

Detailed Report and Executive Summary for SNHU Clothing

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Detailed Report for SNHU Clothing

Data Gathering

Business Needs

Two major business needs for SNHU clothing are establishing a Data Base Management System (DBMS), and an Enterprise Resource Planning (ERP) system. SNHU Clothing is in the midst the growth phase of its organizational lifestyle. We recently acquired an additional customer database and need to merge our existing MS Access database while resolving database inconsistencies and redundancies. The types of data that would be needed to address these business needs would involve structured internal warehouse data, manufacturing and product design data, sales data, distribution data, and customer data. Some of the reports we may need to run on these two databases would surround customer orders, customer credit, shipping and receiving, current sales & sales forecast, and warehouse inventory and overhead cost.

Unfortunately, there is currently no straightforward way to run these sorts of reports on the Access databases due to limitations within the Access data dictionary. Moreover, there is a high likelihood for database inconsistencies and redundancies, which would further complicate producing these sorts of reports (Ecommerce-Platforms.com, 2021). Additionally, due to the rapid growth there is a need to scale our information systems so that they are prepared to handle additional capacity. Since this growth centers around “growth through collaboration” we should focus our efforts on the “simplification of formal systems” and establishing “more sophisticated information systems”. Coordinating migration to a new DBMS in conjunction with an ERP would fulfill both requirements and allow for future growth (Inc., 2021).

Current Client Systems

The two client systems associated with SNHU clothing are utilizing Microsoft Access databases which typically function as an MDE which are both relational DBMS. Relational DBMS have a basic data dictionary that shows information about the “name, description, size, type, format, and other properties of each field in a table.” For the purposes of this report, we shall refer to the original SNHU Clothing database as SNHUCDB1 and the newly acquired database as ACQDB2. Unfortunately, with our client systems utilizing MS Access its difficult to produce meaningful reports that can show actionable insights. In light of this, there is a strong possibility that our current business needs are currently going unmet. However, utilizing a more sophisticated DBMS would allow us to capture additional information and perform more advanced reporting (Laudon & Laudon, 2020).

Currently these two client systems do not correlate with one another as both SNHUCDB1 and ACQDB2 have fields that may differ drastically. Both systems may have fields with differing names that contain customer data containing “incorrect, incomplete, improperly formatted, or redundant data” such as names, street addresses, city, state, zip code, telephone numbers, and sales records. The formatting of this customer data may equally vary and there may be differing, or duplicate naming conventions being utilized for the unique identifiers which act as the primary keys for our customers. As an example, street types may be abbreviated, telephone numbers may or may not contain country codes, and there may or may not be salutation, title, or pronoun data for the customers contained within the databases (Laudon & Laudon, 2020).

Accessed

To truly know what information is currently available, SNHU Clothing must evaluate the data to determine if it is unnormalized and has “incorrect, incomplete, improperly formatted, or

redundant data”. There is a strong likelihood that this is the case in relation to the data residing within our database as well as the database acquired during the acquisition. This data would encompass the organizations customer sales, product information, and vendor supplier data for the IT, sales, warehouse, manufacturing and product design departments of SNHU clothing. In Addition, this data would comprise our newly acquired customer database.

Utilizing enterprise-wide data standards could specifically address the business concerns mentioned above. One data solution that could address the business needs described above would include implementing OLAP in conjunction with data mining during the implementation of a new DBMS. “ONLINE analytical processing (OLAP) is a key component of modern data processing pipelines and aims at analyzing large data sets to inform business decisions” (Hassan, 2019). Implementing a solution such as this would enable us to use multidimensional analysis to perform sophisticated query-oriented data analysis. This would ultimately allow us to find hidden trends within the data and enable us to perform more accurate forecasting going forward. Another data solution that could address the business needs described above would include implementing a cloud-based database such as Microsoft Azure SQL database. Merging the databases into this type of solution would improve disaster recovery efforts since it is cloud-based and stored off prem. Additionally since our existing databases are currently stored in Access migrating to another Microsoft solution may lead to an easier implementation (Laudon & Laudon, 2020).

To know what information is currently available we should assess the severity of the current state of the databases by performing a data quality audit on both databases. Doing so would consist of performing a “structured survey of the accuracy and level of completeness of the data in the MS Access databases.” Following this data quality audit, we should also be open

to the potential need for data cleansing to detect and correct “incorrect, incomplete, improperly formatted, or redundant data” (Laudon & Laudon, 2020).

SNHU Clothing is currently storing its data in the two MS Access databases described above as SNHUCDB1 and ACQDB2. Both databases are being stored on different servers and storage arrays that currently are unable to communicate with one another. As mentioned above if these client systems could communicate with one another, they may possess data which is “incorrect, incomplete, improperly formatted, or redundant”. Reporting the unmerged data separately may duplicate results, and without a proper data cleansing we will be unable to detect and correct these data issues (Laudon & Laudon, 2020).

