

Part A: Describe the Business Case for Car Sharing in Futureville

Introduction

Recently, the city of Futureville announced that it will be taking bold step towards a greener future. City officials announced publicly that they have voted to begin a car sharing plan. This new system will alleviate other city woes such as traffic congestion and ease the burden on strained parking resources. Citizens taking part in the system are projected to save money and drive fewer kilometers. City counselors are clearly excited about the intriguing possibilities on the horizon for car sharing in Futureville.

Car sharing has been implemented in a number of Canadian cities, including Toronto and Vancouver^[1]. The basic idea behind the plan is to provide a fleet of shared cars to a number of plan members who use a reservation system to schedule their vehicle use. These vehicles are parked around the city to offer nearby access and frequent availability. They are essentially rented to users on an hourly basis, and charge rates for both time and distance traveled. The car sharing plan for Futureville is to begin with a pilot 2-3 year pilot project beginning next year.

This pilot program will assess the viability for the car sharing program in Futureville, with hopes of eventual city-wide implementation and profitability within five years. Members for the service will be selected from those who have shown potential interest in the plan and live in the geographic areas being served. To handle the needs of these individuals and the fleet of vehicles, a full time operational manager will oversee the project to maintain high levels of service. Several systems will be needed to handle all aspects of the service including reservation, tracking, and billing. The systems will need to interact with each other seamlessly to provide high levels of service. There is a significant focus on service because the success or failure of the project will be determined by these initial pilot program members.

The Business Environment

Business needs

The city of Futureville is looking for an innovative and unique solution to address and alleviate some of the growing concerns in the area. To meet the needs of the city, the new car-sharing program must meet its social, business and customer service goals. To meet the social goals of lowering vehicle usage and emissions the project must

[1] "City List," *Car Sharing Canada*. accessed December 04, 2013. http://autosshare.com/ca/city_list.html

maintain a fleet of well serviced cars that are conveniently available to users. This will also reduce the strain on parking facilities. In terms of business goals, the project is not expected to be initially profitable, but valuable management information needs to be produced. The system will need to accurately track customer and vehicle data to achieve this goal. This information will hopefully lead to the continued management and success of the project, eventually leading to profitability once the car-sharing program extends beyond the initial pilot stages. High levels of customer satisfaction must also be maintained to ensure the success of the program. This means the program must be low cost, well organized, and effective at member communication. Managers must be responsible for achieving this goal in order to ensure the success of the project.

Meeting all these needs will certainly require a substantial amount of effort. However, planning for the business needs of the system beforehand will help to alleviate some of this workload. The car sharing program will need to be easy to use and available any time. It must also provide new and reliable vehicles for member use. Tracking and vehicle usage must also be easy to use and understand. Finally, managers must have excellent communication skills and maintain a professional environment. Planning and meeting these needs will help lead to favourable outcome.

Interfaces needed

The system being developed to handle the new car sharing program is critical to the success of the program. This system will involve three major components. First is a reservations system. It must be easy and convenient to use to book vehicles, and provide management with simple access to information and reports. It will need to interface with the in-car tracking system to provide availability data to users. The in-car tracking and recording system must also be able to interact with the reservations system to unlock for members who have booked the vehicle at a specified time. An interface is also needed with the billing system to pass on the tracking information for payments. This third system, for billing and accounts, must provide users with clear and transparent data to avoid any miscommunication and ensure proper payment. Keeping track of all accounts will also be necessary to handle accounts in arrears, or offer benefits to those accounts in good standing. For instance, members may not be allowed to make reservations if they have an outstanding payment, or may receive a billing discount if they frequently return the car on time, requiring an interface with the other two systems. The billing system will also need to interface with banking systems to process automatic payments from members.

Stakeholder analysis

Several stakeholders will have an investment in the overall system:

- business users - car sharing plan members
- external users - servicing personnel, telephone booking staff

- management and information users - project manager and management staff
- system client - the city of Futureville
- technical staff - IT personnel

Each group has certain stakes involved in the success of the car sharing system. Business users will need the system to work well because they will be investing membership fees and needing vehicles on a certain schedule. Regular members will need vehicles available when they have booked them or they may miss important appointments. External vehicle maintenance personnel will also need the system working to guarantee that the car is where it's needed to be picked up for maintenance. Management and information users need a strong system to guarantee customer satisfaction. Furthermore, they will need accurate tracking and billing to make sure the system is providing accurate data for income and possible future expansion. Finally, the city will want the overall system working to recuperate investment costs, and hopefully expand into other areas in the future to make the plan profitable. They will also want a new system to add to current public transportation, to decrease environmental impact and raise the city's standing. These are key components of the future city planning strategy. Of course, technical staff will want the system to be easy to debug and fix so that they will not waste valuable time needed for other projects.

