**The Excel Problem (Cameron Mostert 218006098)**

According to the director, the floor managers handle stock take and management using an efficient, but still manual spreadsheet system. While the spreadsheet itself and the management of it is impressive, it is imperative to note that for the business to sustainably grow and keep up with data demands, a DBMS system will be preferable. Relational Database Management will allow the company to expand their database without cost and keep up with stocktake will minimizing human error. (360 Data Science, 2020)

There are multiple solutions available for implementing SQL standards and database management systems, however there are free alternatives better suited to small/medium sized businesses such as the client’s. For this purpose, I have selected DB2 Express-C from IBM, as it is easy to learn and completely free. It is specifically designed for small start-ups and does not have any specific hardware or server requirements. (IBM, 2009)

With the database implementation itself being free, the client can focus on spending money to establish a VPN connection between both branches, SQL training for the floor managers, and a reliable data server to be installed in each branch. Using the barcodes that come with each garment, they can be registered with primary keys within the database, and automated queries can be set up in order to make the process of monitoring the ins and outs of stock take easier and less prone to error. This solves the director’s concern about shipments going missing – they can now be traced if such a thing were to happen. The DBMS also allows for higher levels of data integrity and meta data collection which can help the business with business analytics. (360 Data Science, 2020)

In addition, the use of DB2 Express-C comes with a license allowing free distribution, commercial use, and limitless database growth perfectly suited to this business, as the director can therefore focus on expansion of their company and not have to worry about their database buckling under load due to said expansion, thus following along with the goal of catapulting their business into a different orbit.

**Communication between branches (VPN)**

This system can easily be expanded upon, and the establishment of a VPN allows for secure communication between each branch, which is also useful for administration purposes. Having two servers available, one for each branch, allows not only for unique data sets to be safely stored, but the ability to back up important data in case one server goes down.

Utilizing a router or gateway with VPN routing enabled, the branches can then safely communicate email, database information and other business-related information securely over the internet without worry of being tracked or monitored by suspicious parties. This also allows the branch managers or director to perform important admin away from the branches securely if they are connected to the VPN. (Hein, 2020)

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