As described above, in order to extract and gather the data we believe that a DBMS and an ERP system would be the best tools to meet existing business needs. These solutions would allow us to scale our information systems so that they are prepared to handle additional capacity. Additionally, enterprise-wide data systems such as OLAP and database mining could enable the use of multidimensional analysis to perform sophisticated query-oriented data analysis. This would ultimately allow us to find hidden trends within the data and enable us to perform more accurate forecasting going forward (Laudon & Laudon, 2020).

There may be differing security rights on both the SNHUCDB1 and ACQDB2 databases. Data Security would be important to the stakeholders at SNHU clothing because some folks may have read-write access to these databases that may only require read access, and some may have access that do not require access. Something like this could typically occur as individuals move throughout different roles in an organization via promotions or transfers. If an end user winds up with higher security privileges than are required, it could be dangerous should their systems become infected with malicious software as data loss can occur. In light of this, it may be good

reason to justify reassessing existing security rights during the implementation of the new DBMS. Data Integrity would also be important to the stakeholders at SNHU clothing because if someone has higher security rights than are needed, they may accidentally overwrite or delete data. In Addition, if the data is improperly merged the resulting data may become excessively slow to load which could impede existing business processes, or the database merger may cause existing reports to produce inaccurate results (Laudon & Laudon, 2020). As Microsoft puts it, “Many factors impact needs and performance including the number of concurrent users, the network environment, throughput, latency, the size of the database, peak usage times, and expected growth rates.” (Microsoft, 2021).

Business Needs

Questions

The types of questions surrounding the business needs of coordinating a migration to a new DBMS in conjunction with an ERP system that leaders at SNHU clothing might ask that could be answered using data are: What sort of decision support system (DSS) would help us choose the best option for a new DBMS and ERP System? How timely and accurate is our current data reporting method based on existing systems? How can we best improve the timeliness and accuracy of our reporting in relation to the DBMS systems we are considering? What DBMS and ERP Systems are similar companies using, and can we make ours better? Can we benchmark against our current systems performance to measure improvement? What sort of data is contained within the existing DBMS? What are the potential options for new DBMS and ERP Systems? How much would each DBMS and ERP System cost to procure, implement, and support? Do we have existing employees that can implement and support the new DBMS and ERP Systems? Can we train existing employees to support the new DBMS and ERP Systems?

Will we need to hire additional employees to implement and support the new DBMS and ERP Systems? Does training for the new DBMS and ERP Systems have a cost associated with it? Do we have an internal resource that can train folks on how to use these solutions once selected? What would the training schedule look like for these solutions? What benefits would result from implementing the chosen DBMS and ERP Systems for SNHU Clothing? How long would each DBMS and ERP System take to implement? Do we have the proper resources to support a new DBMS and ERP System, or will we need to procure additional resources? Do the potential DBMS and ERP Systems allow for easy scalability? How flexible are the options for DBMS and ERP Systems? Would we be required by contract to stay with each potential DBMS and ERP System once chosen? Do we have anyone internal that can review the contracts to ensure SNHU Clothing's interests are safeguarded? Do we have internal resources that can run the implementation projects?

The types of data needed to answer some of the business questions outlined above might be stored in existing client systems location within SNHU Clothing. This data might surround the existing business processes: warehouse data, manufacturing and product design data, sales data, distribution data, and customer data. I imagine each of these business processes would have data stored within our existing Access databases.

The Warehouse data might contain data such as this:

WareHouse Data		
Field Name	Date Type	Description
Color	Short Text	Garment Color
Date	Date/Time	Date/Time Inventoried
Inventory ID	Short Text	Inventory ID key
Item Description	Short Text	Item Description
Location	Short Text	Location name
Material	Short Text	Type of Material
Price PF	Short Text	Price per foot

Quantity	Short Text	Quantity in Inventory
Size Length	Short Text	Size Length in Feet
Style	Short Text	Style of material
Supplier City	Short Text	Supplier City
Supplier ID	AutoNumber	Supplier ID foreign key
Supplier Name	Short Text	Supplier Name

The Manufacturing and Product Design data might contain data such as this:

Manufacturing and Product Design		
Field Name	Date Type	Description
Barcode	Short Text	Barcode Number
Color	Short Text	Garment Color
Date	Date/Time	Date/Time Inventoried
Inventory ID	Short Text	Inventory ID foreign key
Item Description	Short Text	Item Description
Location	Short Text	Location name
Material	Short Text	Type of Material
Price	Short Text	Price of Garment
Product Description	Short Text	Product Description
Quantity	Short Text	Quantity in Inventory
Size	Short Text	Size (S,M,L)
Style	Short Text	Style of material
Order ID	AutoNumber	Order ID foreign key
Supplier City	Short Text	Supplier City
Supplier ID	AutoNumber	Supplier ID key
Supplier Name	Short Text	Supplier Name

