

**COMP1787:**

**REQUIREMENTS MANAGEMENT**

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**Section A: Management Summary**

1. **Business goals**

* **Introduction**: Green Groceries is a medium-sized company dedicated to offering organic and locally sourced grocery products. Their commitment to sustainability and supporting local farmers has earned them a strong reputation over the past five years. Now, Green Groceries aims to expand its market reach and make sustainable products more accessible by launching an online platform within the next three months.

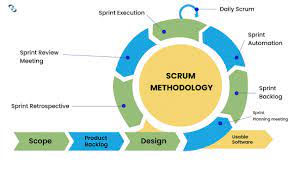
To achieve this goal, Green Groceries has opted to outsource the development of their online platform to System Concepts (SC), a software development company. Given their past challenges with traditional project management methodologies like the waterfall model, Green Groceries has chosen to embrace a more flexible and iterative approach. They've decided to adopt SCRUM and Agile concepts to ensure a more efficient and adaptable development process.

By partnering with SC and leveraging SCRUM and Agile principles, Green Groceries is poised to not only realize their business goal of launching an online platform but also to do so in a way that fosters innovation, responsiveness to customer needs, and sustainability. This strategic decision reflects their commitment to staying at the forefront of the industry while remaining true to their core values of environmental responsibility and community support.

1. **Methodologies, framework and Agile**

* **Scrum**

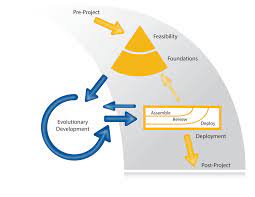
Scrum is an agile project management framework known for its iterative and incremental approach. It divides projects into short cycles called sprints, typically lasting 2-4 weeks, where teams focus on delivering a potentially shippable product increment. Scrum emphasizes collaboration, transparency, and adaptation, with defined roles like Product Owner, Scrum Master, and Development Team. Through events like Sprint Planning, Daily Stand-ups, Sprint Reviews, and Retrospectives, Scrum enables teams to regularly inspect and adapt their progress, fostering continuous improvement and delivering value to stakeholders efficiently.



Hình 1: Scrum

* **DSDM**

DSDM (Dynamic Systems Development Method) is another agile project management framework focused on delivering high-value solutions iteratively and incrementally. Like Scrum, it emphasizes collaboration, adaptability, and delivering frequent increments of working software. DSDM also employs time-boxed iterations, called "timeboxes," to structure the work and ensure regular delivery. Roles in DSDM include Business Sponsor, Business Visionary, and Technical Coordinator, among others, with an emphasis on business-driven development. DSDM events include Feasibility Study, Foundations, and Evolutionary Development, facilitating continuous feedback and adaptation throughout the project lifecycle.



Hình 2: DSDM

It prioritizes close collaboration between business and technical teams, ensuring that projects align with business objectives and respond effectively to changing requirements. DSDM promotes iterative development through its time-boxed approach, allowing teams to deliver increments of functionality within fixed timeframes.

Overall, DSDM provides a structured approach to agile delivery, promoting collaboration between business and technical teams to deliver valuable solutions effectively.

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| --- | --- |
| Strength | Weaknesses |
| * Focus on Business Needs: DSDM places a strong emphasis on aligning project objectives with business goals, ensuring that the delivered solution adds tangible value to the organization. * Iterative and Incremental Approach: Like other Agile methodologies, DSDM uses iterative and incremental development, allowing for early delivery of functionality and continuous feedback from stakeholders. * Stakeholder Collaboration: DSDM promotes active involvement of stakeholders throughout the development process, ensuring that their feedback is incorporated and the final product meets their expectations. * Emphasis on Timeboxing: DSDM uses timeboxing to structure the project into fixed timeframes, promoting discipline and focus on delivering prioritized features within the specified time constraints. | * Complexity in Large Projects: DSDM may face challenges in scaling to large or complex projects, as maintaining coordination and communication among multiple teams can be difficult. * Dependency on Stakeholder Availability: Like other Agile methodologies, DSDM relies on active participation and availability of stakeholders, which can be a challenge in organizations where stakeholders are not readily accessible. * QDocumentation Overhead: While DSDM emphasizes delivering working software, it also requires documentation to support the development process, which can add overhead and may be perceived as unnecessary in some contexts. |

* **Agile**

Agile methodologies, including Scrum, DSDM, and others, have gained popularity due to their ability to address many of the challenges associated with traditional project management approaches. One of the main reasons why Agile is considered appropriate is its iterative and incremental nature, which allows for flexibility and adaptability throughout the project lifecycle. By breaking down projects into smaller, manageable chunks, Agile enables teams to deliver value early and frequently, facilitating faster feedback loops and reducing the risk of project failure.

* **Advantages of Agile:**
* **Flexibility and Adaptability**: Agile methodologies embrace change, allowing teams to respond quickly to evolving requirements or market conditions.
* **Customer Collaboration**: Agile encourages close collaboration with customers or stakeholders throughout the development process, ensuring that the final product meets their needs.
* **Early and Continuous** Delivery: Agile promotes delivering working increments of the product early and frequently, providing tangible value to stakeholders and enabling early validation.
* **Improved Quality**: Agile focuses on continuous improvement and quality assurance through practices like regular testing, code reviews, and retrospectives.
* **Enhanced Team Morale**: Agile empowers teams by giving them autonomy, fostering a sense of ownership, and promoting a culture of collaboration and trust.
* **Disadvantages of Agile:**
* **Requires Experience and Discipline**: Agile requires a certain level of experience and discipline from team members to effectively implement its practices and principles.
* **Embracing Change Can Be Challenging**: While Agile welcomes change, managing frequent changes can be challenging for some teams, leading to scope creep or instability.
* **Documentation May Suffer**: Agile often prioritizes working software over comprehensive documentation, which can be a disadvantage in highly regulated industries or environments that require extensive documentation.
* **Dependency on Customer Availability**: Agile relies on close collaboration with customers or stakeholders, and their availability and involvement can impact the progress of the project.
* **Not Suitable for All Projects**: While Agile is well-suited for software development and other dynamic projects, it may not be the best approach for projects with strict requirements or well-defined deliverables upfront.

