Project:	Dealership management system
	CSE 5325 – Fall 2019
	Project Management
Module:	Project Scope & Feasibility
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1. Introduction and Executive Summary

The web application which needs to be developed will be known as dealership management system. This web application would be used by customers as well as employees. The objective of the application is to give a platform (customer specific) to provide information about the company and inventory of the products available and to give a platform (employee specific) to register as new users and also enabling them to view more confidential data such as sales records and customer information. It would also contain feature to allow employees to keep personal notes and an option to search for relevant data. This application would ensure that our client's customer acquisition cost is reduced and provides an effective platform to promote their company.

The key achievements for our software development company after completion of this project would be increased managerial and technical skills of our employees. It would act as the first step towards building a strong foundation for our firm and would give us the motive to work better in order to establish ourselves as game changers of the software development world. The objective of undertaking this project is also to generate a good return and build up the company's reputation so that we can get bigger and higher-paying project in the future.

2. Objectives

2.1 BUSINESS OBJECTIVES

1. Generation of a large revenue to increase profit.
2. The successful completion of the dealership management system project will enable the team to gain more visibility and gain operational excellence, which in turn will help them acquire more projects in future.
3. This project would help the development team gain professional experience. For the developers, it would be technical knowledge that they would gain.
4. This project will help our software development company to gain the spotlight amongst other competing software development companies and this would be a milestone for our firm.
5. Investing in new infrastructure and software licenses for development ensures that we can use the same tools for future projects as well. Employee training also goes into company's productivity.

2.2 SYSTEM OBJECTIVES

1. To provide the users and employees an easy access to all the resources of the dealership company, such as information about the various makes and models of vehicles that the dealership has.
2. The website should be interactive and well organized so that it encourages users to visit the page.
3. Providing relevant information on the home page and updating it regularly so that the users are up to date with the most recent information.
4. Providing an option where customers can have their accounts created by the company representatives.
5. Employees should have access to customer information, inventory and sales records.
6. Search bar should be implemented so that users can search for items.
7. Employees should be provided with a notes options where they can keep notes about anything, they feel is relevant.
8. Web application should provide the users with a list of all items present in their inventory.
1. System should be able to handle 500 users simultaneously at any given point of time by making use of multithreading.
2. Login should be secured and sensitive user information such as login ID, password, credit/debit card details should be encrypted and stored securely.
3. Make use of authentication technologies like one-time passwords, biometric authentication and device identification.
4. System should have high availability through data redundancy, high reliability and high fault tolerance.
5. The system should have a reliable firewall in place to prevent unauthorized users from accessing sensitive data.
6. The web application should be hosted on the company's own web server present in their data center.

3 Project Feasibility, Risks and Metrics

Project feasibility and metrics are summarized below:

3.1 Project Feasibility Concerns

1. **Market readiness –** Since we are provided with this information that the dealership business has been expanding greatly over the past 10 years, it is safe to assume that it must have acquired a large customer base. We have a total of 3 months to develop this application which would give us an ample amount of time to promote this website amongst those customers. With respect to the above point and considering the fact that this is the digital age we are currently living in, it is safe to assume that almost every customer will have access to a web browser and an internet connection ; having a web application will prove to be an attractive option for existing customers and will also help in drawing more potential customers. Thus concluding, the market readiness of this application is high.

2. **Technical issues –** Technical issues could arise from the fact that the capabilities of the server present in the data center is unknown. Since it is unknown, we do not know the specifications of the web servers being used, such as how many users it can handle, specifications of the database servers being used, such as memory allocated for data storage and if it has enough space to backup an entire copy of the web application code as well as the data present in the database. It is also not known if the servers have load-balancing capabilities. Other technical issues can arise from browser incompatibility, incorrect memory usage, fatal production bugs etc.

3. **Resources –** Resources include development team and the business team. Risks involve team members leaving before the completion of the project and there is no backup of team members and the company must spend extra money and time to train new people, which can cause delay in the project.

4. **Cost –** The budget should involve all the expenditures such as cost of hiring a development team, cost of setting up the infrastructure and a provision for miscellaneous costs. Risks involve the budget being exceeded due to wrong estimations of cost, fluctuations in the market due to which prices increase, unforeseen maintenance of devices that involve a lot of cost and training of developers due to unavailability of experienced resources.