The System Vision

System objectives

The car sharing information system will need to be designed to meet three main objectives. First of all, it must be easy and convenient to use. This will encourage users to adopt the system and make it successful. This ease of use extends all the way through the system, from booking, vehicle use, tracking, and billing. Next, to capitalize on future success, the system will must also provide reliable and accurate tracking data. This will allow for optimization of limited resources in the pilot program, and provide statistics for analysis and expansion of the program into other areas of the city. Finally, the system must interface fluidly with existing banking systems to receive automatic billing payments and secure revenues for the project

Business benefits

The main business benefit of the car sharing system is to make Futureville a leader among Canadian cities in terms of green initiatives and public transportation options. Other benefits include:

- Reduced traffic congestion due to less overall vehicle use
- Reduced wear and tear on public roads, meaning reduced cost for maintenance, from less overall distance driven

- Increased efficiency of currently available parking and reduced needs for new parking facilities with less cars being owned outright by Futureville citizens
- Increased ridership on public transportation and other "green" options, because users are more likely to make use of other transportation methods
- Increased happiness of Futureville citizens due to reduced traffic and cleaner environment
- Possible qualification for federal/provincial funding for environmental initiatives
- increased city revenue from a profitable car sharing program

System capabilities

To obtain the above benefits, the car-sharing IS should include the following capabilities:

- Provide an adequate number of vehicles so that users have nearby available options
- Provide a quick and easy reservation system to make booking easy and convenient
- Be able to handle increases in membership without degradation
- Support 24-hour booking through a web based system
- Support for telephone booking for those without web access
- Maintain vehicle location database to offer other vehicles close to the user if the requested vehicle is already booked
- Reliable and accurate billing and accounts system to adequately obtain payments and handle non-payments
- Support for automatic billing via bank or credit card
- Provide a newsletter included with billing information
- In-car tracking system to track use in both distance and time for billing and maintenance purposes
- Maintain a database of users for tracking and billing, and potential users for future expansion
- Maintain a history of use for assessing the viability of the pilot project, including expansion

Risks and Feasibility

Organizational/cultural feasibility

The car sharing community in its entirety may face certain issues related to adoption and use of the new car sharing system. These include:

- Current level of computer competency
- Substantial computer phobia
- Significant change in normal car usage procedures and driving habits

- Unfamiliarity with vehicles never being driven before
- Vehicle needs not adequately met by current vehicle fleet in terms of availability or type of vehicle
- Apprehension due to lack of ownership and control over vehicles
- Resistance to fee structure
- Possibility of overwhelming job responsibilities for project manager
- Fear that tracking procedures are invasive

Many of computer issues can be addressed through proper user training and information. Management staff should be fully familiarized with the system so that they can handle issues as they arise. Plan members should be guided through the web interface with easy to follow instructions. Telephone service staff will guide themselves and users through the system with similar functionality. The will need to be designed to handle new users as the project expands, so ease of use should be a top priority to ensure system adoption.

Issues related to the vehicles and related systems will be mitigated by time and usage. As this is a pilot project, initial plan members will be able to acclimatize to their new transportation options because of the smaller scale and scope of the project. As users become more comfortable in using the system, they will be more at ease with the vehicle usage and driving habits. As the project expands, new types of vehicles such as trucks, vans, SUVs or mini-vans can be added to meet demands. Initial acclimatization can also be mitigated by making sure the system is fully functional and easy to use. The in-car system provided by COCOS seems to meet this criteria.

The fees of the new system are also flexible due to the nature of the pilot project. The fee requirements should be reviewed on a regular basis to make sure that both revenue requirements and user satisfaction are met. These should be adjusted by management staff if necessary. Additionally, staff workload may also be an issue, especially in the early days of the program. As staff gets used to the responsibilities required of them, they will be better able to manage their time appropriately. Moreover, the hiring of an assistant manager and office assistant should alleviate the manager duties, allowing them to adequately meet the needs of their position.

Finally, the tracking system concerns cannot be directly resolved. Usage information is certainly not anonymous because the information is needed for billing procedures. However, users should be assured that this information will not shared with any third parties, unless the city is legally required to do so. This will most likely prove adequate for most members as part of the membership contract will state that the vehicle is not to be used in any illegal activities.

Technological feasibility

Creating the new car sharing system represents a substantial investment in new technology for the city of Futureville. Technological issues relating to the new system include:

- Necessary skills for website creation and maintenance
- Necessary skills for billing system creation and maintenance
- Website navigation and reliability
- Accuracy and communication capabilities of in-car tracking system
- Interface capabilities provided by third-party in car tracking system
- Lack of expertise in system use by all users
- Access of information to all users

The technological issues of the system are relatively straightforward to address. The city of Futureville has significant access to significant technical resources. The system can be built and maintained by technological experts used for other city initiatives. If these are unavailable, third-party consulting and development firms can be looked into. This is exactly the case for the in-car tracking system provided by COCOS. Their staff should be experts in its use and maintenance, and will likely be able to handle any issues that arise.

