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Team Name: We Are Farmers

**Executive Summary**

The project's primary purpose is to provide an excellent vending o machine with dual temperature functionality that provides hot and cold functionality in one vending machine. In addition, to consider the global pandemic, we will implement no touch functionality in the vending machine to avoid spreading the virus. For planning, we gathered requirements for the vending machine from the project managers and project champions and what they expect from us for the vending machine. After all the requirements were identified, we formated our work breakdown structure. Furthermore, towards our project, we explore all iron triangle components; for that, we do time estimation and set our time goal for the project as 13 weeks. Moreover, we set the cost limit to 188200 $. Finally, we make the project's quality plan, including quality matrix, acceptance criteria, preventative and correctness action, and quality deliverables. Furthermore, communication is the most effective factor in the project, which leads the project to success or failure, so we made a communication plan that includes the weekly meetings with all our departments separately. We start the email chain if anything happens in the project. It is related to others so that they can be updated on that. We set the time goal for meetings. after that, we set the protocols for our project and find out which risk arises in our project and what is that probability and impact on the project. Moreover, how to mitigate them to get success in the project.

**Project Team**

Project Managers: Tanner Armento, Ethan Bates, Dhruv Patel

Tanner is responsible for overseeing the Hardware Department and ensuring everything runs operationally. Tanner has ten years of experience in Hardware Procurement and Operations Management.

Ethan is responsible for overseeing the Software Department and ensuring everything runs operationally. Ethan has ten years of experience in Software Development as well as Development Management.

Dhruv is responsible for overseeing the Product Department and ensuring everything runs operationally. Dhruv has ten years of experience in Product Procurement and Operations Management.

**Project Scope**

The project aims to create a vending machine that will supply essential and non-essential products to consumers. One assumption to consider is developing safety guideline protocols to ensure employee and consumer health is a top priority. We maintain those protocols by daily cleaning equipment, practicing social distancing, and mask mandates. One aspect in the scope of the project is a dual temperature feature. We ensure this with a specialized tool to gauge the temperature to ensure it sets to the correct setting. Another in-scope aspect of the project is software and hardware testing. We guarantee the code produces no errors to give consumers a good user experience. We will ensure the experts handle suitable quality materials regarding the hardware. In addition, the experts will map out the machine through AutoCAD and have experience in building good quality machines. An out-of-scope aspect is the stakeholders wanting more features as the project lifecycle ensues. An additional aspect is the consumers not following protocols. If they contaminate the machine and other consumers, we will need to quarantine the area.

**Work-Breakdown Structure**

Farmers Market Vend-o-Mat

Meat (3.1)

Machine Details (2)

Software Development (1)

Coding (1.1)

Software Testing (1.2)

Vend-o-Mat Products (3)

Project Management (4)

Materials (2.1)

Project Charter (4.1)

Dual Temperature Feature (2.2)

Hardware Testing (2.3)

No-touch Payment System (1.3)

Produce (3.2)

Alcohol (3.3)

Project Plan (4.2)

WBS (4.3)

Hardware Implementation (2.4)

Covid No-touch design (1.4)

Estimating (4.4)

Cash Reader (1.5)

Controlling (4.5)

Card Reader (1.6)

Project Closing (4.6)

Software Implementation (1.7)

**Time Plan**

**Overview**

Time buffers were necessary to certain aspects of the project lifecycle. The ones identified to add a different schedule to the project are Coding, Testing for Software, and Testing for Hardware. We have extended the milestone for each to accommodate the lack of deliverables. Our past experiences have indicated that this would be the best course of action due to our coding and testing teams not meeting similar project deadlines. We noted that adding one additional week will be a safety measure to complete the project within the time estimate.

The time estimation section of our project covers our Time Goal, which is fastest time of the project completion. We have broken down the time estimation into four sections: Software Development, Project Management, Vend-o-mat Products, and Machine Details. We indicated from our internal staffing experience, warehousing, and outside resources, that we can safely accomplish the project in a quick and efficient manner.

**Time Estimation**

Time Goal: Complete Project in Thirteen Weeks

**Software Development (9 Weeks)**

Coding (2 Weeks)

Software Testing (2 Weeks)

No-touch Payment (1 Week)

Covid No-Touch Design (1 Week)

Cash Reader (1 Week)

Card Reader (1 Week)

Software Implementation (1 Week)

**Project Management (6 Weeks)**

Project Charter (1 Week)

Project Plan (1 Week)

WBS (1 Week)

Estimating (1 Week)

Controlling (1 Week)

Project Closing (1 Week)

**Vend-o-Mat Products (3 Weeks)**

Meat (1 Week)

Produce (1 Week)

Alcohol (1 Week)

**Machine Details (5 Weeks)**

Materials (1 Week)

Dual Temperature feature (1 Week)

Hardware testing (2 Weeks)

