**ASSIGNMENT 2 FRONT SHEET**

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| **Qualification** | **BTEC Level 5 HND Diploma in Computing** | | |
| **Unit number and title** | Unit 06: Managing a Successful Computing Project | | |
| **Submission date** | 25th,October 2023 | **Date Received 1st submission** |  |
| **Re-submission Date** |  | **Date Received 2nd submission** |  |
| **Student Name** | Son Rattana | **Student ID** | GCC210013 |
| **Class** | GCC1001 | **Assessor name** | Tran Thi Kim Khanh |
| **Student declaration**  I certify that the assignment submission is entirely my own work and I fully understand the consequences of plagiarism. I understand that making a false declaration is a form of malpractice. | | | |
|  |  | **Student’s signature** |  |

**Grading grid**

|  |  |  |  |  |  |
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| P5 | P6 | P7 | M3 | M4 | D2 |
|  |  |  |  |  |  |

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| --- | --- | --- |
| **❒ Summative Feedback: ❒ Resubmission Feedback:** | | |
| **Grade:** | **Assessor Signature:** | **Date:** |
| **IV Signature:** | | |

Unit 06: Planning a Computing Project

Assignment Brief 2

|  |  |
| --- | --- |
| Unit Number and Title | Unit 06: Planning a Computing Project |
| Academic Year | 2023 - 2024 |
| Unit Tutor | Nguyen The Lam Tung |
| Assignment Title | Plan and conduct a small scale research activity |
| Issue Date | 01 September 2023 |
| Submission Date | 01 August 2023 |
| Submission Format | |
| |  |  | | --- | --- | | *Format* | The submission is in the form of an individual written report that shows how you have manage the project. This should be written in a concise, formal business style using single spacing and font size 12. You are required to make use of headings, paragraphs and subsections as appropriate, and all work must be supported with research and referenced using the Harvard referencing system. Please also provide a bibliography using the Harvard referencing system. | | *Submission* | Students are compulsory to submit the assignment in due date and in a way requested by the Tutors. The form of submission will be a soft copy in PDF posted on corresponding course of <http://cms.greenwich.edu.vn/> | | *Note* | The Assignment must be your own work, and not copied by or from another student or from books etc. If you use ideas, quotes or data (such as diagrams) from books, journals or other sources, you must reference your sources, using the Harvard style. Make sure that you know how to reference properly, and that understand the guidelines on plagiarism. *If you do not, you definitely get fail*. | | |
| Unit Learning Outcomes | |
| LO3: Present the project and communicate appropriate recommendations based on meaningful conclusions drawn from the evidence findings and/or analysis.  LO4: Reflect on the value gained from conducting the project and its usefulness to support sustainable organisational performance. | |
| Transferable skills and competencies developed | |
| The assignment offers students the chance to explore various aspects of big data from the perspective of computing professionals or data scientists. It also encourages investigations into the applications, benefits, limitations, and responsibilities associated with big data and provides solutions to the problems it aims to solve. | |
| Vocational scenario | |
| Introduction to theme  Application of Big Data and IoT/AI to potential future developments  Over the past decade, the term "big data" has gained increasing popularity. Initially, it referred to data generated in massive volumes, such as internet search queries, weather sensor data, and social media information. Nowadays, big data represents large amounts of information from diverse sources that cannot be processed conventionally or without computational intervention. Big data can be stored in structured, unstructured, or semi-structured formats. Many systems and organizations generate massive quantities of big data on a daily basis, some of which are publicly available for analysis. Consequently, machine learning systems have been developed to sift through this data, rapidly identify patterns, and solve problems. This has led to the emergence of data science analytics as a discipline to design, build, and test machine learning and artificial intelligence systems. Leveraging big data requires a broad range of knowledge and skills, creating new opportunities for previously inaccessible organizations. It allows businesses to gain a comprehensive understanding of global trends, enabling more accurate and up-to-date decision-making. Big data can help identify potential business risks earlier and minimize costs without compromising innovation. However, the rapid application of big data raises concerns about security, the ethical storage of personal data from multiple sources, and the sustainability of energy requirements in large data warehouses.  Task  You have done the research and have the answer for the company problem in the assignment 1. It’s time to do a presentation of the results of your research in front of the board of directors. Results should be analysed and appropriate recommendation should be drawn from that. | |
| Assignment activity and guidance | |