5. **Time to market –** As discussed in the first point, it is safe to assume that the application will be market ready. But it is always a good idea to do a market survey and promote the application before the first release. Not enough promotions and not doing a proper market survey will give the business users a wrong estimate of the market readiness of the app and having the app will prove to be a liability instead of an asset. It will not generate a profit like the business users intend it to.

3.2 PROJECT RISKS

1. **Risk:** Since the development of this project requires not only the help of the development team but business team, software testers, all of them are supposed to be aware of the web application's features. It is possible that one of these people may get indulged in stealing some private data about the web application.
   Mitigation Step: This can be prevented by having appropriate security measures in place such as disabling USB ports of the workstations (using firewall or disabling them from BIOS), tracking communications and giving proper awareness training to inform them about the consequences of stealing confidential data.

2. **Risk:** Considering that this is the first time in 10 years that this dealership company is hiring a software development company to design a web application, it is possible that our client doesn't really know his requirements for the webpage. This can lead to long delays as well as lots of changes in the design modules, therefore extra expenses.
   Mitigation Step: To mitigate these expenses, it's necessary that the development team spend more time talking to the client to understand their needs more clearly. We can make use of the prototyping tools here so that user requirements are well accommodated. We can also ensure that the requirements are properly frozen and signed off by both the parties before the actual development starts.

3. **Risk:** As mentioned in the project feasibility concern, there is a risk associated with the budget being exceeded due to sudden increase in the cost prices of materials or unforeseen maintenance of devices which can prevent our product from hitting the market and earning the profit. Similarly, the delay (for the product to hit the market) can be caused by team-members suddenly deciding to leave the project.
   Mitigation Step: Both risk factors can be mitigated by having a backup plan ready for such circumstances. There should also be a provision to exceed the budget if there are any unforeseen crucial expenditures.

4. **Risk**: Dependency of the product on the server present in the datacenter (mentioned by the owner of the dealership company in its requirement), since the limitations of the server is unknown.
   Mitigation Step: Client should provide the exact specifications of the server so that the development team knows exactly what they will be working with and they will not run into any surprises.

5. **Risk:** Not having enough test cases to test the functionality of the application poses as a risk too. Therefore, it's important to ensure that the application can work on devices such as laptops, mobiles and tablets with varied screen size and resolutions.
   Mitigation Step: There should be appropriate unit testing of each component of the app as and when it is developed and there should be appropriate integration testing as well to ensure that all the components work well with each other. Another step that could be used to mitigate this risk would be to have a test-first method of development, where the test cases are written first and then the app is developed to ensure it satisfies all the tests.

3.3 PROJECT METRICS

1. **Budget –**

   The estimated cost for the entire project is approximately $305020, the **Threshold value is $310K**. If at any stage, it is found that the expenditure is more than this calculated value, it's an indicator that there is something which is amiss in the project.

   Formula – Actual money spent / Approved budget

2. **Time taken to complete each phase –**

   - Time allotted for "Requirements" phase to complete = 4 weeks
   - Time allotted for "Design" phase = 1 week
   - Time allotted for "Implementation" phase = 4 weeks
   - Time allotted for "Testing" phase = 3 weeks
   - Time allotted for "Deployment" phase = 1 week

   Formula – Number of weeks *any phase* is supposed to get completed in / Actual number of weeks taken to complete a phase.

   Threshold value = 0.9 i.e. Number of weeks any phase is supposed to get completed in / Actual number of weeks it takes to get completed should always give us a value greater than or equal to 0.9

Project scope includes the following:

1. **Functionality:** The website will contain Welcome Page: contains basic information about the company, such as “Who are we”, history, board of directors, list of addresses for all its current 6 stores, employee portal, etc. If the user is a customer, they will have the option to only view the information given in the welcome page and check the inventory. Customers would also have the option to provide the feedback about the application. They must give the rating out of 5 with 1 being the lowest and 5 being the highest. If the user is an employee, they will have two options: 1) If the employee is accessing the page for the first time, they will have to create an account using registration link. 2) If it’s an existing employee, they can use the login option. If the user logs in as an employee, they will have the option to search for/view customer information, Inventory (makers and models) and sales records. They can also create personal notes related to their day to day activities. They can create read, update and delete records about new customers. They can also create, read, update and delete makers’ and models’ information.

2. **Content Strategy –** In order to develop an application to fulfill 2 goals: a) To build an online community b) To increase sales

3. The web page would be able to handle 500 simultaneous access requests at any given point of time.

4. **Security -** A way to log in securely and allowing only authenticated users to login as employees and register as new employees would be implemented and a system to report any user for getting involved in non-ethical or fraudulent activities shall be implemented as well.