The Sales data might contain data such as this:

Sales Data		
Field Name	Date Type	Description
Barcode	Short Text	Barcode Number
City	Short Text	Customer City
Color	Short Text	Garment Color
Customer ID	AutoNumber	Customer ID foreign key
Date	Date/Time	Date/Time of sale
First Name	Short Text	Customer first name
Last Name	Short Text	Customer last name
Location	Short Text	Location name

Order ID	AutoNumber	Order ID key
Phone	Short Text	Customer Phone number
Price	Short Text	Price of Garment
Product Description	Short Text	Product Description
Quantity	Short Text	Quantity Sold
Sales Tax	Short Text	Applicable Sales Tax
Shipping Cost	Short Text	Total Shipping Cost
Shipping ETA	Date/Time	Date/Time of ETA for shipment
Shipping Speed	Short Text	Chosen Shipping Speed
Size	Short Text	Size (S,M,L)
State	Short Text	Customer State
Street	Short Text	Customer street address
Style	Short Text	Style of material
Sub Total	Short Text	Sub Total
Total Price	Short Text	Total Price
Zip	Short Text	Customer Zip code

The Distribution data might contain data such as this:

Distribution Data		
Field Name	Date Type	Description
Barcode	Short Text	Barcode Number
City	Short Text	Customer City
Color	Short Text	Garment Color
Customer ID	AutoNumber	Customer ID foreign key
Date	Date/Time	Date/Time of sale
First Name	Short Text	Customer first name
Last Name	Short Text	Customer last name
Location	Short Text	Location name
Order ID	AutoNumber	Order ID foreign key
Phone	Short Text	Customer Phone number
Product Description	Short Text	Product Description
Quantity	Short Text	Quantity Sold
Shipping ETA	Date/Time	Date/Time of ETA for shipment
Shipping Speed	Short Text	Chosen Shipping Speed
Size	Short Text	Size (S,M,L)
State	Short Text	Customer State
Street	Short Text	Customer street address
Style	Short Text	Style of material
Zip	Short Text	Customer Zip code

The Customer data might contain data such as this:

Customer Data		
Field Name	Date Type	Description
City	Short Text	Customer City
Customer ID	AutoNumber	Customer ID key
Date	Date/Time	Date/Time of previous sale
First Name	Short Text	Customer first name
Last Name	Short Text	Customer last name
Order ID	AutoNumber	Order ID foreign key
Phone	Short Text	Customer Phone number
State	Short Text	Customer State
Street	Short Text	Customer street address
Zip	Short Text	Customer Zip code

Some additional types of data needed to answer the business questions outlined above might be stored within external vendor systems. However, in order to collect this external data we would first need to reach out to vendors for quotes. This data would surround the quotes implementation timeline, cost for implementation, cost for training, and training duration. Likewise, we may need to know SNHU Clothing's employee skillset data which may be present within existing SNHU Clothing's Operational data. This data may be contained within Human Capital Management (HCM) data, or learning management system (LMS) data. Additional research may be required to gather both structured and unstructured web data in order to best answer the business questions outlined above.

Link

In order to link SNHU Clothing's systems to get the data that answers questions related to business needs we would first need to ensure that the data integrity and security issues discussed above have all been resolved. To do so, we would first need to perform a data quality audit on both databases, and potentially a data cleansing based on the results. We would also

need to perform a security audit to assess database security risks. Once these concerns are resolved, we should consider moving our data over to a data warehouse so we can store both current and historical data to assist with decision making. If the databases are large and we need to analyze large datasets then we may want to consider high-speed analytics platforms. If timeliness of our reporting is a concern, we should consider in-memory computing solutions. Additionally, if transaction cost and security is a concern, we should consider blockchain databases.

Once these details are determined, we would link SNHU Clothing's systems using both primary and foreign keys highlighted above under "Questions". Doing so would allow us to get the data that answers these questions related to business needs directly from the data warehouse. This data would surround the existing business processes: warehouse data, manufacturing and product design data, sales data, distribution data, and customer data. Within the customer data the Customer ID would be the primary key. However, within the other databases such as sales data and distribution data the Customer ID would be a foreign key used to look up customer data. Likewise, within the warehouse data the Inventory ID would be the primary key. However, within the Manufacturing and Product Design data and distribution data the Inventory ID would be a foreign key used to look up material data. Similarly, within the Manufacturing and Product Design data the Supplier ID would be the primary key. However, within the Warehouse data and distribution data the Supplier ID would be a foreign key used to look up Supplier data. Furthermore, within the sales data the Order ID would be the primary key. However, within the other databases such as customer data, distribution data, and Manufacturing and Product Design the Order ID would be a foreign key used to look up Order data to enable previous order history, shipping, and just-in-time production respectively.