| You need to write a brief report to QA department to reflect the whole project process. The report should include:  - Logbooks, lessons learnt, reflection of project outcomes and project process  - Critical evaluation of the selection of appropriate research tools and techniques for accuracy and authenticity  - Critical evaluation of project management plan and process applied on the project | |
| **Recommended Resources**   1. **Article: 6V’s of Big Data** [**https://www.geeksforgeeks.org/5-vs-of-big-data/**](https://www.geeksforgeeks.org/5-vs-of-big-data/) 2. **Article: Business Ethics and Big Data** [**https://www.ibe.org.uk/resource/business-ethics-and-big-data.html**](https://www.ibe.org.uk/resource/business-ethics-and-big-data.html) 3. **Article: What is Big Data Security? Challenges & Solutions** [**https://www.datamation.com/big-data/big-data-security/**](https://www.datamation.com/big-data/big-data-security/) 4. **Article: What is Big Data?** [**https://www.oracle.com/uk/big-data/what-is-big-data/**](https://www.oracle.com/uk/big-data/what-is-big-data/) 5. **Magazine: Information Sciences** [**https://www.sciencedirect.com/journal/information-sciences**](https://www.sciencedirect.com/journal/information-sciences) 6. **Magazine: Big Data Research** [**https://www.sciencedirect.com/journal/big-data-research**](https://www.sciencedirect.com/journal/big-data-research) 7. **Report: Big Data & Investment Management: The Potential to Quantify Traditionally Qualitative Factors** [**https://tinyurl.com/yff4uenz**](https://tinyurl.com/yff4uenz) 8. **Webinar: Big Data Sources & Analysis Webinar** [**https://tinyurl.com/2p85d7mb**](https://tinyurl.com/2p85d7mb) 9. **Video: Big Data In 5 Minutes|What Is Big Data?|Introduction To Big Data|Big Data Explained** [**https://www.youtube.com/watch?v=bAyrObl7TYE**](https://www.youtube.com/watch?v=bAyrObl7TYE) 10. **Video: Challenges of Securing Big Data** [**https://www.youtube.com/watch?v=3xIuIcPzMVs**](https://www.youtube.com/watch?v=3xIuIcPzMVs) 11. **Video: The Importance of Data Ethics** [**https://www.youtube.com/watch?v=gLHMhCtxEYE**](https://www.youtube.com/watch?v=gLHMhCtxEYE) 12. **Book: A Bite-Sized Guide to Visualising Data** [**https://tinyurl.com/38d6thsk**](https://tinyurl.com/38d6thsk) 13. **Book: Business Intelligence Strategy and Big Data Analytics** [**https://www.sciencedirect.com/book/9780128091982/business-intelligence-strategy-and-big-data-analytics**](https://www.sciencedirect.com/book/9780128091982/business-intelligence-strategy-and-big-data-analytics) 14. **Book: Principles and Practice of Big Data Preparing, Sharing, and Analysing Complex Information** [**https://www.sciencedirect.com/book/9780128156094/principles-and-practice-of-big-data**](https://www.sciencedirect.com/book/9780128156094/principles-and-practice-of-big-data) 15. **Book: Systems Simulation and Modelling for Cloud Computing and Big Data Applications** [**https://tinyurl.com/2s3wkehn**](https://tinyurl.com/2s3wkehn) 16. **Journal: Big Data in Construction: Current Applications and Future Opportunities** [**https://www.mdpi.com/2504-2289/6/1/18**](https://www.mdpi.com/2504-2289/6/1/18) 17. **Journal: Big Data with Cloud Computing: Discussions and Challenges** [**https://www.sciopen.com/arti cle/pdf/10.26599/BDMA.2021.9020016.pdf**](https://www.sciopen.com/arti%20cle/pdf/10.26599/BDMA.2021.9020016.pdf) 18. **Journal: Mobile Big Data Solutions for a Better Future** [**https://tinyurl.com/hpk2zvvw**](https://tinyurl.com/hpk2zvvw) 19. **Journal: The social implications, risks, challenges and opportunities of big data** [**https://tinyurl.com/yw593svk**](https://tinyurl.com/yw593svk) 20. **Journal: Policy discussion – Challenges of big data and analytics driven demand-side management** [**https://tinyurl.com/kyb3j6x7**](https://tinyurl.com/kyb3j6x7) 21. **Journal: Explore Big Data Analytics Applications and Opportunities: A Review** [**https://tinyurl.com/597j8nd3**](https://tinyurl.com/597j8nd3) 22. **Journal: What is Big Data?** [**https://www.oracle.com/cl/a/ocom/docs/what-is-big-data-ebook- 4421383.pdf**](https://www.oracle.com/cl/a/ocom/docs/what-is-big-data-ebook-%204421383.pdf) 23. **Journal: Towards felicitous decision making: An overview on challenges and trends of Big Data** [**https://www.sciencedirect.com/science/article/abs/pii/S002 0025516304868**](https://www.sciencedirect.com/science/article/abs/pii/S002%200025516304868) 24. **Journal: Critical analysis of Big Data challenges and analytical methods** [**https://www.sciencedirect.com/science/article/pii/S014829631630488X**](https://www.sciencedirect.com/science/article/pii/S014829631630488X) 25. **Journal: Big Data Security Issues and Challenges** [**https://tinyurl.com/wabx7zya**](https://tinyurl.com/wabx7zya) 26. **Journal: IoT Big Data Security and Privacy Versus Innovation** [**https://ieeexplore.ieee.org/abstract/document/8643026**](https://ieeexplore.ieee.org/abstract/document/8643026) 27. **Journal: Big Data Security and Privacy Protection** [**https://www.atlantis-press.com/proceedings/icmcs-18/25904185**](https://www.atlantis-press.com/proceedings/icmcs-18/25904185) 28. **Journal: Big data analytics in Cloud computing: an overview** [**https://journalofcloudcomputing.springeropen.com/articles/10.1186/s13677-022-00301-w**](https://journalofcloudcomputing.springeropen.com/articles/10.1186/s13677-022-00301-w)   **Please note that the resources listed are examples for you to use as a starting point in your research – the list is not definitive.** | |