5. **Fault tolerant-** A web application which would be highly available at all times through the method of data redundancy.

6. **Host –** The host of the web application shall be the server at the company’s own data center.

Following is a list of items out of scope:

1. Tax issues
2. Vacation and social and health insurance costs
3. Post project maintenance costs
4. Contract negotiation and legal concerns
5. Integration of payment gateway

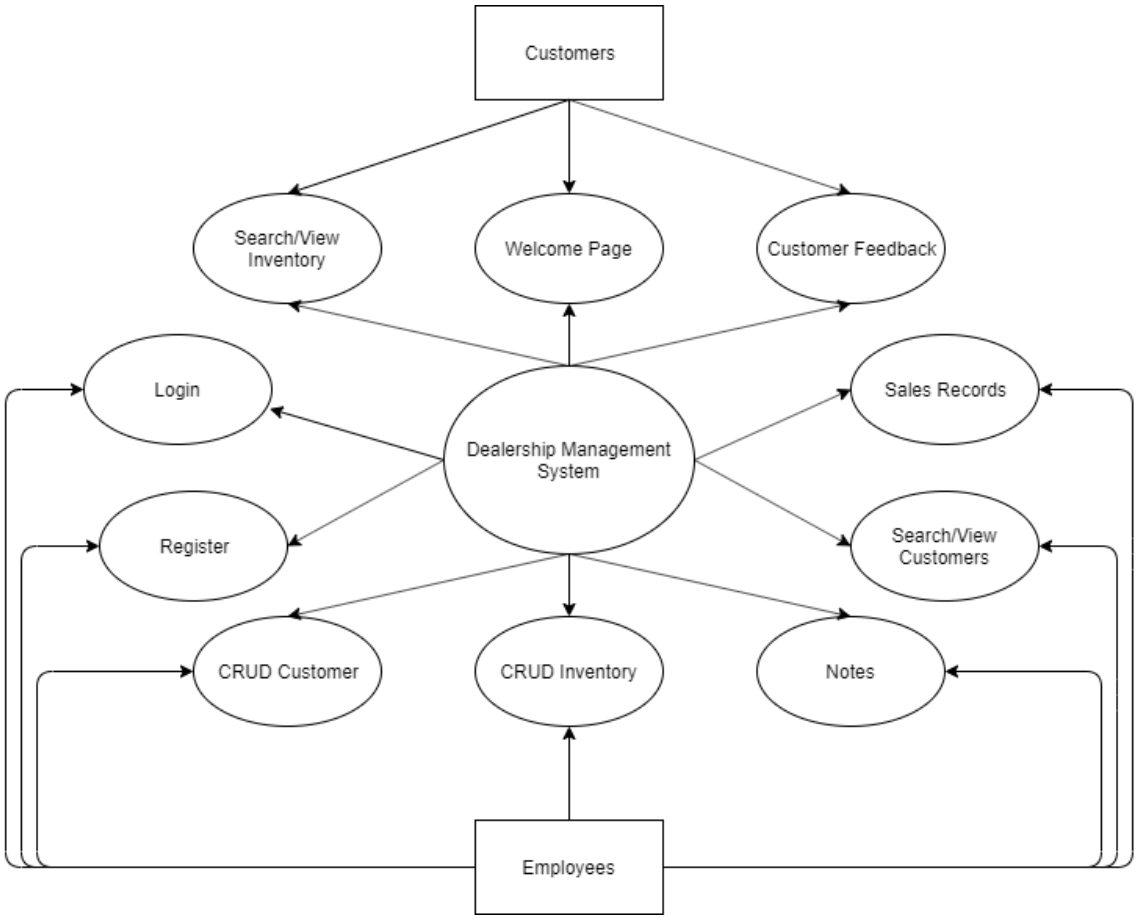
4.1 PROJECT PROCESS MODEL

The model which I will adopt for the development of this web application would be Waterfall method.
The primary reason to choose this model is that it's well suited for smaller size projects. Secondary reasons would be that it's one of the easiest models to manage and this model is beneficial in managing dependencies.
Both Agile and Waterfall have their share of pros and cons. Our incapability of not making the client involved in each process and not being able to go back any step of the process if there's ever a need to make any changes, sure is something to ponder about, but as a manager I firmly believe that I can compensate for both of these disadvantages of waterfall method, by making the client's requirements very clear in the beginning and taking more time to understand their needs. If client requirements are very well understood, implementing the waterfall method would give us good and faster delivery of results.
The waterfall model would be implemented as follows:

1. Requirements engineering
2. Design
3. Implementation
4. Testing
5. Deployment

To compensate for the disadvantages offered by our model (as described above), the first phase which is requirements engineering should take the maximum amount of time to get completed and after each phase, we can verify the system being built with the help of our client to assure that we are building it right and to avoid any further mistakes we made in the previous phase. If "validation" and "verification" is done after each phase, we can reduce the negative scope of waterfall method.