Gaps

Currently, there are potential gaps in data flow present within SNHU Clothing's systems and system interactions. Fields could potentially be labeled differently within each database which would make it difficult to link the databases. In Addition, if the databases are currently unlinked due to lack of primary and foreign keys then this would cause potential redundant, incorrect, or missing data within each of the databases because they are unlinked. Establishing primary and foreign keys and importing the data into a data warehouse would enable queries that could better answer business questions. For example, if a customer's address or contact information has been changed in the customer data but was never updated in the distribution data it might cause a shipment to be directed to the wrong address. Likewise, if a customer's address was updated in distribution data but never updated in customer data it would cause incorrect data within the customer data.

To produce more efficient and effective reports we might consider linking sales data and Manufacturing and Product design data to enable Manufacturing and Product Design to perform just-in-time order production instead of producing excess stock. Doing this would lower the overhead costs because it would enable them to predict exactly what is being bought and when it is needed. Likewise, if the sales data and customer data were linked then the sales team could forecast what customers will buy if they could understand what was bought and by whom it was purchased. Additionally, if the distribution data and sales data were linked then the distribution team could forecast shipping needs so they could get the goods out quicker. Moreover, tying the data together through the use of primary and foreign keys within a data warehouse would allow for more accurate forecasting and scheduling across the departments (Laudon & Laudon, 2020).

Integrating Business Resources

Reports

The sorts of reports we would need to answer the business questions outlined above would be MS Access Query reports. We currently possess a recently acquired the customer database that is a MS Access database, and we would be merging this database into our existing MS Access database. These reports we would want to run would be based on the existing business processes: warehouse data, manufacturing and product design data, sales data, distribution data, and customer data. They would be run with the intent of producing easily digestible information meant to provide insight into assessing how long the reporting process currently takes, and how valuable the information produced is. Some insights we might be looking for within these reports would be related to key performance indicators (KPIs) such as dollar value of sales within a period, % new customers within a period, % customer satisfaction, % deliveries received on-time, average time from order to receipt of goods. If the information produced within these reports is inaccurate or untimely then that would certainly justify the need to revamp the DBMS and ERP Systems.

A few additional reports we might want to run would be manually generated reports based on research. An example of this might be a cost vs benefit MS Excel spreadsheet to compare the top 10 DBMS and ERP System options. In order to determine what the top 10 options for these systems are we could start by seeking out Gartner magic quadrant reviews on the top DBMS and ERP Systems. Doing this would save time and provide insight into the top 10 options available so we can review them to compare cost versus benefit. Another manually generated report might be an MS Excel spreadsheet detailing date/time each report was requested, when it was received, a formula to calculate days, hours, and minutes it took to receive the report, and how long it took to convert the reports to easily digestible information

such as the KPIs mentioned above. Additionally, we would want to reach out to HR or internal people leaders to generate a MS Excel spreadsheet on who is skilled in working with the top 10 DBMS and ERP System options (Laudon & Laudon, 2020).

Report Linking Data

To create a report linking data from various systems some of the information we might need from stakeholders at SNHU Clothing would be the names of the fields they would like present within each query report. We would also want to know which database the fields are present within so we can fully understand the data record sources. Additionally, we would need to understand which keys were primary and foreign for each database. We would also want to understand if the report should be a simple listing or if the fields should be grouped. Furthermore, we would want to understand the tables or queries the fields reside (Microsoft Support, 2021). Lastly, we would also want to know what name we would like to give each report that will be linked, and what we want to name the combined report (Cox, 2021).

How and Who

My approach to acquiring this information from stakeholders at SNHU Clothing would start with scheduling a meeting with the SNHU Clothing Leadership team. To do this I would coordinate the meeting with all department managers: Mark Manager, Jim Sales, Dan Warehouse, and Patricia Product, as well as the CEO, David Officer. During this meeting I could explain the project and bring my concerns and questions to the table. This meeting would provide a safe space for folks to ask questions and share information. I could ask the leadership team about the fields and keys that are present within the databases so we could determine how to best link the data. I could also ask Mark Manager who I should go to for permission to view data within the databases, so I could generate the reports. Additionally, I could ask how the

systems interact and discuss potential risks that might provide justification to take pause before proceeding. I could also ask David Officer to confirm the reports he would like run and discuss potential reports that might not have been considered. After the meeting was over I could summarize what was discussed and share the information with the stakeholders. I would then gather my approvals for accessing the databases and then circle back with Mark for access and help connecting my MS Access to the right data sources. Once that was done I would be able to view the fields within the databases so I could confirm which fields were present within the databases and if any were assigned as primary or foreign keys. I could then begin running the queries to generate the reports and then link the reports through primary and foreign keys.

