

Internship in Business Analytics Report.

MIS 64092

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Executive summary

ND Global Consultancy services is a health-care based software company provides Commissioning, Validation, cGMP Support, Clinical Operations, Biometrics and Regulatory Compliance services to the Life Sciences Industries, combining experience and resources with exceptional quality. Working as a data analyst at the company has allowed me to utilize my SQL, web developing and statistical skills to achieve the tasks assigned to me.

I had two online dashboards under my control. In addition, I was able to recognize a critical problem I ran into while working at ND Global Consultancy Services, analyze it, and offer remedies. The absence of thorough documentation for the company's databases was the cause of this issue. The suggested answer was to build a web-based search engine utilizing the Lucene indexing and search engine for the documentation data that had been gathered, allowing the staff to access and use the documentation system conveniently and safely.

Introduction

I had a wonderful chance to put all of my academic expertise to action by joining the workforce. With an open-door policy that encourages employees to create their best work, ND Global Consultancy Services offers a very healthy work and educational atmosphere. As a result, I had a terrific experience working as a data analyst at ND Global Consultancy services since I got to work with a lot of data that was gathered from the devices of sleep apnea sufferers. Additionally, meeting with staff members from various departments improved both my social and academic experience.

I also had to comply with many analytical requirements from clients and other departments. I was also in responsible of creating, maintaining, and upgrading web dashboards. For the company's database documentation, I identified and suggested a knowledge mapping solution.

Organization description.

ND Global Consultancy Services creates health monitoring systems. With an emphasis on sleep disordered breathing, it is one of the market leaders worldwide in the development, manufacture, and marketing of medical products for the diagnosis, treatment, and management of respiratory disorders. The u-sleep CPAP compliance monitoring and management solution is the company's main product. The "Management by Exception" approach, which enables businesses to specify rulesets for therapy compliance, is how u-sleep operates. By setting off pre-determined actions and notifications, this enables the system to recognize patients who adhere to or violate the regulations.

The system also uses one of the three methods voice, SMS, or email to communicate feedback to the patients. These notifications include patient-specific automated coaching messages, which

increase adherence to therapy. Additionally, it gives businesses thorough reports on the patients they oversee. An additional product created by the company is a web application focused on patients. With the use of this web application, the patient will receive a score out of 100 based on how well they use their sleep apnea equipment. The website exhorts users to earn higher marks because doing so will improve their therapeutic results.

Based on the device and mask types entered on the website, this system also sends feedback and inspirational messages to the patient. Time-based and action-based notifications are the two categories into which these notifications are separated. Time-based notifications are based on research that the company conducts to determine the crucial moments when the majority of patients require messaging. Action-based notifications, on the other hand, are prompted by the patients' behavior and include messages of support for patients who are not performing well in the system or alerts of compliance and adherence to therapy plans.

Team interactions

I mostly spoke with the following teams:

Team for Customer Success:

This team is in charge of inspecting businesses to ensure that they are using the u-sleep system and properly setting up patients. The team conducts follow-ups using data from a web dashboard that I was given responsibility for managing. By ensuring that patients are set up correctly, we can guarantee that they will receive the required system-generated feedback for improved therapeutic results.

U-sleep Team:

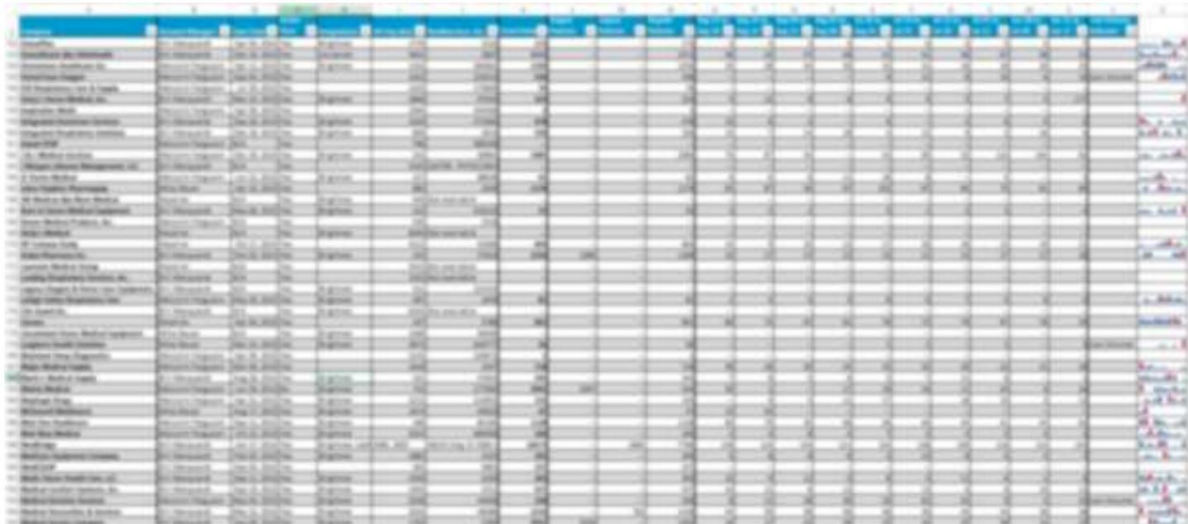
The U-Sleep Team is in charge of creating, sustaining, and introducing the U-Sleep system to new users.