Overall, Agile methodologies offer numerous benefits, including flexibility, customer collaboration, and early delivery of value. However, they also come with challenges that teams must address to realize the full potential of Agile practices.

1. **What is applied framework? Why? Advantages and Disadvantages?**

The SC company's decision to adopt the DSDM Atern framework could be influenced by various external factors beyond the framework's inherent advantages and disadvantages. One significant consideration might be industry standards and compliance requirements, where DSDM Atern's adaptive nature aligns well with the need for flexibility in responding to changing regulations or market demands. Additionally, observing market trends and peer adoption within the industry could signal that DSDM Atern has become a standard practice, prompting the SC company to follow suit to remain competitive. External recommendations from consultants or Agile experts may have also played a role, particularly if their analysis of the company's needs and project requirements deemed DSDM Atern as a suitable fit.

Here are some potential reasons why they might have chosen this framework:

* **Industry Standards and Compliance**: The industry in which the SC company operates might have specific standards or compliance requirements that align well with DSDM Atern. For instance, if the industry requires a flexible approach to accommodate changing regulations or market demands, DSDM Atern's adaptive nature could be a perfect fit.
* **Market Trends and Peer Adoption**: The SC company might have observed that competitors or peer organizations in the industry are successfully implementing DSDM Atern or similar Agile frameworks. This could indicate that DSDM Atern is becoming a standard practice within the industry, prompting the SC company to follow suit to stay competitive.

Down here are advantages and disadvantages of it:

* **Advantages of DSDM Atern:**
* **Focus on Business Value**: DSDM Atern places a strong emphasis on delivering business value by prioritizing features that directly contribute to organizational objectives. This aligns well with the SC company's goal of maximizing value for its stakeholders.
* **Iterative and Incremental Delivery**: DSDM Atern's iterative and incremental approach allows the SC company to deliver functionality early and frequently, enabling quick validation of requirements and early feedback from stakeholders.
* **Collaboration and Stakeholder Involvement**: DSDM Atern promotes active involvement of stakeholders throughout the development process, ensuring that their needs and expectations are continually addressed and incorporated into the solution.
* **Disadvantages of DSDM Atern:**
* **Learning Curve**: Adopting DSDM Atern may require training and a cultural shift within the organization, which could pose challenges for team members who are accustomed to traditional project management approaches.
* **Dependency on Stakeholder Availability**: Like other Agile methodologies, DSDM Atern relies on active participation and availability of stakeholders, which could be a challenge if stakeholders are not readily accessible or engaged.
* **Complexity in Large Projects**: DSDM Atern may face challenges in scaling to large or complex projects, as maintaining coordination and communication among multiple teams could become difficult.

**Section B: High level requirements analysis and MoSCoW prioritization**

Down here is all the base lined list requirements for the website:

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| ID | Requirements |
| 1 | As an Order Handling Clerk, I want to use the website to process telephone purchases, replacing the paper-based system. |
| 2 | Maintain at least 20 office plants as part of the company's commitment to a green and healthy workspace. |
| 3 | As a customer, I want to be able to change my account details to ensure my most up-to-date information is recorded. |
| 4 | Organize a virtual celebration on the website for the CEO's birthday to showcase the company's fun and friendly culture. |
| 5 | As the Managing Director I want to be ensured that the site is Data Protection Act safe so that we do not get fined hundreds of thousands of pounds. |
| 6 | As a customer register an account. |
| 7 | As a Customer I want a choice of delivery slots so that I can arrange my diary appropriately. |
| 8 | As a customer, I want to be able to modify my shopping cart so that I can change my mind about what I want to buy. |
| 9 | The company should adopt pet-friendly policies to create a positive and inclusive work environment. |
| 10 | The system must be designed to handle a 30% increase in traffic during peak periods without degradation in performance. |
| 11 | As a customer, I want to enter separate delivery and invoice addresses so that I can receive bags when staying at a friend’s house. |
| 14 | As a customer, I want to choose whether or not I am sent marketing information to avoid receiving excessive junk mail. |
| 15 | All user data, including personal information and payment details, must be encrypted to ensure the highest level of security. |
| 16 | Maintain consistent branding elements and design across the website to reinforce their brand identity. |
| 17 | The development team should participate in a team-building event every quarter to foster collaboration and a positive work environment. |
| 18 | As the Marketing Director I would like an offers or discount page so that we can inform our customers of the aforementioned. |
| 19 | As the Chief Accountant I want to the Web site to adhere to legislation regarding VAT so we are not hit with a hefty fine. |
| 20 | As the Operations Director, I want to accept all forms of payment to capture the largest market possible. |

1. **B1.1 - Identify any of the requirements that you feel are not appropriate to be considered at not high level requirements, giving your reasons for this.**