Reporting Tools

Some of the reporting tools that could be used to answer the business questions outlined above would be utilizing the Report, Report Wizard, or Blank Report tools within MS Access's Create tab. Doing so would allow us to utilize the built-in query building tools that are present within Access to generate the report (Support.Microsoft, 2021). If we were to employ MS Access query building tools it would utilize Access to generate the SQL commands necessary to run the report. To utilize MS Access to generate the report we would open MS Access and go to the Create tab, click on the Reports group, and select the appropriate report (Support.Microsoft, 2021). Another option would be to utilize Crystal Reports to generate the desired reports, but Crystal Reports is typically utilized in large corporations so utilizing this might prove to be a little too complicated for what we are trying to accomplish (Laudon & Laudon, 2020).

Reporting: Executive Summary for SNHU Clothing

Business Goals

SNHU Clothing is a family focused, Brick and Click, clothing & accessory retailer with one physical location; We are presently expanding our east coast presence and experiencing rapid growth surrounding our online sales. Our company presently has 10 employees in total, and the leadership team consists of an IT manager, sales manager, warehouse manager, manager of manufacturing and product design, and a business analyst. A few of the challenges we are facing is that we are utilizing a Microsoft Access database to store customer sales, product information, and vendor and supplier data. In addition, we recently acquired another small clothing retailer's clothing and customer database, which is also in Microsoft Access format, but the fields differ from those of our original database. To remedy this issue, two business needs SNHU clothing should consider are establishing a Data Base Management System (DBMS), and an Enterprise Resource Planning (ERP) system (Ecommerce-Platforms.com, 2021).

The problem that a database merger presents is that if our existing MS Access database is merged with another MS Access database it may introduce database inconsistencies and redundancies. This would be due to unique field naming conventions and configurations between the two Access Databases. However, there is also the possibility of duplicate, missing, and incorrect customer data. Without making any changes to the existing Access databases it would be difficult to produce accurate and timely reports surrounding structured internal warehouse data, manufacturing and product design data, sales data, distribution data, and customer data. A few of the reports we might need to run on these two databases would surround customer orders, customer credit, shipping and receiving, current sales & sales forecast, and warehouse inventory and overhead cost (Ecommerce-Platforms.com, 2021).

If we were to correct database inconsistencies and redundancies and merge the two MS Access databases it would solve the immediate problem, but the end result would be inefficient and the time spent generating this solution would inevitably become sunk costs in a DBMS solution that ultimately does not fit our business need. It's worth noting that relational DBMS's like MS Access possess a basic data dictionary, and this means that Access would only be able to show information about the "name, description, size, type, format, and other properties of each field in a table." One other downside is that when utilizing this type of solution, the database is typically "stored on a shared network drive, and all users share the database file simultaneously." The limitations that this solution presents comes in the form of "reliability and availability" especially if multiple users are modifying data as "all database objects are shared." Additionally, this solution would lead to decreased performance as "all the database objects are sent across the network." Therefore, if Access is utilized as the chosen DBMS solution, it would be difficult to produce meaningful reports to generate actionable insights (Support.Microsoft.com, 2021).

An additional problem that is presented is that due to the rapid growth there is a need to scale our information systems so that they are prepared to handle additional capacity and future growth. Without modifying our existing information systems we may find ourselves overtaxing our current resources and this may lead to unplanned downtime. We are in the midst of a growth phase in our organizational lifestyle. If we consider this, the growth we are experiencing centers around "growth through collaboration". Due to the specifics surrounding this portion of the life cycle we should focus our efforts on the "simplification of formal systems" and establishing "more sophisticated information systems". Coordinating a migration to a new DBMS in conjunction with an ERP would fulfill both requirements and allow for additional growth down the road (Inc., 2021).

Data Requirements

Some of the data that would be required to position SNHU Clothing to experience a successful implementation of new DBMS and ERP systems to achieve our business goals would encompass the current state of our database inconsistencies and redundancies. The two client systems associated with SNHU clothing are both utilizing Microsoft Access databases which typically function as an MDE which are both relational DBMS. As mentioned above, relational DBMS have a basic data dictionary and because of this it would be difficult to produce meaningful reports that can show actionable insights. In light of this, there is a strong possibility that our current business needs are currently going unmet. In our data's current state it takes several days to produce a report and this often leads to an issue with timeliness of our data. To extract and gather more accurate data we believe that a DBMS and an ERP system would be the best tools to meet existing business needs. These solutions would allow us to scale our information systems so that they are prepared to handle additional capacity.

