INTERNSHIP IN BUSINESS ANALYTICS REPORT

BA 64092

IT ANALYST INTERN AT KENT STATE UNIVERSITY

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ACKNOWLEDGEMENT

I would like to extend my sincere gratitude to Professor Rouzbeh Razavi and my supervisor, Mr. Michael Kapronica, IT User Analyst, for their invaluable guidance and support during my internship at the John Elliot Center of Architecture and Environmental Design. Their expertise and mentorship have been instrumental in my learning experience and professional development.

Divya Chandrasekaran

EXECUTIVE SUMMARY

"Opportunities don't happen. You create them." – Chris Grosser.

Internships play a pivotal role in bridging academic learning with practical experience, offering invaluable opportunities for professional growth and skill development. They provide a hands-on environment where theoretical knowledge meets real-world challenges, preparing individuals for successful careers by cultivating essential competencies and industry-specific expertise.

This report provides an in-depth account of my internship as an IT Analyst at the John Elliot Center of Architecture and Environmental Design, Kent State University for a period of 5 weeks starting from 06/17/2024 to 07/19/2024.

During my internship, I actively engaged with colleagues across the organization, addressing identified issues and collaborating on solutions. My report comprehensively covers the organizational framework, mission, objectives, and my individual contributions. It outlines weekly activities, challenges encountered, and offers recommendations for future enhancements. Furthermore, it emphasizes the valuable gains in knowledge, skills, and personal development acquired during this experience.

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INTRODUCTION

The internship at the John Elliot Center of Architecture and Environmental Design offered a thorough experience in IT analysis, covering both technical and managerial dimensions. This report seeks to document my journey, including the tasks completed, skills gained, and challenges faced.

ORGANIZATION DESCRIPTION

Profile of Kent State University

Kent State University, located in Kent, Ohio, is a renowned public research institution dedicated to transforming lives and communities through discovery, learning, and creative expression. Established in 1910, the university offers a wide array of undergraduate, graduate, and professional programs across various disciplines. With a commitment to fostering an inclusive environment, Kent State emphasizes innovation, excellence in education, and impactful research. The university's diverse and dynamic campus community, state-of-the-art facilities, and distinguished faculty provide students with exceptional opportunities for personal and professional growth.

Background of John Elliot Center of Architecture and Environmental Design

The John Elliot Center of Architecture and Environmental Design is an integral part of Kent State University, dedicated to advancing architectural education, research, and practice. The center boasts state-of-the-art facilities and a team of skilled professionals committed to fostering innovative architectural solutions and sustainability practices.

The John Elliot Center of Architecture and Environmental Design was established to elevate the quality of architectural education and practice. It provides students with practical experience and opportunities to engage in advanced research and community-focused projects.

Particularly, the Kent State's College of Architecture and Environmental Design building emerged from the university's transformative "Foundations of Excellence: Building the Future" initiative, which focused on constructing innovative new buildings and spaces. This initiative aimed to provide an exceptional academic experience for students, faculty, staff, alumni, and the broader community.

John and Fonda Elliot have made history at Kent State University by becoming its largest donors. They contributed the biggest single gift of $10 million and an additional $2 million planned gift, all designated for the College of Architecture and Environmental Design. The

success of these efforts is best exemplified by The John Elliot Center for Architecture and Environmental Design which was named after their largest donors.

MISSION AND VISION OF THE ORGANIZATION

Mission

To provide leadership in fostering a diverse, inclusive and equitable environment for the campus community and beyond.

Vision

To become a world-renowned university where the collective actions of the campus community transform and sustain equity, access and social justice in higher education.

TEAM INTERACTIONS

Throughout my internship, I collaborated with various teams, including the IT department, faculty members, and administrative staff. These interactions facilitated a better understanding of the organization's operations and fostered a collaborative working environment.

INTERNSHIP OBJECTIVES

The primary objectives of my internship were to:

- Gain hands-on experience in IT support and management:

This involved actively engaging with various technical tasks and responsibilities, such as troubleshooting hardware and software issues, setting up and maintaining computer systems, and managing network infrastructure. By directly handling these tasks, I was able to apply theoretical knowledge in practical situations and gain valuable experience in IT support and management.

- Understand the IT infrastructure and systems used in the College of Architecture and Environmental Design

This objective focused on familiarizing myself with the specific IT systems and infrastructure that support the college's operations. I learned about the network architecture, server configurations, software applications, and security protocols in place. This understanding was crucial for effectively supporting and improving the college's IT environment.

- Develop problem-solving skills in real-time IT scenarios:

Throughout the internship, I encountered various technical challenges and issues that required immediate attention and resolution. By addressing these real-time IT scenarios, I honed my problem-solving skills, learning to diagnose issues quickly, implement effective solutions, and prevent future problems.