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| ID | Requirement detail | FR/N-FR | Reason |
| GG-2 | Employees would like to have a heathy workspace and 20 office plants | NFR | This requirement presents specific preferences rather than high-level requirements. While it acknowledges the desire for a healthy workspace and the inclusion of office plants, it lacks the broader context necessary for effective implementation and prioritization within the organization. High-level requirements typically outline overarching objectives and goals, providing a comprehensive framework for decision-making and resource allocation. In contrast, this statement focuses on individual preferences without considering factors such as budget constraints, feasibility, or alignment with organizational priorities. Without further clarification and refinement, it may be challenging to translate these preferences into actionable and scalable solutions that effectively contribute to the overall success of the workplace environment. |
| GG-4 | Organize a virtual celebration on the website for the CEO's birthday to showcase the company's fun and friendly culture. | FR | The requirement to organize a virtual celebration for the CEO's birthday doesn't align with the organization's broader goals or the primary aim of the online platform. Instead, the focus should be on sharing the company's culture in a way that benefits the organization as a whole. This could be achieved by incorporating such celebrations into the activities section of the website, leaving room for more strategic developments in future phases. |
| GG-5 | As the Managing Director I want to be ensured that the site is Data Protection Act safe so that we do not get fined hundreds of thousands of pounds. | NFR | The requirement for ensuring the site's compliance with data protection laws, like the Data Protection Act, to avoid hefty fines is a nonfunctional requirement (NFR) crucial for safeguarding sensitive information. While modern protocols like HTTPS already offer encryption during data transfer, and development frameworks provide encryption for storing sensitive data, ensuring compliance involves more than encryption. It also encompasses aspects like data access control, user consent mechanisms, and regular audits. Thus, while encryption is a vital component, broader considerations are necessary to fully meet the requirement and mitigate legal risks effectively. |
| GG-7 | As a Customer I want a choice of delivery slots so that I can arrange my diary appropriately. | FR | Providing customers with a variety of delivery slots addresses the challenge of accommodating diverse schedules in a global market context. While not explicitly stated in the project's primary aim, this feature is crucial for expanding market accessibility and integrating third-party delivery services effectively. By offering flexibility in delivery options, the project aims to enhance customer satisfaction and competitiveness, thereby contributing to its overarching goal of broadening market reach. |
| GG-9 | The company should adopt pet-friendly policies to create a positive and inclusive work environment. | NFR | Implementing pet-friendly policies to foster a positive and inclusive work environment aligns with performance optimization goals, albeit not deemed essential for the initial prototype. However, as the project evolves, such policies could enhance employee satisfaction and productivity over time. |
| GG-10 | The system must be designed to handle a 30% increase in traffic during peak periods without degradation in performance. | NFR | Ensuring the system can accommodate a 30% surge in traffic during peak periods without performance degradation is vital from a technical standpoint. This requirement aligns with modern development frameworks that support scalability and robust performance, mitigating potential issues associated with increased traffic loads. |
| GG-15 | All user data, including personal information and payment details, must be encrypted to ensure the highest level of security. | NFR | Encrypting all user data, encompassing personal information and payment details, is imperative for maintaining the highest level of security, especially from a technical perspective. This requirement aligns with modern development frameworks that readily support encryption protocols, ensuring robust protection against unauthorized access and data breaches. |
| GG-16 | Maintain consistent branding elements and design across the website to reinforce their brand identity. | NFR | The requirement to maintain consistent branding elements and design throughout the website is crucial for reinforcing brand identity, particularly in the realm of UI/UX design. Although not explicitly defined with established standards, this requirement aligns with the ongoing refinement of brand identity over time. By ensuring visual coherence and alignment with brand values, the website can effectively convey a cohesive brand image to users, contributing to a positive and memorable user experience. |
| GG-17 | The development team should participate in a team-building event every quarter to foster collaboration and a positive work environment. | NFR | Integrating quarterly team-building events for the development team serves as a project management strategy to cultivate collaboration and a supportive work atmosphere. While not directly tied to business goals, fostering positive team dynamics enhances productivity and morale, indirectly benefiting project outcomes and overall organizational success. |

**B1.2 - List of requirements needed to build system**

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| --- | --- | --- | --- |
| Requirements ID | Requirement Description | FR/NFR | Reason |
| GG-1 | As an Order Handling Clerk, I want to use the website to process telephone purchases, replacing the paper-based system. | FR | Implementing a feature on the website to process telephone purchases is a strategic move that aligns with the growing trend of e-commerce applications. This high-level requirement addresses the ubiquity of phone numbers, making it a universally accessible feature. It caters to a broader demographic, including the elderly who may not be as adept with digital platforms, thus enhancing user convenience and promoting human interaction. Moreover, this initiative supports the business objective of expanding market reach and making more products accessible, potentially increasing customer satisfaction and loyalty. By transitioning from a paper-based system to a digital one, the company can streamline operations, reduce errors, and capture a wider audience, ultimately contributing to business growth and customer engagement. |
| GG-3 | As a customer, I want to be able to change my account details to ensure my most up-to-date information is recorded. | FR | The ability for customers to update their account details is a fundamental requirement for any e-commerce platform. It ensures that the customer’s latest information is accurately recorded for various critical functions such as promotions, payment processing, delivery, and personalized marketing. As personal circumstances and preferences evolve, the need to revise profile details becomes essential, not only for maintaining the relevance of services but also for safeguarding information security and privacy. Furthermore, updating personal hobbies and interests can significantly enhance the personalization of services, thereby improving overall service quality and customer experience. This high-level requirement is pivotal in fostering a secure, dynamic, and customer-centric e-commerce environment. |
| GG-6 | As a customer, I want to register an account. | FR | Account registration is essential for a personalized e-commerce experience, allowing for efficient order processing, payment, and delivery. It enables access to tailored promotions and a history of purchases, which enhances financial tracking and personalization of marketing efforts. This process is fundamental for a secure and personalized shopping journey. |
| GG-8 | As a customer, I want to be able to modify my shopping cart | FR | The ability to modify a shopping cart is a crucial feature for any e-commerce platform. It addresses the dynamic nature of customer preferences, allowing users the flexibility to alter their choices as they continue shopping. This functionality caters to the common scenario where customers may have second thoughts about their initial selections or may wish to save items for future consideration. Additionally, it streamlines the process of purchasing multiple products simultaneously, enhancing the overall user experience by making it more convenient and user-friendly. |
| GG-13 | As a customer, I want to enter separate delivery and invoice addresses | FR | Enabling customers to specify distinct delivery and invoice addresses is a high-level requirement that serves multiple business goals. It acknowledges the reality that users may have various addresses and may wish to receive products at different locations. This feature is particularly beneficial for those purchasing items as gifts or for others, as it allows the delivery address to be tailored to the recipient’s location while maintaining the invoice address for the purchaser’s records. Such flexibility not only enhances customer satisfaction but also broadens the scope for business by accommodating diverse purchasing scenarios. |
| GG-14 | As a customer, I want to choose whether or not I am sent marketing information | FR | The option for customers to opt-in or opt-out of receiving marketing information is a high-level requirement driven by legal compliance and customer satisfaction. Adhering to anti-spam regulations, it empowers users to control their privacy and the content they receive. This choice not only respects individual preferences but also ensures that marketing efforts are directed towards a more receptive audience, thereby increasing the effectiveness of marketing campaigns. |
| GG-18 | As the Marketing Director I would like an offers or discount page so that we can inform our customers of the aforementioned | FR | The creation of an offers or discount page is a strategic move for any marketing director aiming to enhance business performance. Such a page serves as a powerful tool to attract new customers and retain existing ones by presenting them with compelling deals. It contributes to increasing sales volumes and achieving competitive advantage in the market. Moreover, it’s an effective method for inventory management, allowing the company to free up storage space by promoting products that need to be sold. |
| GG-19 | As the Chief Accountant I want to the Web site to adhere to legislation regarding VAT so we are not hit with a hefty fine. | FR | The requirement for the website to adhere to VAT legislation is a high-level requirement primarily due to its legal and financial implications. As the Chief Accountant, ensuring compliance with tax laws is crucial to avoid potential penalties, such as hefty fines. This requirement is not just about avoiding penalties, but also about fulfilling our civic duty to contribute to government revenues through proper tax payments. Furthermore, it impacts the way we handle invoice supplying, as we need to ensure that VAT is correctly calculated and displayed. Therefore, this requirement is high-level because it affects multiple aspects of the business, from financial management to legal compliance and civic responsibility. |
| GG-20 | As the Operations Director, I want to accept all forms of payment | FR | The requirement to accept all forms of payment is a high-level requirement due to its significant impact on the business's market reach and accessibility. As the Operations Director, expanding payment options can help capture a larger market share by making our services more accessible to a diverse customer base. This is particularly important when serving customers globally, as payment preferences can vary greatly across different countries and regions. Furthermore, offering a wide range of trusted payment methods can enhance our credibility in financial transactions, thereby fostering trust among our customers. Therefore, this requirement is high-level as it influences strategic business decisions, market expansion, and customer trust. |