It should be noted that these databases have fields that differ, and because of this these two client systems do not correlate with one another in any way. In light of this, the timeliness and accuracy of our current data reporting method is suffering. These databases are being stored on different servers and storage arrays that currently are unable to communicate with one another. They also may have unnormalized data that includes fields with differing names containing customer data which is "incorrect, incomplete, improperly formatted, or redundant data". This data may include first and last names, street addresses, city, state, zip code, telephone numbers, and sales records. The formatting of this customer data may equally vary and there may be differing, or duplicate naming conventions being utilized for the unique identifiers which act as the primary keys for our customers. As an example, street types may be abbreviated,

telephone numbers may or may not contain country codes, and there may or may not be salutation, title, or pronoun data for the customers contained within the databases. This data would encompass the organizations customer sales, product information, and vendor supplier data for the IT, sales, warehouse, manufacturing and product design departments of SNHU clothing (Laudon & Laudon, 2020).

Reporting the unmerged data separately may duplicate results, and without a proper data cleansing we will be unable to detect and correct these data issues. To best improve the timeliness and accuracy of our reporting in relation to the DBMS systems we are considering we need to understand the information contained within the databases. To do this, one of the processes we should consider is assessing the severity of the current state of the databases by performing a data quality audit on the databases. Doing so would consist of performing a “structured survey of the accuracy and level of completeness of the data in the MS Access databases.” Following this data quality audit, we should also be open to the potential need for data cleansing to detect and correct “incorrect, incomplete, improperly formatted, or redundant data” (Laudon & Laudon, 2020).

After the data has been cleaned and reconciled, we could merge the SNHUCDB1 and ACQDB2 databases and begin utilizing a more sophisticated DBMS. One such data solution that similar companies are using to address the business needs described above would be ONLINE analytical processing (OLAP). “[OLAP] is a key component of modern data processing pipelines and aims at analyzing large data sets to inform business decisions”. If we were to implement a solution such as this we may be able to reduce the timeline for producing our reports from several days to a matter of hours. However, if we wish to gain a true competitive advantage we could implement OLAP in conjunction with data mining during the

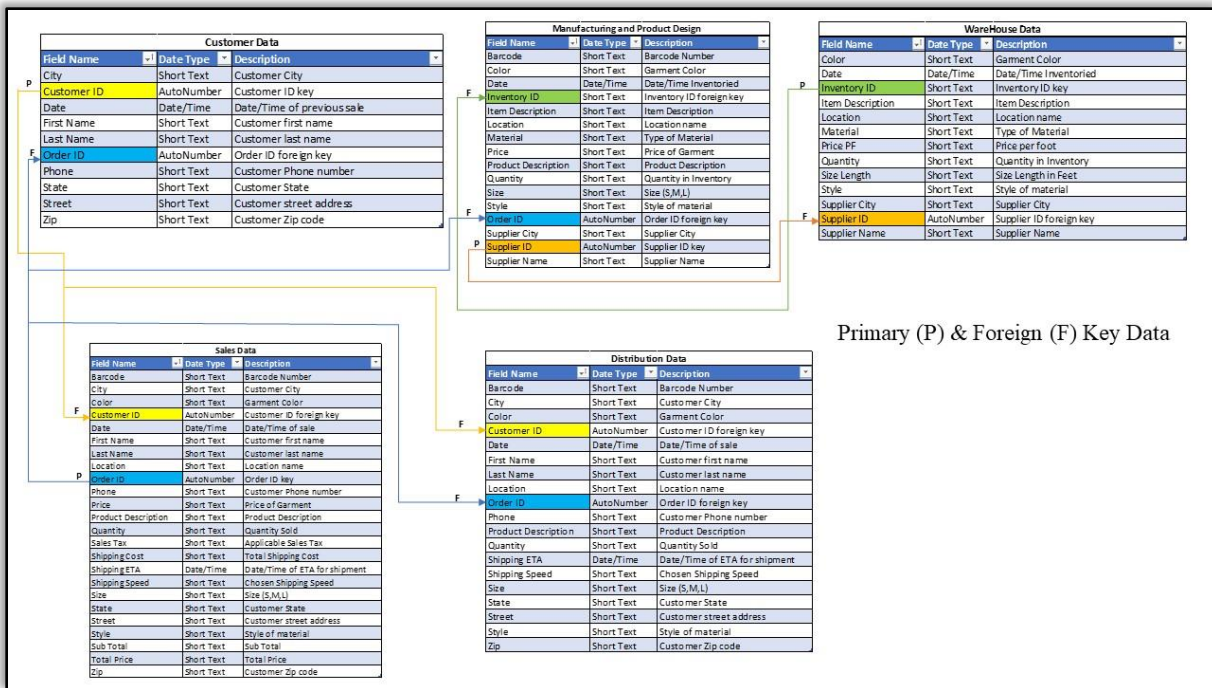
implementation of a new DBMS. A solution such as this would enable us to use multidimensional analysis to perform sophisticated query-oriented data analysis. This would ultimately allow us to find hidden trends within the data and enable us to perform more accurate forecasting going forward (Hassan, 2019).