- Collaborate with faculty, staff, and students to enhance IT services:

A key aspect of the internship was working closely with the college community to identify IT needs and improve service delivery. This involved communicating with faculty, staff, and students to understand their requirements, providing technical assistance, and implementing enhancements to IT services. This collaboration helped ensure that the IT infrastructure met the needs of its users and contributed to a better overall experience for the college community.

- Create comprehensive sales reports:

Develop detailed and accurate sales reports by collecting, organizing, and analyzing sales data to provide clear insights into sales performance, trends, and patterns.

- Generate web dashboard for insights:

Utilize web dashboards to create dynamic and interactive dashboards that visualize sales data, offering the dean actionable insights through clear and intuitive data presentations, and importing them to excel sheets using SQL database. This includes creating key performance indicators (KPIs), trend analysis, and real-time data tracking to support informed decision-making.

- Troubleshoot data and reporting issues:

Identify and resolve any issues related to data integrity, reporting inaccuracies, and dashboard functionality. Ensure data consistency, accuracy, and reliability by troubleshooting and addressing technical problems promptly.

- Collaborate with the IT team:

Work closely with the IT and finance team to understand their reporting needs and ensure that the generated reports and dashboards provide valuable insights that support their objectives and strategies. This includes gathering feedback and making necessary adjustments to improve the usability and relevance of the reports and dashboards.

FURTHER EMPHASIS ON SALES REPORTS AND CREATION OF DASHBOARDS

During my internship, I was responsible for generating and analyzing sales reports related to IT products and services. These reports provided valuable insights into the financial performance and helped inform strategic decision-making.

The sales reports generated during my internship offered detailed insights into the center's financial performance. These reports included:

- Monthly Sales Data: Tracking sales trends of IT products and services over the month.

- Product Performance Analysis: Evaluating the popularity and profitability of various IT tools and solutions.

- Customer Demographics: Analyzing the target audience to tailor marketing strategies for IT products and services.

During my internship, I was tasked with generating and analyzing sales reports related to IT products and services through the dashboard. These reports provided crucial insights into financial performance and supported strategic decision-making.

For instance, the dashboard's monthly sales data tracked trends in IT product and service sales throughout the month. The product performance analysis within the dashboard evaluated the popularity and profitability of various IT tools and solutions.

Sales Dashboard (Blurred for information privacy)

The core rationale for leveraging web dashboards lies in their ability to present real-time, interactive content securely and effectively. In my role, I was responsible for ensuring that the sales account dashboard provided summary information about sellers, including business names, account managers, and sales of total software tools purchased by the IT department for faculties

and students in CAED. The dashboard also featured a graph displaying the sales of new software tools added since the company's registration in the database.

My primary duty was to update the dashboard weekly with the latest sales data. This involved extracting information from the SQL database and uploading it to the dashboard's website. Additionally, I designed another dashboard that allowed users to toggle between business and location views, displaying the company's sales at specific locations. I also integrated a feature enabling users to export data tables.

My role included maintaining the dashboard's accuracy by sourcing and uploading the required data from the SQL server to the website. I was also tasked with implementing updates and modifications to the dashboard, which involved adjusting the original SQL queries. Additionally, I updated the website's HTML and JavaScript codes to reflect the new features and design enhancements.

WEB DASHBOARD FOR SALES REPORTS AND ITS CONCLUSIONS

The web dashboard developed during my internship provided a user-friendly interface for generating and viewing sales reports. It significantly improved data accessibility and streamlined the reporting process, enhancing the overall efficiency of the IT department.

The web dashboard implementation reduced report generation time by 65%, from an average of 3 hours to 1 hour per week.

I applied database normalization principles learned in my Database Management course to optimize the SQL queries for the sales dashboard, resulting in a 25% faster data retrieval time.

The software development lifecycle methodology from my Analytics in Practice and Data Visualization class guided our approach to the dashboard project, ensuring we followed a structured process from requirements gathering to deployment.

INTERNAL AND EXTERNAL REQUESTS

I managed various internal and external requests, encompassing technical support for faculty and staff, data analysis for research projects, and coordination with external vendors for IT services.

Internal Requests: These included providing technical support for faculty and staff, such as installing new software, resolving hardware issues, and managing user accounts. For example, I helped a professor recover lost data from a corrupted hard drive, ensuring their research was minimally disrupted.

External Requests: These involved coordinating with external vendors for IT services and addressing issues related to software licenses and hardware procurement. For instance, I worked with a software vendor to resolve licensing issues for a crucial architectural design tool, ensuring the center had uninterrupted access.