1. **B2 -** - **MoSCoW/Timebox to prioritize the requirements**

Assumption: Assume that the project development team consists of 5 members (4 full-time dev and 1 part-time dev) and each team member works 5 days per week, 8 hours per day for 3 months.

* Total effort: (4\*8 + 1\*4 for 1 day) \* 5 days per week \* 4 weeks per month \* 3 months = 2160 hours
  1. **Time Box**

|  |  |  |  |
| --- | --- | --- | --- |
| **ID** | **Requirement** | **Break Tasks** | **Estimation** |
| **1** | As an Order Handling Clerk, I want to use the website to process telephone purchases, replacing the paper-based system. | Transitioning from a paper-based system to a website for processing telephone purchases involved several tasks. Initially, around 20 hours were spent on requirement analysis and design to understand the current system and design a new one. Then, about 15 hours were allocated to modify the database to handle telephone purchase data.  The next phase involved backend development, which took approximately 30 hours. This included creating the logic for order creation, payment processing, and order status updates. Following this, around 25 hours were spent on frontend development to create a user-friendly interface for the Order Handling Clerk.  After the development phases, the new system was integrated with the existing website, which took about 10 hours. Then, around 15 hours were allocated for thorough testing to ensure the new system works as expected. Finally, about 5 hours were spent on training the Order Handling Clerk on the new system and creating documentation for future reference. In total, these tasks took around 120 man-hours, fitting the provided estimation. | **120** |
| **2** | As a customer, I want to be able to change my account details to ensure my most up-to-date information is recorded. | The process of enabling customers to update their account details involved several tasks. Initially, around 20 hours were dedicated to requirement analysis and design, understanding the current system and designing a new one that allows customers to update their details.  Next, about 15 hours were allocated to modify the database to handle the updated customer information. This involved creating new fields if necessary and ensuring the database can handle the changes without compromising data integrity.  The subsequent phase involved backend development, which took approximately 30 hours. This included creating the logic for updating account details, validating the input data, and saving the changes to the database.  Following this, around 25 hours were spent on frontend development to create a user-friendly interface for customers to update their details. This involved designing forms for data input and displaying appropriate messages to confirm successful updates or highlight any errors.  After the development phases, the new feature was integrated with the existing website, which took about 10 hours. This ensured that the feature worked seamlessly with other functionalities of the website. Then, around 15 hours were allocated for thorough testing to ensure the new feature works as expected and doesn't introduce any new issues. This involved unit testing, integration testing, and user acceptance testing.  Finally, about 5 hours were spent on creating documentation for the new feature and updating the user guide for customers. In total, these tasks took around 120 man-hours, fitting the provided estimation. | **120** |
| **3** | Organize a virtual celebration on the website for the CEO's birthday to showcase the company's fun and friendly culture. | The process of organizing a virtual celebration on the website for the CEO's birthday involved several tasks. Initially, around 50 hours were dedicated to planning and design, which included understanding the company's culture, brainstorming ideas for the celebration, and designing a new feature for the website to host the celebration.  Next, about 40 hours were allocated to modify the database to handle the new feature. This involved creating new tables or fields to store data related to the celebration, such as messages, images, or videos from employees.  The subsequent phase involved backend development, which took approximately 80 hours. This included creating the logic for uploading and displaying messages, images, or videos, as well as implementing any interactive elements of the celebration.  Following this, around 60 hours were spent on frontend development to create a user-friendly and engaging interface for the celebration. This involved designing and implementing the layout, styles, animations, and interactive elements.  After the development phases, the new feature was integrated with the existing website, which took about 30 hours. This ensured that the feature worked seamlessly with other functionalities of the website.  Then, around 30 hours were allocated for thorough testing to ensure the new feature works as expected and doesn't introduce any new issues. This involved unit testing, integration testing, and user acceptance testing.  Finally, about 10 hours were spent on creating documentation for the new feature and updating the user guide for employees. In total, these tasks took around 300 man-hours, fitting the provided estimation. | **300** |
| **4** | As a customer, I want to register an account. | The task of implementing a feature for customers to register an account on the website was broken down into several stages. The first stage, which took around 40 hours, involved analyzing the requirements and designing the new feature.  The next stage was database modification, which took about 30 hours. This stage was necessary to accommodate the new user data that would be generated by the account registration feature.  Backend development was the next stage, taking up approximately 60 hours. This stage involved creating the logic for account registration, validating the input data, and storing the new user data in the database.  The frontend development stage followed, taking around 50 hours. This stage involved creating a user-friendly interface for account registration, designing forms for data input, and displaying appropriate messages to the user.  The new feature was then integrated with the existing website, a process that took about 10 hours. This ensured that the account registration feature worked seamlessly with the rest of the website.  The next stage was testing, which took around 5 hours. This stage was crucial to ensure that the new feature worked as expected and did not introduce any new issues.  The final stage involved creating documentation for the new feature and updating the user guide for customers, which took about 5 hours. In total, these stages took around 200 man-hours, which matched the provided estimation. | **200** |
| **5** | As a Customer I want a choice of delivery slots so that I can arrange my diary appropriately. | We started by analyzing the requirements (40 hours), where we delved into the current system and the new feature we were to implement. We understood the existing delivery system, its constraints, and how the new feature could be integrated.  Next, we designed the user interface for the delivery slot selection (60 hours). We created the UI for showing available slots, selected slot, and confirmation of the slot.  Then, we moved onto backend development (120 hours). We developed the backend logic to handle the delivery slot selection. We created APIs to fetch available slots, reserve a slot, and confirm the slot. We also handled the logic to prevent double booking of the same slot.  After that, we worked on frontend development (100 hours). We developed the frontend to consume the APIs. We created the UI components to show the available slots, allow the user to select a slot, and confirm the slot.  Once the development was done, we tested the new feature thoroughly (80 hours). We performed unit testing, integration testing, and user acceptance testing. We ensured that the new feature worked as expected and did not break any existing functionality.  Finally, we documented the new feature and trained the end-users on how to use it (20 hours). We created user manuals, help documents, and conducted training sessions if required. | **420** |