Another data solution that could address the business needs described above would include implementing a cloud-based database such as Microsoft Azure SQL database. Merging the databases into this type of solution would improve disaster recovery efforts since it is cloud-based and stored off prem. Additionally, because our existing databases are stored in Access migrating to another Microsoft solution may lead to an easier implementation while allowing us to perform more advanced reporting. An additional data solution we may wish to consider is moving our data over to a data warehouse so we can store both current and historical data to assist with decision making. If the databases are large and we need to analyze large datasets then we may want to consider high-speed analytics platforms. If timeliness of our reporting is a concern, we should consider in-memory computing solutions. Additionally, if transaction cost and security is a concern, we should consider blockchain databases. (Laudon & Laudon, 2020).

It should also be noted that there are differing security rights on both the SNHUCDB1 and ACQDB2 databases. Additionally, some folks may have read-write access to these databases that may only require read access, and some may have access that do not require access. Something like this would typically occur as individuals move throughout different roles in an organization via promotions or transfers. If an end user winds up with higher security privileges than are required, it could be dangerous should their systems become infected with malicious software as data loss can occur. In light of this, we may wish to follow a process for reassessing existing security rights during the implementation of the new DBMS. Data Integrity would also

be important to the stakeholders at SNHU clothing because if someone has higher security rights than are needed, they may accidentally overwrite or delete data. In Addition, if the data is improperly merged the resulting data may become excessively slow to load which could impede existing business processes, or the database merger may cause existing reports to produce inaccurate results (Laudon & Laudon, 2020). As Microsoft puts it, “Many factors impact needs and performance including the number of concurrent users, the network environment, throughput, latency, the size of the database, peak usage times, and expected growth rates.” (Microsoft, 2021).

In order to link SNHU Clothing’s systems to get the data that answers questions related to business needs we would first need to ensure that the data integrity and security issues discussed above are resolved. To do this, we would need to perform a data quality audit on both databases, and potentially a data cleansing based on the results. We would also need to perform a security audit to assess database security risks. Once these issues have been resolved, we would link SNHU Clothing’s systems using both primary and foreign keys. As seen in the example below, Customer ID functions as a primary key within the Customer Data, and a foreign key within Sales Data & Distribution Data. Similarly, Order ID would function as a primary key within the Sales Data, and a foreign key within the Customer Data, Distribution Data, and Manufacturing and Product Design Data. Likewise, Inventory ID would function as a primary key within the WareHouse Data, and a foreign key within the Manufactoryring and Product Design Data. Additionally, Supplier ID would function as a primary key within the Manufacturing and Product Design Data and a foreign key within the WareHouse Data.



Primary (P) & Foreign (F) Key Data

Establishing primary and foreign keys and importing the data into a data warehouse would enable queries that could better answer business questions. For example, if a customer's address or contact information has been changed in the customer data but was never updated in the distribution data it might cause a shipment to be directed to the wrong address. Likewise, if a customer's address was updated in distribution data but never updated in customer data it would cause incorrect data within the customer data. To produce more efficient and effective reports we might consider linking sales data and Manufacturing and Product design data to enable Manufacturing and Product Design to perform just-in-time order production instead of producing excess stock. Doing this would lower the overhead costs because it would enable them to predict exactly what is being bought and when it is needed. Likewise, if the sales data and customer data were linked then the sales team could forecast what customers will buy if they could understand what was bought and by whom it was purchased. Additionally, if the distribution data and sales data were linked then the distribution team could forecast shipping needs so they could get the

goods out quicker. Moreover, tying the data together through the use of primary and foreign keys within a data warehouse would allow for more accurate forecasting and scheduling across the departments (Laudon & Laudon, 2020).

Justification

DBMS systems typically assist with centralizing, managing, and accessing data. ERP systems typically assist with helping organizations manage and integrate “a company’s financials, supply chain, operations, commerce, reporting, manufacturing, and human resource” daily business activities through automation. DBMS systems can help reduce data redundancy and inconsistency and allow end users acquire data that can provide actionable insight. Whereas ERP systems can help an organization’s systems communicate with one another to provide actionable insight into an organization’s operations, and in the case of SNHU clothing it can provide us with an improved ecommerce and customer engagement solution (Dynamics.microsoft.com, 2021). These solutions can assist us with improving the timeliness and accuracy of our information, performing just-in-time order production, lowering our overhead costs, and improving our forecasts and scheduling across departments. However, some concerns have been presented within this summary surrounding data integrity and data security. (Laudon & Laudon, 2020).