**Learning Outcomes and Assessment Criteria**

|  |  |  |
| --- | --- | --- |
| Pass | Merit | Distinction |
| **LO3** Present the project and communicate appropriate recommendations based on meaningful conclusions drawn from the evidence findings and/or analysis | | **LO3 & LO4**  **D2** Critically evaluate and reflect on the project outcomes, the decision making process and of the initial project management plan to support justification of recommendations and learning during the project. |
| **P5** Analyse research and data using appropriate tools and techniques.  **P6** Communicate appropriate recommendations as a result of research and data analysis to draw valid and meaningful conclusions. | **M3** Evaluate the selection of appropriate tools and techniques for accuracy and authenticity to support and justify recommendations. |
| **LO4** Reflect on the value gained from conducting the project and its usefulness to support sustainable organisational performance | |
| **P7** Reflect on the value of undertaking the research to meet stated objectives and own learning and performance. | **M4** Evaluate the value of the project management process and use of quality research to meet stated objectives and support own learning and performance. |

Table of Contents

[Part 1: Present the project and communicate appropriate recommendations based on meaningful conclusions drawn from the evidence findings and/or analysis 8](#_Toc149145601)

[I. Analyse research and data using appropriate tools and techniques. 8](#_Toc149145602)

[1. Introduction 8](#_Toc149145603)

[2. Qualitative research 10](#_Toc149145604)

[3. Quantitative research 12](#_Toc149145605)

[II. Communicate appropriate recommendations as a result of research and data analysis to draw valid and meaningful conclusions. 15](#_Toc149145606)

[1. Qualitative Research Results 15](#_Toc149145607)

[2. Quantitative Research Results 21](#_Toc149145608)

[3. List of features for the proposed application 24](#_Toc149145609)

[4. The advantages and disadvantages of the proposed application 24](#_Toc149145610)

[Part 2: Reflect on the value gained from conducting the project and its usefulness to support sustainable organisational performance 26](#_Toc149145611)

[I. Reflect on the value of undertaking the research to meet stated objectives and own learning and performance. 26](#_Toc149145612)

[2. Logbook 28](#_Toc149145613)

[3. Performance 30](#_Toc149145614)

[References 32](#_Toc149145615)

**ASSIGNMENT 2**

# Part 1: Present the project and communicate appropriate recommendations based on meaningful conclusions drawn from the evidence findings and/or analysis

## Analyse research and data using appropriate tools and techniques.

### Introduction

#### Research Analysis

Research analysis is the process of evaluating and interpreting data collected for a research project. It can involve different methods and techniques depending on the type and purpose of the data. Research analysis can help answer research questions, test hypotheses, or generate new knowledge. Research analysis is a critical part of the research process, which helps researchers to find patterns, relationships and insights that assist them in making informed decisions on issues such as science, societal sciences, business or more.