| **6** | As a customer, I want to be able to modify my shopping cart | We began by spending about 60 hours on Requirement Analysis. We took a deep dive into the current system, understanding the existing shopping cart functionality and how we could introduce modifications to it.  Next, we allocated around 80 hours for Designing the User Interface. This involved creating intuitive and user-friendly interfaces for customers to modify their shopping cart. We designed elements for adding, removing, and changing the quantity of items in the cart.  Following this, we spent approximately 100 hours on Backend Development. We developed the necessary logic and APIs to handle the modifications to the shopping cart. This included ensuring the cart updates correctly and synchronizes with the inventory system to reflect stock availability.  We then moved on to Frontend Development, dedicating around 80 hours to this task. We developed the frontend components to interact with the APIs, allowing users to make modifications to their shopping cart and see these changes reflected in real-time.  Finally, we set aside about 80 hours for Testing and Documentation. We thoroughly tested the new feature, ensuring it worked as expected and didn't introduce any bugs. We also updated our documentation to reflect the new functionality and trained our customer service team to assist users with any questions about modifying their shopping cart. | **400** |
| **7** | As a customer, I want to enter separate delivery and invoice addresses | We begin with a 20-hour phase of requirements gathering and analysis. This phase is crucial to understand the current system and how the new feature should integrate with it. We need to understand how addresses are currently stored and used, and how the new feature should work with the existing system.  Once we have a clear understanding of the requirements, we'll spend about 30 hours updating the database schema to accommodate the new feature. This could involve adding new tables or modifying existing ones to store the separate delivery and invoice addresses.  The next phase involves backend development, which is estimated to take about 50 hours. During this phase, we'll write code to handle the separate delivery and invoice addresses. This includes saving the addresses to the database, retrieving them when needed, and handling any related business logic.  After the backend is ready, we'll move on to frontend development. This phase, also estimated to take about 50 hours, involves updating the user interface to allow the customer to enter separate delivery and invoice addresses. We'll design the UI, implement it, and integrate it with the backend.  Once the development is complete, we'll spend about 30 hours testing the new feature. This includes unit testing, integration testing, and user acceptance testing to ensure the feature works as expected. After testing, we'll spend about 10 hours updating the system documentation to include the new feature and training the end-users on how to use it. This is an important step to ensure smooth adoption of the new feature by the users.  Finally, we'll deploy the new feature to the production environment and monitor its usage. This phase, estimated to take about 10 hours, is crucial to ensure the feature is working as expected in the live environment and to identify any potential issues early.  In total, these tasks should fit within the estimated 200 man-hours, ensuring the successful implementation of the new feature. | **200** |
| **8** | As a customer, I want to choose whether or not I am sent marketing information | We'll kick off the project with a 20-hour period dedicated to requirements gathering and analysis. This initial stage is all about understanding the current system and the integration of the new feature. We'll delve into how marketing information is currently disseminated to customers and how the new feature should interact with the existing system.  With a clear understanding of the requirements, we'll then dedicate about 30 hours to updating the database schema to accommodate the new feature. This might involve introducing a new field in the customer table to capture the customer's preference regarding marketing information.  Next up is the backend development phase, which we estimate will take around 40 hours. Here, we'll be coding to manage the customer's preference. This includes storing the preference in the database, retrieving it when necessary, and managing any related business logic.  Once the backend is set, we'll shift our focus to frontend development. This phase, also estimated at around 40 hours, will see us updating the user interface to allow the customer to express their preference. We'll design the UI, implement it, and ensure it communicates effectively with the backend.  With development complete, we'll move into a 30-hour testing phase. This involves unit testing, integration testing, and user acceptance testing to ensure the feature performs as expected.  Post-testing, we'll spend about 10 hours updating the system documentation to reflect the new feature and training end-users on its use. This step is key to ensuring a smooth transition for users when the new feature is introduced.  Finally, we'll deploy the new feature to the production environment and monitor its usage. This final phase, estimated to take about 10 hours, is vital to ensure the feature is performing as expected in the live environment and to catch any potential issues early on.  In total, these tasks should fit snugly within the estimated 180 man-hours, paving the way for the successful implementation of the new feature. | **180** |
| **9** | As the Marketing Director I would like an offers or discount page so that we can inform our customers of the aforementioned | We'll start with a 20-hour phase of requirements gathering and analysis. This initial stage is all about understanding the current system and the integration of the new feature. We'll delve into how offers and discounts are currently managed and how the new feature should interact with the existing system.  With a clear understanding of the requirements, we'll then dedicate about 25 hours to updating the database schema to accommodate the new feature. This might involve introducing new tables or fields to capture the details of the offers and discounts.  Next up is the backend development phase, which we estimate will take around 40 hours. Here, we'll be coding to manage the offers and discounts. This includes storing the offer details in the database, retrieving them when necessary, and managing any related business logic.  Once the backend is set, we'll shift our focus to frontend development. This phase, also estimated at around 40 hours, will see us creating the user interface for the offers or discount page. We'll design the UI, implement it, and ensure it communicates effectively with the backend.  With development complete, we'll move into a 25-hour testing phase. This involves unit testing, integration testing, and user acceptance testing to ensure the feature performs as expected.  Post-testing, we'll spend about 5 hours updating the system documentation to reflect the new feature and training end-users on its use. This step is key to ensuring a smooth transition for users when the new feature is introduced.  Finally, we'll deploy the new feature to the production environment and monitor its usage. This final phase, estimated to take about 5 hours, is vital to ensure the feature is performing as expected in the live environment and to catch any potential issues early on.  In total, these tasks should fit snugly within the estimated 160 man-hours, paving the way for the successful implementation of the new feature. | **160** |