Internship Tasks

1. Using SQL and MS Excel, I created and arranged weekly analytical reports that were distributed to various company divisions.
2. To assure the accuracy of the data retrieved, a variety of complex and specialized SQL queries had to be created, including requests from customers, and other departments.
3. Updating, changing, and maintaining two web dashboards that use interactive charts and tables to present the submitted data. These dashboards were developed utilizing a variety of JavaScript tools, including cross filter, jQuery, and d3 "Data-Driven Documents". These dashboards are used by many departments to monitor sales growth, and system usage for follow-up help when necessary.

Sales Report.

Three distinct SQL queries are executed to produce the sales report. Then, the data that was retrieved is formatted in an Excel sheet. Sales reports are primarily used to monitor overall sales growth by counting the number of patients who are added to or deleted from the system.



Sales Report (Blurred for information privacy)

The following analytical sections can be found in the report: Scores for compliance and sleep are shown in this part, which also ranks the scores for the previous 90 days. Additionally, since patients' registration began, it has provided an overall average sleep score for them. This score is a useful indicator of how effectively patients are utilizing their devices for therapy. The number of patients who have registered and are utilizing SMS, email, or both as a communication channel is listed in a table in this section. Additionally, it gives the statistics for the various states for each of the five methods, such as Confirmed or Disabled. This aids in determining the patients' preferred mode of system interaction.

Devices and masks: The statistics in this section describe the number of devices and masks used by patients. It aids in determining how frequently patients use particular masks and gadgets, and it aids the system in providing the right feedback and coaching to patients.

Demographics: For statistics purposes, a summary of the number of patients' genders registered in the system is given in this section.

Access technique: This section gives a quick count of the computers, smartphones, or a combination of both that patients are utilizing to log into the system. Notifications and alerts A total of the significant alerts and notifications that the system has generated are listed in this section. Examples include badges that aid in recognizing any, leak warning, AHI alert, use praise, and red flags regarding the patients' experience with the masks and devices.

Marketing statistics: This section presents straightforward data on the proportion of patients who consented to receive marketing promotions compared to those who did not. Patient login activities on websites Since the day of their registration, this area has recorded all patient login activity. To

determine if patients who are active on the website are more compliant than those who are not is the purpose of this study.

Growth and Dispersion in geography This section includes a summary of all new patients added in the US, Canada, Australia, and New Zealand, which demonstrates the expansion of patients in each of these nations.

Special requests

My work supervisor, who was a woman, sent me 36 requests while I was employed at ND GCS. I have been assigned 36 requests by my work supervisor, who was responsible for revising the results before sending them back to the concerned parties.

There are two categories into which the department's demands can be divided: For internal use only for examining reported issues or studying novel options, internal requests may be made. These queries could be straightforward, such asking for the number of patients, or complex, involving a variety of conditions and criteria.

Finding out, for instance, how many patients changed their mask type in the system more than once prior to July 2015 and how many did the same thing following that date. In order to make sure that patients are registering the correct type of mask in the system, this was done to assess the impact of some website updates.

Investigating why patients choose not to get email notifications by looking at the most recent notification they received prior to choosing not to receive them.

- Counting the number of patients who have used their devices continuously for 90 days after registering.
- Mask Model: A breakdown by number and percentage of the various mask models that users chose when registering.
- Mask Model Change: The likelihood that users will alter their mask models after registering.

Here, the following elements are taken into account:

1. The quantity of users who have switched masks. o
2. The quantity of times users switched masks.
3. The duration (relative to activation) within which users can switch masks.

For instance

A business sought the following patient data:

- The number of days over the previous two weeks that each patient utilized the gadget for more than 4 hours.
- Patient compliance rate during the last 90 days.
- Each patient's average daily usage during the previous 90 days.

- The total number of notifications sent during the last two weeks to any patient under their care.

Website dashboard

The capacity of web dashboards to present current interactive content effectively and securely is the fundamental justification for utilizing them. I was the reader can find summary information about clients on the sales account dashboard, including the name of the business, the account manager, and the total number of patients. It also offers a graph that displays the number of patients who have been added since the company was registered with the database.

My main responsibility was making ensuring the dashboard was updated each week with the latest sales figures. The information was obtained from the SQL database and uploaded to the dashboard website to do this. I was also in charge of designing a different dashboard that let users flip between business and location views while viewing the company's sales at a certain location. I also included a feature that enabled users to export data tables.