#### Analysis Tool

Google Forms is a free online software that allows users to create questionnaires, quizzes and. This is in addition to Google's Web Based Apps, such as Google Docs, Google Sheets, Google Slides and more. It is a flexible tool that can be used for a variety of applications to collect RSVPs for an event or to create a pop quiz.

(Demarest, 2021)

* **Advantages of Google Forms:**
* Easy to use interface makes creating and deploying forms easy. Any user with average computer knowledge can create forms and deploy it.
* The wizard is simple to use. A What-You-See-Is-What-You-Get interface makes it easy to drag and drop form elements and organizing them based on actions or events.
* The forms are integrated with Google Sheets which gives a spreadsheet view of the data collected, making it easy to analyze.
* The type of data that can be inserted into a field can be customized based on regular expressions for advanced users. This gives the ability to customize the form even further.
* **Disadvantages of Google Forms:**
* The design customization for the form is very limited. If the users could change the design to make it look for formal, then it can be used for more purposes.
* If the forms provide APIs for the data, then the developers will be able to collect and analyze the data even faster.
* Sometimes developers tend to like more dynamic interfaces. For example, instead of the WYSIWYG interface, if there was a way to build these forms themselves using HTML or other languages, then it gives users more control over their forms.

(Rahman, 2016)

### Qualitative research

Qualitative research is a type of research that aims to gather and analyze non-numerical data (e.g., text, video, or audio) to understand concepts, opinions, or experiences of individuals or groups. Qualitative research can be used to explore complex phenomena, generate new ideas, or test hypotheses in a natural setting.

**Question 1:**

*A close-up of a sign

Description automatically generated*

Description: This question allows customers to give their personal opinion on reducing water pollution in shrimp ponds through disinfection.

**Question 2:**

*A close-up of a sign

Description automatically generated*

Description: This question allows customers to give their personal opinion on setting expectations about the function of disinfecting the shrimp farming environment.

**Question 3:**

*A close-up of a person's face

Description automatically generated*

Description: This question allows the customer to give their personal opinion on what element of the project they care about most.

**Question 4:**

*A close-up of a number of shrimp

Description automatically generated*

Description: This question allows customers to give their personal opinion on limiting the number of shrimp deaths using oxygen aeration.

**Question 5:**

*A close-up of a computer screen

Description automatically generated*Description: This question allows customers to give their personal opinion about whether the system has the function of scanning radar and counting the number of dead shrimp in shrimp farming.

### Quantitative research

Quantitative research is a type of research that aims to collect and analyze numerical data (e.g., numbers, percentages, or statistics) to test hypotheses, make predictions, or generalize findings to larger populations. Quantitative research can be used to measure or quantify phenomena, such as the relationship between variables, the difference between groups, or the effect of an intervention.

**Question 1:**

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Description: This question allows customers to give their personal assessment of the water disinfection process in the project.

**Question 2:**

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Description: This question allows customers to make a personal assessment of how shrimp growth rates change compared to traditional shrimp farming.

**Question 3:**

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Description: This question allows customers to make personal assessments about the change in the number of standard shrimp between traditional shrimp farming and technology-based shrimp farming.

**Question 4:**

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Description: This question allows customers to make personal assessments about whether it would be good or bad to have a temperature scanning radar system to identify shrimp without human intervention or supervision.

**Question 5:**

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Description: This question allows customers to make a personal assessment of the pH balance function in the water environment of the automatic shrimp farming system.

## Communicate appropriate recommendations as a result of research and data analysis to draw valid and meaningful conclusions.

### Qualitative Research Results

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Most individuals believe that this feature is effective and that it brings maximum precision to the shrimp farming industry, ensuring that shrimp do not get sick and the water environment is preserved.

However, there is still a consideration for this feature, disinfection needs to be done carefully and with appropriate dosage, because some disinfectants can also affect shrimp or beneficial microorganisms in the water. After receiving this attention, we have carried out a precise assessment of this function, the dosage must be of exact standards and the sterilization process is always carefully monitored.