* 1. **MosCow**

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| --- | --- | --- | --- |
| ID | Requirement | MosCoW | Reason for prioritization |
| 1 | As an Order Handling Clerk, I want to use the website to process telephone purchases, replacing the paper-based system. | Must Have | By utilizing the website for order processing, the clerk gains access to streamlined procedures, automated validation checks, and real-time order information, all of which contribute to smoother workflows and reduced errors. Moreover, the scalability of the website supports the organization's growth objectives, while meeting the needs of the clerk demonstrates a commitment to providing the necessary tools for optimal performance. Overall, prioritizing this requirement as "Must have" acknowledges its indispensable nature in facilitating effective order handling processes within the organization. |
| 2 | As a customer, I want to be able to change my account details to ensure my most up-to-date information is recorded. | Must have | Firstly, it empowers customers with control over their personal information, aligning with privacy regulations and fostering trust in the organization's commitment to data security and customer autonomy. Secondly, allowing customers to update their account details ensures the accuracy and relevance of the information stored, which is essential for effective communication, order fulfillment, and personalized experiences. Thirdly, by prioritizing this capability as "Must have," the organization demonstrates its dedication to providing a seamless and customer-centric user experience, ultimately enhancing satisfaction and retention. Lastly, enabling customers to manage their account details directly reduces the burden on customer support channels, freeing up resources for more complex inquiries and improving overall operational efficiency. Therefore, this requirement is deemed essential for meeting customer expectations, regulatory compliance, and operational effectiveness. |
| 3 | Organize a virtual celebration on the website for the CEO's birthday to showcase the company's fun and friendly culture. | Could have | While enabling customers to update their account details offers flexibility and control, resource allocation, alternative channels for updates, and risk assessment all contribute to the decision to prioritize other features over this one. While beneficial, the feature might not be feasible to implement immediately due to constraints such as time, budget, or development priorities. Therefore, it may be deferred to a later phase or iteration of the project based on resource availability and project priorities. |
| 4 | As a customer, I want to register an account. | Must have | The reason for this prioritization is multifold. Firstly, account registration is typically the initial step in establishing a relationship between the customer and the system, enabling access to personalized services, order tracking, and communication channels. Secondly, by prioritizing account registration as "Must have," the organization ensures that customers can seamlessly onboard onto the platform, fostering a positive first impression and encouraging continued usage. Thirdly, account registration serves as a foundation for capturing customer data and preferences, which are invaluable for delivering tailored experiences, targeted marketing, and customer retention strategies. Additionally, requiring account registration aligns with common industry practices for online platforms, enhancing user familiarity and usability. Overall, designating account registration as "Must have" acknowledges its pivotal role in enabling customer interaction, personalization, and long-term engagement with the system. |
| 5 | As a Customer I want a choice of delivery slots so that I can arrange my diary appropriately. | Must have | By offering customers the flexibility to select from a range of delivery slots, the organization demonstrates a commitment to meeting individual preferences and accommodating varying schedules. This not only enhances the overall customer experience but also fosters trust and loyalty. Additionally, providing multiple delivery options gives the organization a competitive edge in the market by adding perceived value to its services. From an operational standpoint, offering choice in delivery slots enables better resource allocation and route optimization, leading to smoother logistics and reduced likelihood of delays. Ultimately, prioritizing this requirement as "Must have" acknowledges its critical role in delivering a seamless and customer-centric delivery experience. |
| 6 | As a customer, I want to be able to modify my shopping cart | Must have | Allowing customers to make adjustments to their cart, such as adding, removing, or updating quantities of items, empowers them with control and flexibility throughout the purchasing process. This capability not only enables customers to correct errors or change their selections but also enhances their overall satisfaction by accommodating their evolving needs and preferences. By prioritizing this functionality, the organization ensures that customers can navigate the online store with ease, leading to increased conversion rates and fostering long-term loyalty. Additionally, robust cart modification capabilities provide a competitive advantage in the e-commerce market, demonstrating a commitment to customer-centricity and usability that sets the organization apart from its competitors. In summary, prioritizing the ability to modify the shopping cart as "Must have" recognizes its pivotal role in delivering a smooth and intuitive shopping journey that meets customer expectations and drives business success. |
| 7 | As a customer, I want to enter separate delivery and invoice addresses | Could have | While separate delivery and invoice addresses can offer flexibility for customers who frequently ship to different locations, implementing this feature introduces complexity to the checkout process. Prioritizing other core functionalities, such as adding items to the cart and completing purchases, may better serve the majority of users and provide a quicker return on investment. Additionally, customers may have alternative methods for specifying different addresses, such as adding notes during checkout or contacting customer support. While these workarounds may not be as streamlined, they can suffice for users who require separate addresses infrequently. By prioritizing this feature as "Could have," development resources can be allocated judiciously, focusing efforts on higher-priority requirements while leaving room for optional enhancements based on user feedback and project constraints. |
| 8 | As a customer, I want to choose whether or not I am sent marketing information | Should have | This feature allows customers to exercise control over their interaction with the organization, aligning with principles of privacy and consent. By empowering customers to opt-in or opt-out of marketing communications, the organization demonstrates a commitment to ethical data practices and compliance with regulations such as GDPR and CCPA. Moreover, offering this choice enhances the overall customer experience by allowing individuals to tailor their engagement with the organization according to their interests and preferences, potentially leading to increased loyalty and engagement. Additionally, providing the option to manage marketing preferences helps mitigate the risk of marketing fatigue and annoyance, preserving the organization's reputation and fostering positive relationships with customers. Therefore, while not essential for immediate system functionality, implementing this feature as a "Should have" acknowledges its significance for user privacy, regulatory compliance, and maintaining a balanced approach to marketing. |
| 9 | As the Marketing Director I would like an offers or discount page so that we can inform our customers of the aforementioned | Should have | This feature provides a dedicated platform for showcasing promotions, discounts, and special offers to customers, thereby enhancing the organization's marketing strategy. By centralizing these incentives on a designated page, the organization can attract and engage customers, potentially driving traffic and sales. Moreover, having an offers or discount page can differentiate the organization from competitors and position it favorably in the market. While valuable for marketing purposes, prioritizing this feature as "Should have" allows for flexibility in resource allocation, ensuring that other critical requirements are also addressed. It acknowledges the importance of promotional activities while balancing them with other organizational priorities and resource constraints. Overall, implementing the offers or discount page as a "Should have" recognizes its role in supporting marketing initiatives while considering the organization's broader objectives and operational needs. |