For these systems to become a feasible solution, we would need to first address all data integrity concerns by executing a full data quality audit and data cleansing. Next, we would need to address all data security concerns by assessing the current and future state of data security permissions to understand if any adjustments are needed. However, we should note that this work will need to be performed regardless of a new DBMS and ERP and system being implemented. Additionally, there were several business questions considered within this

summary concerning cost to procure, implement, and support these solutions. There were also concerns raised surrounding whether we have existing employees that can implement and support these new systems. We also need to understand if we need to train existing employees, or if we will we need to hire additional employees with these skill sets to implement and support the new systems. In order to gain additional insight, we will need to find out if these new systems come with training or if the training may have a cost associated with it. We would also need to understand if we are required by contract to stay with each potential solution once the solutions have been chosen. Before embarking on any implementations, we would first need to determine if we have any internal resources that can review RFP contracts and can run the implementation projects; doing so would ensure SNHU Clothing's interests are safeguarded.

Some of the data needed to answer these business questions outlined above might be stored within external vendor systems. To collect this external data our best next steps would begin with reaching out to vendors for quotes. Some of the data we would specifically be looking for would surround the quotes implementation timeline, cost for implementation, cost for training, and training duration. Likewise, we may need to know SNHU Clothing's employee skillset data which may be present within existing SNHU Clothing's Operational data. To gather this data our best next steps would be to reach out to HR to see if this data may be contained within Human Capital Management (HCM) data, or learning management system (LMS) data. Additional research may be required to gather both structured and unstructured web data in order to best answer the business questions outlined above.

In order to proceed, the reports we may want to run would surround our existing business processes: warehouse data, manufacturing and product design data, sales data, distribution data, and customer data. They would be run with the intent of producing easily digestible information

meant to provide insight into assessing how long the reporting process currently takes, and how valuable the information produced is. Some insights we might be looking for within these reports would be related to key performance indicators (KPIs) such as dollar value of sales within a period, % new customers within a period, % customer satisfaction, % deliveries received on-time, average time from order to receipt of goods. We would also want to understand if the report should be a simple listing or if the fields should be grouped. Furthermore, we would want to understand the tables or queries the fields reside (Microsoft Support, 2021). Lastly, we would also want to know what name we would like to give each report that will be linked, and what we want to name the combined report. If the information produced within these reports is inaccurate or untimely then that would certainly justify the need to revamp the DBMS and ERP Systems (Cox, 2021).

Some of the reporting tools that could be used to answer the business questions outlined above would be utilizing the Report, Report Wizard, or Blank Report tools within MS Access's Create tab. Doing so would allow us to utilize the built-in query building tools that are present within Access to generate the report (Support.Microsoft, 2021). If we were to employ MS Access query building tools it would utilize Access to generate the SQL commands necessary to run the report. To utilize MS Access to generate the report we would open MS Access and go to the Create tab, click on the Reports group, and select the appropriate report (Support.Microsoft, 2021). Another option would be to utilize Crystal Reports to generate the desired reports, but Crystal Reports is typically utilized in large corporations so utilizing this might prove to be a little too complicated for what we are trying to accomplish (Laudon & Laudon, 2020).

Prior to running any reports, I'd like to schedule a meeting with the SNHU Clothing Leadership team (Mark Manager, Jim Sales, Dan Warehouse, Patricia Product, and David Officer). Within this meeting I'd like to go over the sorts of MS Access Query reports we would need to answer the business questions outlined above. This meeting would provide a safe space for folks to ask questions and share information. Within the meeting we can hash out the fields and keys that we wish to be present within the database so we could determine how to best link the data, the data security permissions that should be set within the databases, and how the systems should interact. We can also discuss potential risks that might provide justification to take pause before proceeding. We could also verify or adjust the reports we would like run in case there were any reports that might not have been considered. After the meeting I will summarize what was discussed and share the information with the SNHU Clothing leadership team. Once approvals and access to the databases has been acquired I will connect to the MS Access database sources to view the fields within the databases to confirm which fields are present within the databases and the present state of the primary or foreign keys. I will then begin running the queries to generate the reports and then link the reports through primary and foreign keys.

A few additional reports we might want to run would be manually generated reports based on research. An example of this might be a cost vs benefit MS Excel spreadsheet to compare the top 10 DBMS and ERP System options. To determine what the top 10 options for these systems are we could start by seeking out Gartner magic quadrant reviews on the top DBMS and ERP Systems. Doing this would save time and provide insight into the top 10 options available so we can review them to compare cost versus benefit. Another manually generated report might be an MS Excel spreadsheet detailing date/time each report was requested, when it

was received, a formula to calculate days, hours, and minutes it took to receive the report, and how long it took to convert the reports to easily digestible information such as the KPIs mentioned above. Additionally, we would want to reach out to HR or internal people leaders to generate a MS Excel spreadsheet on who is skilled in working with the top 10 DBMS and ERP System options. Once this work has been completed we will be ready to implement the most appropriate solutions that can position us to obtain a competitive advantage (Laudon & Laudon, 2020).

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