CS 255 Module 3 Assignment 3-2 5/24/2025

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After examining the data flow diagram for Hamp Crafts for the purchase and supply process, the data flow appears to be fairly linear. The customer chooses the items in what ever quantity and variation that is needed, and then the customer’s order is generated and received, and the order proceeds to the checkout, where the costs for the items, any tax and shipping charges are totaled up and the customer renders a payment according to whatever terms are agreed upon. From that point the flows get a bit complicated, because from the checkout step there is a fork that goes to the carrier who will be actually transporting and delivering the goods, which will require a payment at the appropriate moment, depending on the terms of the contracts. However the order proceeds to the fulfillment phase of the flow. At this point the employees will manually check the inventory system to make sure the orders items are present and available, and any shortages or back orders will be communicated in a reasonable time frame. From this stage the data flow forks again, with one side going to the choose supplier fork, where chosen suppliers will provide the contracted goods or services for the agreed upon charges, through contract negotiations. Once the appropriate supplier is chosen the supplier will prepare the goods for shipment, and the previously designated carrier will pick up, transport, and deliver the customer ordered goods to the customer, in the agreed upon timeframe.

Data sources involved in this flow diagram include the customer’s demographic and payment information, as well as past purchases and shipping preferences. The checkout step both utilizes data from the customer in the form of the payment information, internal inventory, and shipping plans, in addition to inventory updates and possible reorder, out of stock, or backorder tickets, but it is also a data source of its own as it begins to generate its own data in the forms of receipts, funds transfer, sales tax information, shipping fees and pick up and delivery addresses, the invoice for payment, the manifest of what should be packed to ship, shipping labels, bills of lading, inventory updates, and supply or stock orders. This system will also have some outside data sources like federal, state, and municipal taxes, regulations and documentation requirements, along with supplier’s updates on availability, new products, and discontinuation of other products.

In looking to move this process online, it will get more complicated and simpler. It will get more complicated, because there will be more “moving parts’, but simpler because moving a sales or purchasing process like this will require a lot of integration and automation of systems. To start with the website or electronic store will have to be created online, and it will have to have the functionality to show customers the catalog of items for purchase, and have a shopping cart so the customers can chose multiple items to purchase. And the shopping cart must interface with the inventory system, which will be updated at regular reasonable intervals, so that the customers cannot purchase more of an item than is currently available in the actual stores warehouse and storage areas. From there a payment processing system will need to be engaged so that payments for cost of the items, as well as calculation of shipping and handling fees can be determined and applied to the balance due, along with any taxes and other fees, can be determined, payments can be made and collected electronically. Once the payments are collected that resulting revenue will then be transferred to the primary account in an appropriate time frame, and the payments to the shipper for the shipping fees and to the government for taxes must be made periodically. Then in the fulfillment phase of the operation, the order must be transmitted to the warehouse, and invoice will be created and printed, and employees will assemble and pack the required items into shipping containers, address the containers for shipment, and then give them to the shipper to deliver them safely to the customer. There is also the side flow of data that includes the choice of suppliers, contract negotiation to become a recognized supplier. There is also the parallel data flow from the checkout/ payment processing step where the shipper and service are chosen and a shipping label and pickup are generated and entered in both the company’s system and the shipper system for tracking and billing purposes. Then after all those operations are completed there also needs to be an extension to the system to track and resolve returns, shipping problems, and any other customer service related problems the can come up, like in any other brick and mortar business. There should also be a followup step to check in with a percentage of customers to make sure the customers are happy with the quality of the goods they purchased, the service they received, and the experience they had, because online, ratings and reviews matter, and it is important to be prepared with policies and procedures to address any issues that could occur, an resolve them quickly and positively.

After examining the updated data flow diagram for the online store, there will be more data sources that in the original brick and mortar example, because the new flow diagram will need integrated processes to make the browsing, purchasing, shipping, payment, and any problem resolution work well together to generate the revenue projected by the store owners. By having the inventory cataloged in an integrated database, with pictures, colors, descriptions, and quantity available, the customers can make the best decisions about their purchases, based on up to date information from the website or e-store. Since each step is going to generate feedback of some sort, in the forms of: purchases, payments, shipping information, tracking numbers, customer information, delivery confirmations, inventory updates, and stock replacement orders; all of this data will need to be stored, sorted, and archived as necessary tone able to verify that orders were paid for, where they were shipped to, how they were shipped, what was shipped, and all the other data points that will be important when analyzing the purchasing habits of customers individually, in groups, and overall to see what trends are forming to adjust inventory quantities appropriately, to be able to to schedule staff appropriately, and to make sure the business is operating as efficiently as possible.

There needs to be several database added to the processes in the right places. There needs to be a customer database that contains the demographic, payment, and order history information. There also needs to be a database that contains the inventory items, with pictures, descriptions, and quantity available, which needs to be updated frequently to make sure the customers don’t order more of an item than is available. A payment database is also required to store the records of the payments made by customers, and it must be secure so that the proprietary data is not easily accessible to people who shouldn’t have access to it. The patent database should hold the invoices and payments for customers, as well as the amounts collected for shipping and taxes, which as liabilities that will need to be addressed at the appropriate moments. It will also be important to have the databases interact with with one another so that when a customer makes a purchase, their information is stored securely, but also in a way that makes sense. It makes sense to me to separate the databases into 3 separate databases that interact with one another instead of 1 master database for security purposes. To me it make sense to keep customer data and past purchases together, separate from the inventory database that would keep track of the items in the warehouse, with a high degree of accuracy, which is also separate from the payments database, which might contain sensitive data like customer and bank account numbers, that could cause a lot of problems if compromised. The secure payments database would be used to track and verify online payments, track to taxes collected as part of payments to be sent to where they need to go, the database would also track the revenue as it was transferred to the regular primary business account.

From studying the data flow diagram for the brick and mortar store, and analyzing the requirements for the online store, it is apparent that there should be some elements from the online store that should be integrated into the brick and mortar store. The inventory system, payment processing system, and fulfillment and shipping should all be integrated across both versions of the operation. By having the inventory updated regularly, it will limit some of the problems that would have happened by the customer ordering more items than were available, backorders on items, and having more than one customer purchase the same item when there is only one left (hopefully). Also, having a virtual inventory will make it easier to maintain appropriate stock levels in real time, make ordering easier by having the most current stock information available, and it should help decrease response time and decrease customer waiting times to find out if a specific item is available or not. And by having a unified integrated payment structure between the online store and actual store, payment security would increase, accounting would be easier( and possibly more automated), it would also allow for faster transfers from the payment accounts to the main accounts, since every thing would be ‘virtual’. By integrating the fulfillment and shipping steps between both the virtual and actual stores, it would allow more efficiency in assembling, packing and shipping orders, in generating packing slips and shipping labels, and would probably decrease shipping costs since they could be better calculated, entered and billed by the system instead of by hand. Integrating shipping between both parts of the operation would also allow for automatic pickup scheduling, automatic responses to the customers about pickup tracking and delivery, which would hopefully increase customer satisfaction, which would help customer retention and future revenue through their purchases. It also stands to reason that by having integrated systems between the virtual and actual stores, it would allow for greater efficiencies in the companies functions and processes, which would hopefully drive better sales, which makes more revenue, better profits, which hopefully leads to growth and longevity for the company.