProdID2 FOREIGN KEY (ProdID) REFERENCES
product (ProdID))
```

Assumption:

The Product Price at time of sale needs to be tracked in case the product list price changes in the Product table overtime. This way, it saves keeping a Product Price History table and the Customer Payment Received amount would be proofable in case of a dispute.

Products cannot be deleted until all Customer Order no longer refer to the product ID

Analysis based on first CSV file

SLF has been in business since January 3, 2022. It ships its customers' orders within 5 days and gets paid for these orders at the time of purchase. For suppliers, they receive their supplies within 30 days of the date of purchase. SLF pays its supplier on the same date the order is marked received.

The 2 suppliers from which we receive most of our products are Ultrices and PURUS with 185 and 106 total orders, respectively. On the other hand, the 2 suppliers we have ordered the least from are Sed LLC and NEC with only 7 and 9 total orders, respectively.

Focusing on the total amount paid to suppliers and the total quantity of products ordered from those suppliers, we find the disparity between our top 2 and bottom 2 suppliers remains important as shown in the table below:

Supplier Name	Number of Orders Placed	Total Amount Ordered (USD)	Total Quantity of Products Ordered
Ultrices	185	\$ 199,656	14,838
PURUS	106	\$ 129,831	9,495
NEC	9	\$ 6,972	419
Sed LLC	7	\$ 7,551	530

An important question to ask is how the leading supplier varies over time. The results show that Ultrices and PURUS were the top suppliers every month, from January to May 2022, fulfilling between 12 to 43 orders each month. On the contrary, the suppliers from which we order the least from each month alternate between Sed LLC, UT, NEC, and Aliquam with no more than 2 orders per month.

To close out the topic of suppliers, we analyzed the regions from where we ordered the most products. We found that most of our payments were sent to Europe (\$244,285), followed by Africa (\$136,803), and, finally, North America (\$100,197). This could put SLF's supply-chain at risk in time of international tensions or in the case of another pandemic as shipping could be disrupted.

Switching to our customers, the top 2 US states that order the greatest number of products are Arizona and Maryland with 400 and 377 orders overall. The state with the fewest number of items ordered is Montana.

The states that spend the most on orders are Ohio with 13 orders overall, followed by Missouri, Arizona, and Virginia, all with 10 orders since January 1st. Breaking this down per month, the rankings change slightly:

State	Month	Higher Revenue per Month
OH	January	\$ 388
MO	February	\$ 343
KS	March	\$ 531
LA	April	\$ 550
CT	May	\$ 513

State	Month	Fewer Revenue per Month
TX	January	\$ 42
CA	February	\$ 23
LA	March	\$ 21
MS	April	\$ 20
OK	May	\$ 21

Our best customers are Ashely Hopkins (Kansas), Victoria Sweeney (Maryland), Cecilia Stokes (Arizona), and Vaughan Horn (Missouri). Their orders totaled between \$2,500 and \$2,921 each and included about 125 items and averaged 5 items per order.

SLF's best sale months in dollars-spent so far were March (\$39,066) and May (\$38,712). May, January, and March were the best months for number of customer orders placed, respectively 105,104, and 103. There is a drop in April to 95 orders places.

When checking our products' popularity, we can see the five most and least popular ones below:

Product Name	Number of Orders Placed	Total Numbers of Orders
Electric SolderingIronGun 2	42	247
Shoe Dryer 2	40	221
Wallets Waterproof	40	204
Portable CarVacuum	39	222
Shapewear Strapless 1	38	195
Minimalist Wallets 1	21	125
TowelsSummer Baby	30	124
GardenHose One 2	24	119
Matcha Tea	20	118
Portable Electric	25	111

The least popular product represents 44.94% of the most popular product. We did not find any product that customers were not interested in at all.

Month-to-month, the best-sellers vary as illustrated here:

Product Name	Number of Orders Placed	Number of Items	Month in 2022
TowelsSummer Baby	10	42	1
Portable CarVacuum	12	72	2
Electric SolderingIronGun 2	13	76	3
Wallets Waterproof	12	65	4
Waterproof EyebrowLiner	13	82	5
Minimalist Wallets 2	1	6	6

We will now focus on product profitability. The products that generate the most profit are Projector Bluetooth, Shoe Cover 1, and Tea Eyebrow. These each return \$14 per unit and are sold by Sed LLC, AA Supplier, and Neque LLC, respectively.

Of the products we have ordered, looking across all orders, assuming all are sold, SLF's supplier Ultrices comes out ahead. This vendor's products would have cumulative net profits of \$124,170. Since this vendor has an average profit per unit of \$8.5, this performance is due to the larger number of orders SLF places with this vendor: 14,838. The next closer supplier, PURUS, only supplies 9,495 products for a projected profit of \$75,722. So far, the products supplied by Ultrices have been purchased 724 times by customers via 115 orders.

On the other hand, when looking at customer sales, the supplier which comes out ahead is Cras Supplier. The profits for all customer orders total \$11,481 for a total of products ordered 1,348.

Switching topics and looking for our most productive employees, we can see that Graiden Johnston has spent the most on product orders from suppliers. This employee has also placed the highest number of supplier orders. So far, employees have been staying on top of re-orders. "Minimalist Wallets 2" is the only product running low in SLF's inventory (1 on hand, set to alarm at 3). The next product that should soon need reordering is the Projector Bluetooth, within 3 units of needing to reorder. Since employees should pool orders, this is totally acceptable.

While looking into SLF's order efficiency, we can see that employees have placed up to 151 orders for the same product, totaling up to 3,963 items. This would have obviously been more efficient to pool these orders a lot more to lower the overhead of placing and receiving these. Since the company has been in business for 5 months, up to 10 orders would have been preferable. Fine-tuning these orders will be easier once more trending data can be gathered.

Finally, by validating cash flow, and booking the cash out when the order to the supplier is placed, we can see that the company is mostly working with negative balances each month. This makes sense for such a young company that is still building its inventory. So far, month-to-month, the cash flows in and out have been inconsistent. The amount has been improving by about \$30,000 each month since March.

If we exclude outstanding orders to suppliers (accounts payable), May seems to have a positive cash balance. However, once these payments are added, the May cash balance does go negative. Also, June shows a positive cash balance of \$1,223. However, this is because, so far, no supplier order has been placed in June while customer orders have been received. Once supplier orders happen, the balance is expected to go negative as with previous months.

To conclude our report, we can confirm that SLF is going through a young company's growing pain with adjustments that will need to be made to become profitable. We believe that, as owners, you will find a lot of information here and it may lead to even more questions or a change in marketing customer outreach activities.