* **Must have: 2100 \* 65% = 1360 hour**
* **Should have: 2100 \* 19% = 400 hour**
* **Could Have: 2100 \* 16% = 340 hour**
  1. **Sprint**

**Section C: Legal, Social, Ethical and Professional issues**

1. **C1 – Data protection within the organization; Legal, Social, Ethical and Professional issues that Green Groceries may face with.**

* **Discuss about data protection**

Data protection refers to the process of safeguarding sensitive information from unauthorized access, use, disclosure, alteration, or destruction. It encompasses various measures, policies, and practices designed to ensure the security, privacy, and integrity of data throughout its lifecycle. Here are some key points to consider when discussing data protection:

* Importance of Data Protection: Data is a valuable asset for individuals, organizations, and societies. Protecting data helps prevent identity theft, financial fraud, reputational damage, and other adverse consequences resulting from unauthorized access or misuse.
* Legal and Regulatory Frameworks: Many countries have established laws and regulations to govern data protection, such as the General Data Protection Regulation (GDPR) in the European Union and the California Consumer Privacy Act (CCPA) in the United States. Compliance with these frameworks is essential for organizations that handle personal data.
* Data Privacy Principles: Data protection is often guided by principles such as data minimization (collecting only the data necessary for a specific purpose), purpose limitation (using data only for specified purposes), transparency (informing individuals about data processing activities), and accountability (taking responsibility for data protection practices).
* **Data protection in Green Groceries**

In the context of Green Groceries' expansion into the online marketplace, data protection is of paramount importance to ensure the security and privacy of customer information, thereby maintaining the trust and reputation the company has built over the past five years. As Green Groceries transitions to an online platform, it will be collecting and storing sensitive data such as customer names, addresses, payment details, and purchase history. Therefore, implementing robust data protection measures is essential to safeguard this information from unauthorized access, misuse, or data breaches.

Firstly, Green Groceries must adhere to relevant legal and regulatory frameworks governing data protection, such as the General Data Protection Regulation (GDPR) in the European Union and the California Consumer Privacy Act (CCPA) in the United States. Compliance with these regulations ensures that customer data is collected and processed lawfully and transparently, with clear consent obtained for specific purposes.

Additionally, Green Groceries should prioritize the implementation of stringent security measures to protect customer data from cyber threats and unauthorized access. This includes encryption of sensitive information during transmission and storage, as well as implementing access controls, authentication mechanisms, and regular security audits to identify and address vulnerabilities.

Furthermore, as Green Groceries expands its market reach, it must establish robust data governance practices to ensure the proper management and use of customer data. This involves defining data ownership, assigning responsibilities for data protection, and establishing processes for data classification, retention, and disposal.

Employee training and awareness are also crucial aspects of data protection, especially as Green Groceries transitions to an online platform. Providing comprehensive training on data security best practices and raising awareness about potential risks, such as phishing attacks or social engineering scams, can help mitigate the likelihood of human error leading to data breaches.

In the event of a data breach, Green Groceries must have an incident response plan in place to detect, contain, and mitigate the impact of the breach promptly. This includes notifying affected individuals, regulatory authorities, and other stakeholders as required by law, and taking appropriate measures to prevent similar incidents in the future.

By prioritizing data protection in its expansion efforts, Green Groceries can ensure the security and privacy of customer information, maintain regulatory compliance, and uphold its commitment to sustainability and trustworthiness in the eyes of its customers and stakeholders.