The customer success dashboard is designed to give the team an overview of the businesses' use of the u-sleep system and to ensure that they are getting the most out of it. This guarantees that the system is providing the patients with the finest therapy feedback possible for better therapy results. This is accomplished by assigning each organization a score based on standards established by the customer success team. The team contacts every company that receives a low score in the weekly update for a quick check-up and to offer any assistance that may be required. I was tasked with maintaining the dashboard's accuracy by locating the necessary data from uploading it to the dashboard website from the SQL server. I was also given the task of implementing numerous updates and changes to the dashboard, which necessitated changing the original SQL query to account for the modifications. To display the new features and aesthetics, I also made the necessary adjustments to the website's html and java script codes.

The reader could use these dashboards to make the best choices possible for enhancing patient therapy and care. I was able to perform analytical and statistical analysis when necessary, by utilizing the statistical information presented in the HINF 6030 class and the research techniques learned in the HINF 6020 - Research Methods course. I was able to comprehend the information flow and the life cycle of the data collected from the sleep apnea devices thanks to the knowledge I gained from the HINF 6110 - Health Information Systems and Issues course. Several examples of requests and how they impact a patient's therapy.

- A quick comparison of the database's numbers for the various types of masks patients are registering with the numbers provided by the sales departments revealed that some patients were not registering the correct type of mask on the website. Patients consequently received the incorrect feedback messages. This discovery led to modifications in the layout of the website that improved mask registration precision.

- Ensuring that ND GCs set up their patients' accounts correctly through the customer success dashboard's weekly updates ensured that all system notifications and feedbacks were successfully delivered to the patients, improving therapeutic outcomes.
- Analyzing the relationship between patient compliance and how frequently they visit the ND GCs website to demonstrate how using the website boosts patient compliance (percentage).

A problem I solved during my internship.

I received some fundamental training about the business, its products, and most importantly the database architecture I would be using during my first week of employment.

My supervisor did his best to instruct and explain a variety of topics pertaining to the organization's systems, operations, and the teams I would be working with. He also took a lot of time to explain the various fields and structures of the databases to me. At the time, I saw that the business lacked comprehensive database documentation.

No one was documenting this tacit knowledge anywhere, and everyone was depending on it. As a result, I had to consult my boss anytime I required information from any of the databases about a specific subject. In addition, if he didn't have the knowledge, I had to speak with a member of the software development team to find out what I needed to know. This experience made me aware of the company's extensive and intricate database's lack of documentation.

Therefore, I have suggested a straightforward approach to knowledge management that is based on the fundamental principles of knowledge mapping. There are both technical and non-technical elements to the suggested solution. All management and non-technical, associated steps are included in the non-technical portion.

In terms of the technical aspect, I choose to use Lucene, which is described as "a Java full-text search library that makes it simple to add search functionality to an application or website." By adding material to a full-text index, Different text formats, including HTML and raw text files, can be indexed by Lucene. Additionally, Lucene also allows web-based searches of all the material that has been indexed.

The steps included in the suggested solution are as follows:

1. Determine the business issue. In this instance, the problem is a lack of thorough documentation for the current databases.
2. Present the business advantages that the organization will realize from solving this challenge to the senior management to obtain the necessary approval. When attempting to execute the policy and taking some team members away from their work, this is a crucial step.
3. Form a knowledge management team that will research the issue, come up with a solution, and put it into action. Each team that is impacted by the issue should send a representative to this team.
4. The team should begin the problem-solving procedure by going over the current documentation and figuring out the information that is lacking.

5. Identify the database knowledge expert.
6. Based on the availability of the individual who possesses this knowledge, choose the optimal way for transforming the tacit knowledge to explicit knowledge. A personal interview, online questionnaires, or just requesting staff to turn in any documents they have written but have never shared with other employees could all be used to collect data.
7. All of the documentation and data should be documented and digitalized in Lucene-compatible formats.
8. Use Lucene to index and create searchable databases out of the digital files.
9. Using Apache Lucene [6], provide a web interface for simple search and access.
10. The team may gradually improve the knowledge-based system by seeking input from employees on the services they receive.

The following justifies the requirement for proper documentation:

- Liability in law. When dealing with legal difficulties, appropriate paperwork is crucial because the business deals with a variety of medical products.
- Shorten the time required for new hires to complete their training, which would boost output.
- Increasing accuracy and productivity at work.
- Lessen erroneous information.

Recommendations

1. Establish a procedure for database change notifications so that each department using the same database is informed if any of the database's fields or structures change.
2. Since there is just one data analyst, hire another one.
3. Hire another data analyst because there is now just one in the organization. Prepare a welcome package with all of the needed reading materials to provide new employees with a thorough overview of the company's operations and demands.

Conclusion

Being a part of a very successful health software solution company, such as ND Global Consultancy Services, provided me with a unique perspective on the significance of health information in the workplace. Working as a data analyst has been a highly instructive experience for me. Furthermore, working for the organization demonstrated the breadth of responsibilities that I could perform as a health informatician. Using several of my technological skills, such as web programming and SQL, in conjunction with the fact that I was able to use many of my technical

abilities, such as web development and SQL, in conjunction with my statistical understanding to complete the tasks allocated to me demonstrated that my health informatics skills and knowledge could be implemented in the workplace. The most fulfilling aspect of working at ND Global Consultancy Services was knowing that all of my efforts went towards treating patients.