Hardware Implementation (1 Week)

**Cost Estimation Plan**

**Overview**

The baseline budget for this project is $230,000, with most of the costs accrued from labor due to a skilled workforce of farmers, vending machine builders, brewery workers, and programmers. The following cost estimations use analogous estimating and are based on current prices found in a Silicon Valley-like environment. Below is a table of these estimations:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Cost Estimation** | **Cost** | **# of Weeks** | **# of Hours (per worker)** | **# of Workers** | **Total** |
| Project Manager | $60/hr | 6 | 240 | 3 | $43,200.00 |
| Programmers | $50/hr | 9 | 360 | 4 | $72,000.00 |
| Vending Machine Builders | $40/hr | 5 | 200 | 3 | $24,000.00 |
| Farmers | $40/hr | 2 | 40 | 4 | $12,800.00 |
| Brewery Workers | $40/hr | 1 | 40 | 2 | $3,200.00 |
| Product Manager | $55/hr | 1 | 40 | 1 | $2,200.00 |
| Hardware Manager | $55/hr | 5 | 200 | 1 | $11,000.00 |
| Software Manager | $55/hr | 9 | 360 | 1 | $19,800.00 |
|  |  |  |  |  | $193,600.00 |
| Materials and Temperature Functionality | $10,000 |  |  |  | $10,000.00 |
| No-touch Payment | $3,000 |  |  |  | $3,000.00 |
| Covid No-touch Payment | $3,000 |  |  |  | $3,000.00 |
| Cash Reader | $3,000 |  |  |  | $3,000.00 |
| Card Reader | $3,000 |  |  |  | $3,000.00 |
|  |  |  |  |  | $215,600.00 |
| Buffer Funds | $14,400 |  |  |  | $14,400.00 |
|  |  |  |  |  | $230,000.00 |
|  |  |  |  |  |  |

**Cost Buffers**

A buffer fund of $14,400 is allocated to the project to account for the possibility of high material prices, spoiled products, or potential employee pay raises.

**Quality Approach**

Our quality is handpicked and handled with care. Our brewing company follows covid-19 safety protocols to maximize health concerns. The ingredients themselves are shipped daily to ensure the freshness of the product. The farmers handpick the best quality produce and meat to provide the consumer with the best tasting experience from our vend-o-mat machine. The top-of-the-class students carefully picked for the software developer team originates from Carnegie Mellon University. We have full-stack developers for every project sector to deliver any coding projects with speed and efficiency. The top-of-the-class students carefully picked for the Hardware Specialist team originates from Stanford University. These engineers designed and developed cutting-edge technology prototypes to display a sleek model that even competitors will want to buy. To ensure maximum quality, we thoroughly test the product.

**Overview**

Products

Make sure the customer receives the product.

Ensure the produce, meat, and alcohol are properly heat/cold regulated and are edible.

Vending Machine

Make sure the machine is accessible to the customer.

Make sure the cleanliness of the machine is upkept due to pandemic precautions.

Software

Ensure software code is clean and defect free.

Ensure input validation and security requirements for safe transactions.

**Quality Metrics and Acceptance Criteria**

Hardware Testing

1. Use temperature gauging tool to ensure dual temperature functionality does not reach overly hot or overly cold temperatures.
2. Complete performance testing (ensure selection functions properly and make sure the correct sealed shelf opens for the customer)

Software Testing

1. Run automated script testing to confirm that the payment and touchscreen software functions properly.
   1. If does not work:
      1. Script creates report that details all defects in software

User Surveys

1. Provide option on touchscreen for customer to provide email address, which will send a survey for the customer to complete. This survey will help determine improvements needed for the machine after the initial implementation.

**Preventative and Corrective Actions**

Software

1. Ensure software patches are applied both before and after implementation to protect against evolving cybersecurity attacks.

Sanitation

1. Sanitation worker employed by the company will clean the machine during the off-hours.

Stocking

1. Vending machine stocker employed by the company will re-stock the machine during the off-hours.

**Quality Deliverables**

1. For ease-of-use (accessibility), create simple text prompts on digital screen that provide understandable instructions.
2. Ensure meat, produce, and alcohol products are stored at appropriate temperatures for safe customer consumption.

**Communications Plan**

A kickoff meeting will be initiated via Zoom to group the stakeholders. The stakeholders will consist of the Project Manager, the Project Champion, the Project Sponsor, the managers of the products, hardware, and software. The kickoff meeting will go over the overview of the project scope, expectations, and deliverables of the farmers market vend-o-mat.

A separate weekly meeting will be held by the IT Project Manager through Zoom to give updates to each manager respectively to their own sector. The meetings will be scheduled and will last 30 minutes. The purpose of these separate meetings will be to relate the essential information to their respective team. Mondays will be with the Product Manager. Tuesdays will be with the Hardware Manager. Wednesdays will be with the Software Manager.