A screenshot of a computer

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A screenshot of a computer screen

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Most people are hopeful about environmental protection and disease reduction for shrimp. Besides, productivity, sustainability and cost are also equally expected. We need to learn and improve on feature expectations perfectly and carefully.

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Many people consider water environment quality to be the most important factor. Because it includes many other small factors such as pH, salinity, and oxygen that determine the shrimp's living environment. However, there are many people who think that technology and automation are the most important factors. Because they believe that sensors will analyze and process data quickly and predict the near future of shrimp. We carefully considered the two elements of this feature and developed it perfectly

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Many people believe that the Oxygen aeration method is useful in shrimp farming. because they think that oxygen aeration will ensure shrimp health and increase DO levels in the water. We will research and build an aquarium.

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Most people think that this function will be useful for the system. Because they think that radar technology will bring high accuracy and even in turbid water environments they can still complete the task well. However, there are also some opinions that this function is not necessary. We will research and come up with a feature that is most effective and suitable for the system.

### Quantitative Research Results

*A pie chart with different colored circles

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According to survey 1 - 5, 70% of people think that the water disinfection process should be at level 4, besides, the remaining 20% consider it should be at level 5. On the contrary, 10% think that it should only be at level 3.

*A diagram of a shrimp change compared to a shrimp

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According to the survey, 80% of people consider the growth rate of shrimp to change faster than traditional shrimp farming. The remaining 20% think that the growth rate of shrimp is slower than traditional shrimp farming.

*A blue and red pie chart

Description automatically generated*

According to the survey, 90% of people think that during the process of using the project, the number of shrimp meeting the standards between traditional shrimp farming and shrimp farming using technology has changed significantly. The remaining 10% believe that the number of shrimp meeting standards between traditional shrimp farming and shrimp farming using technology does not change significantly.

*A pie chart with a red and blue circle

Description automatically generated*

According to the survey, 70% of people think that building a temperature scanning radar system to identify shrimp without human intervention or supervision is a good idea. The remaining 30% of people think it is a bad idea.

*A diagram of a pie chart

Description automatically generated*

According to the survey, 90% of people gave good ratings to the pH balancing function in the water environment of the automatic shrimp farming system. The remaining 10% of people gave this function a bad rating.

### List of features for the proposed application

* Water environment disinfection feature.
* Radar scanning feature and counting the number of dead shrimp in shrimp farming.
* The system ensures good security and data safety.
* Process data sources well and quickly from many places.
* Automatic notification feature when shrimp encounters problems.

### The advantages and disadvantages of the proposed application

* **Advantages:**
* **Improved Shrimp Health and Growth:** Maintaining optimal water quality and environmental conditions leads to healthier and faster-growing shrimp.
* **Early Problem Detection:** Real-time monitoring and automated alerts allow for the rapid identification and resolution of issues such as water quality imbalances or equipment failures.
* **Efficiency:** Automation can reduce labor and operational costs, as well as optimize resource usage.
* **Data-Driven Decision Making:** Data collected from the system can be analyzed to make informed decisions about shrimp farming practices, leading to higher yields and better profitability.
* **Environmental Sustainability:** Monitoring can help prevent or mitigate negative environmental impacts by ensuring responsible resource use and waste management.
* **Regulatory Compliance:** A monitoring system can assist in adhering to local and international environmental regulations, reducing the risk of fines and legal issues.
* **Remote Control:** Remote access to the system enables farmers to manage operations and make adjustments from anywhere, enhancing convenience and efficiency.
* **Increased Profitability:** By optimizing shrimp growth and minimizing losses, a monitoring system can significantly improve the overall profitability of the shrimp farm.
* **Disadvantages:**
* **Initial Costs:** Setting up a comprehensive monitoring system can be expensive, including the purchase of sensors, control systems, and software.
* **Maintenance and Upkeep:** Monitoring systems require regular maintenance to ensure accuracy and reliability. Components may need to be replaced over time.
* **Technical Expertise:** Operating and maintaining the system may require specialized technical knowledge and training.
* **Data Overload:** Constant data streams from multiple sensors can lead to information overload, making it challenging to discern important trends from background noise.
* **Dependency on Technology:** Relying heavily on automation and technology can lead to vulnerability in case of system failures or technical glitches.
* **Power Outages:** Interruptions in power supply may disrupt the monitoring system and potentially harm shrimp and the environment.
* **Environmental Impact:** While the monitoring system can promote environmental sustainability, its own production and disposal could contribute to waste and resource consumption.
* **Privacy and Security:** Data security and privacy concerns may arise with remote access and data storage, especially if the system is connected to the internet.