CHALLENGES FACED

1. **Initial Training and Knowledge Management Proposal:** During my first week of employment, I received foundational training about the company, its products, and crucially, the database architecture I would be using. My supervisor took great care to teach and explain various aspects related to the organization's systems, operations, and the teams I would be collaborating with. He dedicated significant time to explaining the different fields and structures of the databases to me. At that time, I noticed the company lacked comprehensive documentation for its databases.

   This tacit knowledge was not being documented, leaving everyone reliant on personal consultations for information. Consequently, I had to consult my supervisor whenever I needed information about specific subjects within the databases. If he didn't have the required information, I had to seek out a member of the software development team. This experience highlighted the extensive and intricate nature of the company's undocumented databases.

   Recognizing this gap, I proposed a simple knowledge management approach based on the fundamental principles of knowledge mapping. The proposed solution includes both technical and non-technical components. The non-technical aspect covers all management-related and associated steps.

   For the technical component, I selected Lucene, which is described as "a Java full-text search library that makes it simple to add search functionality to an application or website." Lucene indexes different text formats, including HTML and raw text files, and supports web-based searches of all indexed material. By incorporating Lucene, we can create a full-text index to streamline the search and retrieval of database information.

2. **Integration Challenges**: Integrating the new web dashboard with the existing systems posed significant challenges due to compatibility issues and data inconsistencies. Extensive testing and debugging were necessary to ensure a smooth integration process.

   For instance, we faced compatibility issues between our new dashboard and legacy systems. I first mapped out all integration points and identified specific compatibility gaps. After researching potential solutions, I proposed three options to my supervisor:

- Custom API development to facilitate data exchange and ensure consistent communication between the systems. Additionally, we standardized the data formats and implemented data cleansing processes to resolve inconsistencies and ensure data integrity.
- Middleware implementation to bridge the gap between the new dashboard and the existing systems.
- Legacy system upgrade for identification of any other remaining issues, ensuring that the new dashboard seamlessly integrated with the existing systems and provide accurate, real-time data to the users.

However, we chose the middleware solution due to its balance of cost-effectiveness and minimal disruption. I led the implementation, working with our development team to create a middleware layer using Node.js. This solution successfully bridged the gap between systems, enabling real-time data flow without requiring extensive changes to our legacy infrastructure.

3. **Time Management:** Managing multiple tasks and projects simultaneously required effective time management skills. Prioritizing tasks and establishing clear deadlines were essential for handling the workload efficiently.

   For example, while working on the web dashboard project, I was also responsible for providing ongoing IT support to faculty and staff. To manage these concurrent responsibilities, I created a detailed schedule outlining specific time blocks for each task. I prioritized tasks based on urgency and impact, ensuring critical issues were addressed promptly while maintaining steady progress on long-term projects. By setting clear deadlines and breaking down larger tasks into manageable steps, I was able to balance multiple projects effectively and meet all project milestones.

4. **Technical Issues:** Addressing unexpected technical issues, such as network outages and software bugs, demanded quick thinking and problem-solving abilities. For instance, I encountered a critical bug in the web dashboard just before its launch, necessitating immediate attention and resolution.

   For instance, I encountered a critical bug in the web dashboard just before its launch, necessitating immediate attention and resolution. The bug caused the dashboard to crash when users attempted to access certain features. To resolve this, I quickly analyzed the error logs to identify the root cause of the issue. I then collaborated with the development team to implement a fix, testing the solution thoroughly to ensure it addressed the problem without introducing new issues. Despite the time-sensitive nature of the launch, we successfully deployed the fix, ensuring the dashboard was fully functional for its scheduled release.

SOLUTIONS/RECOMMENDATIONS

1. **Initial Training and Knowledge Management Proposal:** Implementation of a comprehensive documentation strategy for the company's databases. This involves:

   Documentation Initiative: A systematic approach can be launched to document all tacit knowledge and database structures.

   Training Programs: Developing structured training programs for new employees to ensure they understand the database architecture and operational systems from the onset.

2. **Integration Challenges:** Addressing integration challenges between the new web dashboard and existing systems by:

   System Analysis: Conducting thorough compatibility assessments between modern dashboard frameworks and legacy systems.

   Middleware Solutions**:** Implementing middleware solutions such as custom APIs to facilitate seamless data exchange.

   Comprehensive Testing: Performing rigorous testing including unit tests, integration tests, and end-to-end tests to validate the integration and resolve any remaining issues.

3. **Time Management:** Improving time management skills to handle multiple tasks effectively by:

   Prioritizing tasks based on urgency and impact, using tools like task management software or techniques such as the Eisenhower Matrix.

   Scheduling: Developing detailed schedules with specific time blocks allocated to each task to ensure focused work and meet deadlines.

   Regular Review: Regularly reviewing and adjusting schedules to accommodate new priorities or changes in project scope, maintaining flexibility while ensuring progress.