4.2 PROJECT CONTEXT



5. Assumptions and Constraints

5.1 ASSUMPTIONS

The following is a list of assumptions –

1. All users are above 18 years of age.
2. The team hired for development is highly qualified.
3. People will have easy access to the application and will know how to make good use of it.
4. Project shall follow waterfall methodology throughout execution.

5.2 CONSTRAINTS

The following is a list of constraints –

1. No promise of the end-product being exactly same as the client wants it to be.
2. Changes can’t be made in the middle of the process of development.
3. Customer requirements can change during the development process.
4. System would not be able to handle more than 500 access requests by users.
5. Project must be completed in 3 months.

6. Project Tasks, Schedule and Cost

Considerations:

1. Since start date of project is September 10 and end date is December 10, we have total 13 weeks for this project.
2. Assuming 5 working days and 8 working hours/day, which gives us 40 hours/week.
3. Assuming that all members will work all the working hours without vacation.

PROJECT COST

Resources	Salary/hour	Total salary for total project duration
Manager	$100	100*520 = $52000
Developer 1	$50	50*520=$26,000
Developer 2	$50	50*520=$26,000
Developer 3	$50	50*520=$26,000
Developer 4	$50	50*520=$26,000
Developer 5	$50	50*520=$26,000

Particulars	Price
Laptops – HP Zbook studio X360	6*2400=$14400
Database and web server provided by client	Free
McAfee Security Software	6*20=$120
Microsoft Office	6*50=$300
Selenium testing tool	Free
Visual Studio	6*1200=$7200
IBM Server (for client's data center)	$10,000
Operating system for server - CentOS	Free

ROUGH PROJECT SCHEDULE

Phases	Start Date	End Date	Week distribution
Requirements	10th September	7Th October	4 weeks
Design	8th October	14th October	1 week
Implementation	15th October	11th November	4 weeks
Testing	12th November	2nd December	3 weeks
Deployment	3rd December	9th December	1 week

Summary:
Total Cost of resources = $182,000
Total cost of Particulars = $32,020
Total Miscellaneous cost = 91,000 (Insurance, Utilities, building costs)
Total Global Cost = $305020
Therefore, the amount that shall be charged to the customer would be approx. $457530 to maintain profit margin of 50%

7. Conclusion and Recommendations

This application would be useful as it will promote the company and extend their reach to a greater number of customers. Customers would be able to view the inventory with ease instead of physically going to the dealership. However, these would not be possible without adequate promotion and marketing. There is also a risk that the initial client requirements might change during the development phase. Future scope could include having spaces for advertisements to generate revenue. New functionality to view inventory of used cars as a customer and another functionality to view the spare parts for each make and model.

- https://paretocrm.com/blog/project-management-metrics-kpi/
- https://visualstudio.microsoft.com/vs/pricing/
- https://www8.hp.com/us/en/workstations/zbook-x360.html
- https://store.avantiglobalresources.com/7915mc1-150066928?matchtype=&network=g&device=c&adposition=1o3&keyword=&campaign=1058256652&adgroup=pla-311316379370&gclid=EAIaIQobChMIpIuttN3d5AIVEdvACh0mZgf_EAYYAyABEgLBbfD_BwE
- https://www.infopulse.com/blog/top-10-software-development-metrics-to-measure-productivity/
- https://projectbliss.net/project-assumptions-list/
- https://www.joomshaper.com/blog/anything-can-happen-risk-in-web-projects
- https://www.clearpointstrategy.com/56-strategic-objective-examples-for-your-company-to-copy/
- https://www.orangepegs.com/blog/business-objectives-examples
- https://www.solarwindsmsp.com/blog/network-authentication-methods
- https://rentalsupport.tripadvisor.com/articles/FAQ/noc-Common-IT-issues-and-how-to-fix-them
- https://www.hexacta.com/2018/11/20/the-5-most-critical-web-application-security-risks/