# Part 2: Reflect on the value gained from conducting the project and its usefulness to support sustainable organisational performance

## Reflect on the value of undertaking the research to meet stated objectives and own learning and performance.

1. **The schedule created in the previous report**

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### Logbook

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Project Logbook | | | | | |
| Begin date: 25/9/2023 | | | | End date: 9/9/2024 | |
| Scheduled | | Actual | | Task action list | Problems and Changes |
| Begin | End | Begin | End |
| 25/9/2023 | 10/10/2023 | 25/9/2023 | 11/10/2023 | * Define project objectives * Define project scope * Define user requirement * Collect requirements | It's hard to get feedback from customers and requests. |
| 11/10/2023 | 8/11/2023 | 12/10/2023 | 6/11/2023 | * Define project plan * Define quantity plan * Define Resource * Define Financial * Define Risk * Define a plan for working with the media * Define a shopping plan * Plan for the project | Our team has produced clear design samples and work plans during the project planning process, so we have completed the project earlier than expected. |
| 9/11/2023 | 7/12/2023 | 7/11/2023 | 7/12/2023 | * Identify and gather relevant literature * Develop research from relevant literature * Survey research * Data analysis * Result analysis * Collect information and data | It is difficult to collect and research the data we need. |
| 8/12/2023 | 6/8/2024 | 8/12/2023 | 6/8/2024 | * GUI * Database * Class * System architecture * Interface/Front-end Develop * Set up Data * Equipment installation * Set up the radar/imaging system * Implementation * Testing * Data migration * System deployment * Build a complete system | During the design and construction process, we have had some difficulty adapting our designs. |
| 7/8/2024 | 9/9/2024 | 7/8/2024 | 9/9/2024 | * Final Report * Document * Prepare presentations * Send the final report to the counterparty * Project evaluation * Results of the project * End the project and save the data * Project handover | To speed up the completion of the project, we accelerated the construction progress and worked at full capacity |

### Performance review:

* **Customer Feedback and Requests:**
* **Proactive Communication:** Reach out to customers personally and let them know that you value their input. Assure them that their feedback is important and will be acted upon.
* **Simplify Feedback Channels:** Ensure that the feedback process is user-friendly and easily accessible. Consider using feedback forms, surveys, and even social media platforms for easier engagement.
* **Incentives:** Encourage customers to provide feedback by offering incentives like discounts or small rewards.
* **Feedback Follow-Up:** When customers provide feedback, follow up with them to clarify details, express gratitude, and keep them informed about any changes made based on their suggestions.
* **Project Design and Construction Challenges:**
* **Regular team collaboration:** Maintain open and regular communication within your project team. Regular meetings can help promptly resolve design adjustment issues.
* **Prototyping:** Consider creating a prototype or model before a full build to test and improve the design. This can help identify potential problems early.
* **Flexibility:** We are willing to adjust our designs during the construction phase. Sometimes, unforeseen challenges arise and flexibility is the key to overcoming them.
* **Experienced team:** We have a team with the necessary skills and experience to effectively adapt designs during construction.
* **Data Collection Challenges:**
* **Clear data strategy:** Define a clear data collection strategy. Identify specific data and the sources or methods for obtaining that data.
* **Automation and Tools:** Use data collection and automation tools where possible. This can streamline the process and reduce manual effort.
* **Data analytics:** Deploy data analysis and reporting tools to effectively derive insights from collected data.
* **Data security:** We have appropriate data security measures in place to protect sensitive information.
* **Accelerated Project Completion:**
* **Resource Management:** Optimize resource allocation to ensure that the project's accelerated pace doesn't lead to burnout or errors.
* **Regular Monitoring:** Continuously monitor project progress to identify any issues or bottlenecks that may arise due to accelerated construction.
* **Stakeholder Communication:** Keep all stakeholders informed about the decision to accelerate the project. Manage expectations and communicate any potential changes in timelines.

# References

Demarest, A. A. (2021). *businessinsider*. Retrieved from https://www.businessinsider.com/guides/tech/what-is-google-forms

Rahman, M. F. (2016). *trustradius*. Retrieved from https://www.trustradius.com/reviews/google-forms-2016-06-30-13-52-10