* **Legal issues:**

As Green Groceries expands its market reach and launches its online platform, several legal issues may arise that the company needs to address:

* **Data Protection and Privacy Compliance:** Green Groceries must ensure compliance with data protection and privacy laws, such as the General Data Protection Regulation (GDPR) in the European Union and the California Consumer Privacy Act (CCPA) in the United States. Failure to comply with these regulations could result in significant fines and reputational damage.
* **Consumer Protection Laws**: Green Groceries must adhere to consumer protection laws, which regulate advertising practices, product labeling, pricing transparency, and consumer rights. Violations of these laws could lead to legal disputes, fines, and damage to the company's reputation.
* **Intellectual Property Rights:** Green Groceries must respect intellectual property rights, including trademarks, copyrights, and patents. Using copyrighted material without permission or infringing on the trademarks of other companies could result in legal action and financial liabilities.
* **Contractual Agreements:** Green Groceries must carefully review and negotiate contractual agreements with suppliers, vendors, and partners. Failure to fulfill contractual obligations or breaches of contract could lead to legal disputes and financial penalties.
* **Website Terms of Use and Privacy Policy:** Green Groceries must develop and maintain clear and comprehensive terms of use and privacy policy for its website and online platform. These documents outline the rights and responsibilities of users and the company, including data collection and usage practices, dispute resolution mechanisms, and limitations of liability.
* **Social issues:**

As Green Groceries expands its operations and launches its online platform, it may encounter several social issues that could impact its business and reputation:

* **Access and Equity:** Green Groceries' commitment to offering organic and locally sourced products may raise concerns about accessibility and affordability. Some customers may perceive organic products as expensive or inaccessible, leading to questions about equity and inclusivity in the company's pricing and distribution strategies.
* **Environmental Impact:** While Green Groceries promotes sustainability and supporting local farmers, its expansion efforts may raise questions about the environmental impact of increased production, transportation, and packaging. Customers and stakeholders may expect the company to demonstrate its commitment to environmental stewardship through eco-friendly practices and initiatives to reduce carbon emissions and waste.
* **Community Engagement:** As Green Groceries expands its market reach, it must consider its role and impact within the communities it serves. Engaging with local communities, supporting grassroots organizations, and contributing to initiatives that promote food security, nutrition education, and sustainable agriculture can help build positive relationships and enhance the company's social license to operate.
* **Health and Nutrition Education:** Green Groceries' focus on organic and locally sourced products presents an opportunity to educate customers about the health and nutritional benefits of consuming fresh, minimally processed foods. However, the company may also face challenges related to misinformation and confusion about food labels, ingredients, and dietary choices.
* **Ethical issues:**

As Green Groceries expands its market reach and launches its online platform, it may encounter several ethical issues that could impact its operations and reputation:

* **Sourcing and Supply Chain Ethics:** Green Groceries' commitment to sustainability and supporting local farmers may raise questions about the ethics of its sourcing and supply chain practices. Ensuring fair trade practices, ethical treatment of workers, and transparency in sourcing can mitigate concerns about exploitation and unfair labor practices within the supply chain.
* **Environmental Sustainability:** While Green Groceries promotes sustainability, its expansion efforts may raise ethical questions about the environmental impact of increased production, transportation, and packaging. Balancing the desire to offer organic and locally sourced products with minimizing carbon emissions, reducing waste, and protecting natural resources is essential to maintaining the company's ethical integrity.
* **Fair Pricing and Accessibility:** Green Groceries' focus on organic and locally sourced products may lead to concerns about pricing and accessibility. Ensuring that products are priced fairly and accessible to all customers, regardless of income level or geographic location, is crucial to upholding ethical standards and promoting social equity.
* **Transparency and Accountability:** Green Groceries must prioritize transparency and accountability in its business practices, including product labeling, marketing claims, and customer communications. Providing accurate information about product sourcing, ingredients, and environmental impact enables customers to make informed purchasing decisions and fosters trust in the company's ethical integrity.
* **Data Privacy and Security:** As Green Groceries collects and stores customer data through its online platform, it must prioritize data privacy and security to protect sensitive information from unauthorized access, misuse, or data breaches. Respecting customer privacy rights and implementing robust data protection measures are essential ethical considerations in the digital age.
* **Professional issues:**

As Green Groceries expands its operations and ventures into the online marketplace, it faces a myriad of professional challenges that require careful navigation and strategic planning. Firstly, ensuring compliance with legal and regulatory frameworks pertaining to data protection, consumer rights, and food safety is paramount. With the collection and storage of sensitive customer data through its online platform, adherence to regulations such as GDPR and CCPA is essential to safeguarding customer privacy and avoiding legal repercussions. Secondly, maintaining ethical sourcing and supply chain practices presents a professional imperative for Green Groceries. Upholding fair trade principles, ethical treatment of workers, and transparent sourcing practices not only aligns with the company's commitment to sustainability but also ensures the integrity of its products and brand reputation. Thirdly, the company must address environmental sustainability concerns arising from its expansion efforts. Balancing the promotion of organic and locally sourced products with minimizing carbon emissions, reducing waste, and protecting natural resources necessitates strategic planning and investment in eco-friendly initiatives to mitigate its environmental footprint. By proactively addressing these professional challenges, Green Groceries can uphold its commitment to ethical business practices, regulatory compliance, and environmental stewardship as it continues to grow and innovate in the competitive grocery market.

1. **C2 – BCS code of conduct**

The BCS Code of Conduct sets out the standards of ethical behavior and professionalism expected of individuals working in the field of information technology. It encompasses principles such as integrity, competence, accountability, and respect for confidentiality, and serves as a guide for practitioners to uphold ethical standards in their work.

Relating the BCS Code of Conduct to the case study of Green Groceries, several key aspects come into play:

* **Integrity:** Green Groceries must ensure the integrity of its online platform and IT systems by implementing robust security measures to protect customer data from unauthorized access or breaches. Adhering to the BCS Code of Conduct's principle of integrity means handling customer information with honesty and transparency, ensuring its accuracy and confidentiality at all times.
* **Competence:** As Green Groceries ventures into the online marketplace, it must ensure that its IT systems and e-commerce platform are developed and maintained by competent professionals who possess the necessary skills and expertise. Upholding the BCS Code of Conduct's principle of competence means ensuring that employees are adequately trained and qualified to perform their roles effectively and ethically.

**References**