The first meeting will be with the manager of the products. The IT Project Manager will go over the initial plan of how the products will be gathered from well-known farmers and brewers. The discussion will go over the logistics and supply. Every following meeting from the first will give updates on project progress of their supply and if there are any obstacles.

The next meeting will be with the manager of hardware. The IT Project Manager will go over the initial plan of the materials needed and the design of the machine. The following meetings forward will give updates on project progress on the building of the machine and any obstacles in the future.

The last meeting will be with the manager of software. The IT Project Manager will go over the initial plan of the user interface design, software language, and processes of their code. The following meetings forward will give updates on project progress of their sprint builds and any bugs in their code.

After the three meetings, the Project Manager will have an email chain including the three managers, the project sponsor, the project champion, and any executive that has interest in the project. updated on their current tasks, and if there are any issues presented.

**Risk Management Plan**

**Overview**

The following sections outline the risks identified for this project and the analysis performed to identify, assess, address, and monitor each one. The following risks are based on the current global pandemic climate and its associated factors.

**Identification and Assessment**

Listed below are the reasons each risk is identified and assessed:

1. Project deliverables are late for each phase
   1. Previous project management experiences show that different employee circumstances, material management, and other logistical factors can cause late project milestones.
   2. Per the assessment, this risk is identified as a medium risk due to the uncertainty of the project’s complexity, employee competence, and materials management.
2. Employee health due to pandemic
   1. The current global pandemic involves a highly infectious disease with varying levels of transmissibility and severity. Employees are susceptible to this natural phenomenon, which can result in project delays if workers are too ill to work.
   2. Per the assessment, this risk is identified as a medium risk due to the low probability of vaccinated employees becoming sick. Software employees may still be able to work from home during quarantine; however, vending machine builders may need to stay home to recover, which effectively stops vending machine construction.
3. Stakeholders request new features for vending machine
   1. Even with a solid plan of scope, stakeholders can demand additional features that may or may not extend the duration of the project.
   2. Per the assessment, this risk is identified as a medium risk as multiple stakeholders, ranging from employees to customers, can suggest new features based on the results of construction, testing, and user input. While these features may not be expected to be implemented, choosing to add them could create potential delays and cost increases.
4. Lead developer leaves company
   1. Because of the expected length of this project spanning at least thirteen weeks, employee turnover is a possibility. The lead developer may have personal circumstances that may prompt the employee to resign.
   2. Per the assessment, this risk is identified as a medium risk due to employee turnover being a possibility during the project’s three-month period. Personal circumstances such as employee hardship or a new job can convince the lead developer to resign, thus affecting the knowledge base of the project.
5. Hardware materials and software equipment are not delivered, or they are difficult to obtain
   1. Due to the current global pandemic, material and technology acquisition is met with resistance from global supply shortages.
   2. Per the assessment, this risk is identified as a high risk due to the extensive raw material shortages occurring globally. This shortage affects the procurement of metals for the circuitry and pieces necessary for vending machine and payment readers.

**Monitor and Address**

1. Project deliverables are late for each phase
   1. To monitor this risk, careful attention will be placed on missed deadlines.
   2. To address this risk, the project completion time will be extended to accommodate the missed deadlines.
2. Employee health due to pandemic
   1. To monitor this risk, employees who attend work on-site will be regularly tested for virus symptoms, and employees who are off-site will be questioned of any noticeable symptoms during calls.
   2. To address this risk, strict safety guidelines will be enacted to prevent further infection.
3. Stakeholders request new features for vending machine
   1. To monitor this risk, customer demands will be recorded and assessed to determine if additional features are necessary for customer satisfaction
   2. To address this risk, a definite scope will be established in the project plan before the project is started.
4. Lead developer leaves company
   1. To monitor this risk, employee dissatisfaction will be evaluated before or during the project’s timeline. A two-week notice will also be immediately flagged upon its submission.
   2. To address this risk, higher pay or a promotion, depending on the circumstances, will be offered to the developer to prevent the employee from resigning.
5. Hardware materials and software equipment are not delivered, or they are difficult to obtain
   1. To monitor this risk, supply prices and current geo-political markets will be observed to determine the availability of certain materials.
   2. To address this risk, back-up vendors and markets will be used to supplement the lack of resources from the primary providers.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Probability/Impact Matrix** | | | | |
| **Risk** | **Probability** | **Impact** | **Exposure** | **Timeframe** |
| **Project deliverables are late for each phase** | **2** | **2** | **4; (Medium)** | Product Deliverable Milestones |
| **Employee health due to pandemic** | **1** | **2** | **3; (Medium)** | During physical hardware production and product stocking |
| **Customers request new features for vending machine** | **2** | **2** | **4; (Medium)** | Any time during project |
| **Lead developer leaves company** | **1** | **2** | **3; (Medium)** | Any time before or during project |
| **Hardware materials and software equipment are not delivered, or they are difficult to attain** | **3** | **3** | **6; (High)** | Beginning phase of software and hardware development |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Countermeasures Table** | | | | |
| **Risk** | **Owner(s)** | **Flag(s)** | **Countermeasure(s)** | **Cost** |
| **Project deliverables are late for each phase** | Project Managers | Deadlines for milestones are missed | Extend project deadlines | 1-week delay |
| **Employee health due to pandemic** | Entire Project Team | Sickness symptoms | Enact strict safety protocols | 1-week delay due to quarantine |
| **Stakeholders request new features for vending machine** | Hardware Manager and Software Manager | Customer demands | Establish definite scope and plan before the beginning of the project | $5,000 for labor costs; 2-week delay |
| **Lead developer leaves company** | Software Manager | Two-week notice; employee dissatisfaction | Offer more pay or a promotion | Loss of product knowledge; 4-week delay for hiring replacement |
| **Hardware materials and software equipment are not delivered, or they are difficult to obtain** | Project Managers; Hardware Manager; Software Manager | Supply shortages; high material prices; supply chain lockdowns | Rely on back-up vendors and suppliers | 1-week delay |