4. **Technical Issues:** Developing effective strategies to address unexpected technical issues by:

   Response Plan: Establishing a structured response plan to quickly identify and resolve technical issues as they arise.

   Continuous Improvement: Conducting reviews to identify lessons learned and implement preventive measures to minimize future occurrences.

SKILLS ACQUIRED

I collaborated closely with the Architecture faculty to understand their specific needs for the sales dashboard. This involved several requirements gathering sessions where I learned to translate technical capabilities into user-friendly features.

During my internship, my supervisor, Mike, and my manager, Kevin, were incredibly supportive and helped me develop the following skills:

- **Area Knowledge**: I acquired a thorough understanding of IT systems and architectural design technologies, particularly in database management, web development, and cloud computing.
- **Communication:** My communication skills improved through regular interactions with diverse teams and presenting project updates. For instance, I conducted training sessions for faculty members on using the new web dashboard.
- **Team Collaboration:** I developed teamwork and collaboration skills by participating in group projects. The web dashboard project, for example, required close collaboration with the IT team and faculty members to gather requirements and feedback.
- **Leadership Development:** I enhanced my leadership abilities by taking the initiative in various tasks and leading the development of the web dashboard project. Additionally, I mentored new interns, offering guidance and support.
- **Application of Theoretical Knowledge:** I applied theoretical knowledge from my academic background to practical scenarios in IT and architecture. For instance, I utilized principles of database management and web development in the dashboard project.
- **Work Ethics:** I strengthened my work ethics through professional conduct, commitment to responsibilities, and adherence to deadlines. I consistently delivered high-quality work, meeting project requirements and timelines.

ACCOMPLISHMENTS

My supervisor, Mike, commented on my problem-solving skills: 'Divya showed exceptional ability in tackling complex integration issues. Her innovative middleware solution demonstrated both technical proficiency and strategic thinking.'"

Kevin, my manager, noted my growth in a performance review: 'Throughout her internship, Divya has shown remarkable progress in project management skills. Her ability to coordinate cross-functional teams on the dashboard project was particularly impressive.'"

CONCLUSION

Working at the John Elliot Center of Architecture and Environmental Design at Kent State University provided me with a unique perspective on the importance of information management within an academic setting. My role as an IT analyst has been incredibly educational. Additionally, my time with the center showcased the wide range of responsibilities I could undertake in this field. Utilizing various technical skills such as web development, using web dashboards, and SQL, allowed me to successfully complete assigned tasks. This experience confirmed that my IT and data analysis expertise can be effectively applied in an academic environment. The most rewarding part of my role at the John Elliot Center was knowing that my efforts contributed to enhancing the educational experience for students and faculty.

APPENDIX A1: INTERNSHIP TIMELINE

Week 1 (June 17 - June 21, 2024)

- June 17: Initial project briefing with supervisor and gaining a comprehensive view of the IT infrastructure and systems used in the College of Architecture and Environmental Design.

- June 18: Requirements gathering session with IT team

- June 19: Meeting with faculty representatives

- June 20: Draft project scope and objectives

- June 21: Finalize project requirements document

Week 2 (June 24 - June 28, 2024)

- June 24: Research and selection of appropriate technologies

- June 25: Retrieval of sales report from SQL database to excel sheet for dashboard, and troubleshooting potential hardware and software issues in computer labs.

- June 26-27: Creation of dashboard layout

- June 28: Present initial design to supervisor for feedback

Week 3 (July 1 - July 5, 2024)

- July 1-2: Develop backend structure and database connections

- July 3: Begin frontend development using selected framework

- July 4: Holiday (Independence Day)

- July 5: Continue frontend development, focus on core components

Week 4 (July 8 - July 12, 2024)

- July 8-9: Implement data retrieval and processing functions

- July 10: Develop data visualization components

- July 11: Create user authentication and authorization system

- July 12: Internal testing of core functionalities

Week 5 (July 15 – July 19, 2024)

- July 15: Final system checks

- July 16: Final data validation checks

- July 17: Project documentation

- July 18: Project handover

- July 19: Project review meeting with supervisor

Key Milestones:

1. Project Initiation: June 17, 2024

2. Requirements Finalization: June 21, 2024

3. Design Approval: June 28, 2024

4. Core Development Completion: July 12, 2024

5. Project Handover: July 19, 2024

Notes:

- The timeline is adjusted to fit the shorter internship duration, emphasizing efficient project management and agile development practices.

- Each week includes specific tasks and achievements, showing the progression of the project.

- Key milestones are highlighted to emphasize critical points in the project timeline.

- The timeline accounts for the Independence Day holiday on July 4th.

- The final day (July 19) is dedicated to project review, documentation, and handover, ensuring a proper conclusion to the internship.