**Appendix A – Ethan Bates Resume**

Ethan Bates

Murfreesboro, TN 37127 | 3235533225 | abcde@gmail.com

**Summary**

Innovative Software Development successful in leading and directing projects from inception to launch. More than 10 years of progressive management experience and repeated success in developing project initiatives. Consistently surpasses revenue performance targets. High-achieving management professional possessing excellent communication, organizational and analytical capabilities. Devises innovative solutions to resolve business and technology challenges. Eager to advance business goals through careful team management

**Skills**

|  |  |
| --- | --- |
| * Work Planning and Prioritization * Project Management | * Stakeholder Relations * Staff Management |

**Experience**

Project Manager 01/2012 to 02/2022

creator project management Murfreesboro, TN

* Handled continuous project monitoring and management by developing forecasts, tracking expenses, and approving payments.
* Built strong community relations with subcontractors and vendors to optimize cost savings and complete timely preconstruction.
* Enhanced development and drove continuous improvement of project delivery process by providing strong program leadership.

**Education and Training**

Computer And Information Systems Management **04/2011**

Middle Tennessee State University Murfreesboro, TN

**Appendix B – Tanner Armento Resume**

Tanner Armento

Murfreesboro, TN 37127 | 3235533224 | abcd@gmail.com

**Summary**

Insightful Project Manager dedicated to identifying and cultivating team members' skills and talents. Polished in implementing continuous enhancements and building and maintaining accurate project budgets. Focused and driven team player practiced in leading multiple simultaneous projects leveraging proven project management tools. Innovative Hardware Procurement and Operations Management. successful in leading and directing projects from inception to launch. More than 10 years of progressive management experience and repeated success in developing project initiatives. Consistently surpasses revenue performance targets.

**Skills**

|  |  |
| --- | --- |
| * organizational Skills * Project Development and Lifecycle | * Team Management * Workflow Planning |

**Experience**

Project Manager 01/2012 to 02/2022

sector project management Murfreesboro, TN

* Created project plans with established timelines for integral phases, assigned to appropriate teams, managed workflow and achieved RFP submissions and completion deadlines on or before schedule.
* Made changes to project scope and cost and implemented most effective change management processes to keep project up to date.
* Forecasted, scheduled and monitored project timelines, personnel performance and cost efficiency.

**Education and Training**

Computer And Information Systems Management **04/2011**

Middle Tennessee State University Murfreesboro, TN

**Appendix C – Dhruv Patel Resume**

Dhruv Patel

Murfreesboro, TN 37127 | 3235533223 | abc@gmail.com

**Summary**

Motivated professional offering information system in Product Procurement and Operations Management. Adds value to any organization in need of great collaboration, interpersonal, and multitasking abilities. Meets tight deadlines every time. Systematic Project Manager with more than ten years working in cross-functional environments. Bringing exceptional written and oral communication skills paired with expertise in financial analysis and project coordination. Dedicated to offering locally relevant oversight and management techniques

**Skills**

|  |  |
| --- | --- |
| * Data Management * Organizational Skills | * Team Management * Microsoft Office |

**Experience**

Project Manager 01/2012 to 02/2022

factor project management Murfreesboro, TN

* Brought projects in on-time and in accordance with budget and quality standards.
* Handled continuous project monitoring and management by developing forecasts, tracking expenses, and approving payments.
* Created project plans with established timelines for integral phases, assigned to appropriate teams, managed workflow and achieved RFP submissions and completion deadlines on or before schedule.

**Education and Training**

Computer And Information Systems Management  **04/2011**

Middle Tennessee State University Murfreesboro, TN