The reservation and billing systems, including the website, that will be developed must be designed with ease of use in mind. Additionally, system interaction must be considered between billing, reservations and tracking. Whether developed in-house or through a third party, users, management and technical staff will need to be consulted to make sure all needs are met.

Resource feasibility

A significant number of resources will also be required to build and maintain the new system. Issues related to resource feasibility include:

- Adequate number of project administrators available to handle all tasks
- Project member availability to meet user needs
- Skills of project members to use system properly
- Adequate technical staff available to address system issues
- Adequate number of telephone booking staff
- Needed technical staff to build booking system, website, and billing system
- Availability of technical help from in-car system provider
- Proper repair facilities and staff to handle vehicle maintenance and warranty requirements
- Availability of necessary parking resources
- Adequate number of vehicles to meet user needs
- Availability of required server space to host web related system aspects
- Needed storage space for database information about users and vehicles

System resources will need to be addressed well before development of the system. Staffing considerations are some of the most important to consider. The hiring of adequately skilled management staff should be handled by the human resources department. These staff members should regularly review their workloads and procedures to handle any issues. Also, as this is a planned multi-year project, staff vacation times will need to be considered so there is no significant decline in service. The city will also need to make sure that the third-party staffing requirements are met when hiring negotiating the particular contracts. These procedures and workloads will also need also need regular review processes in place.

Third party considerations are also necessary for regular vehicle maintenance and repair. These facilities will need to be researched carefully to make sure that they are reputable, reliable, and can meet warranty requirements of the vehicle fleet. Additionally, the vehicles will need to be purchased from a reputable dealer. Regular review of the project will be necessary to make sure that there are adequate numbers of vehicles for the program. As the project expands, regular review of vehicle numbers will also be necessary to ensure the adequate levels of service.

Technical resources should be planned for early also. Adequate server and database space requirements must be planned for and regularly reviewed. Since the project will hopefully expand and move beyond the pilot stages, it is necessary that the resources acquired can handle growth or that it can be accommodated for by acquisition of new resources.

Economic feasibility

The first step in assessing economic feasibility is to consider the development costs associated with the project. The salary and wages for management and office staff for the multi-year run of the project can be estimated according to industry standard. The costs of telephone staff and tracking software can also be easily estimated by quotes from the third party vendors involved. The costs of supporting technical staff should also be commensurate with most other websites and projects of similar size. Other costs are less easily estimated.

Costs for the technical needs of the project will not be insignificant. However, due to the smaller scale of the pilot project, initial investment in servers, storage and development will not be large. These costs can also be used to estimate costs for further expansion of the project if necessary.

However, the most significant cost will be involved with the vehicle fleet. The initial purchase of vehicles represents a significant investment. Additionally, installation of the tracking software into the vehicles will need to be considered. As we know the initial size of the pilot project, these numbers can be estimated. What cannot be estimated however is vehicle maintenance. Vehicles can be unreliable or treated poorly and may need to be serviced, but regular maintenance should help mitigate some of these

issues, and regular maintenance can be estimated for the vehicles. Additionally, the costs for the maintenance and system equipment may be hard to anticipate. System failures or problems are impossible to predict, especially considering the state-of-the-art technology and novelty of the system being developed. However, we can estimate costs based on other initiatives similar size and scope.

Taking these factors into consideration, the costs for the project will represent a significant financial investment. These costs must obviously be weighed against the potential benefits available to the city that have been previously mentioned. As it is clear this is a pilot project, the investment should be considered as part of the trial and the city should be ready to lose its investment. However, with a well designed and maintained system, the project should hopefully expand. If it grows large enough, the program should recuperate costs within a 3-5 year time frame, and begin profitability after the five year mark. Overall then it seems that the project should be economically viable as long as it expands and becomes successful.

Part B: Prepare an Event Table for the Proposed Car Sharing IS

Event	Trigger	Source	Use Case	Response	Destination
Potential member needs recruitment	Project expansion	Management	Distribute recruitment package	Recruitment package	Potential member
Member joins car-sharing program	application and fee submission	Member	Add new member to system	Membership confirmation	Member
Member is terminated from program	Member fails to uphold agreement	Member or Management	Remove member from system	Membership termination	Member
Member wants to change preferences or info	Member account update	Member	Update member account info		
Member or management wants to check account or other info	Account status inquiry	Member	Look up member account info	Account details	Member or management
Member, management, or service contractor makes reservation	New reservation	Member	Create new reservation	Reservation confirmation Reservation details	Member or management or service contractor
Member	New	Member	Produce	Vehicle	Member

requests unavailable vehicle	reservation request for unavailable vehicle		alternative vehicle availability	availability list	
Member cancels or changes reservation	Reservation change request	Member	Update reservation	Change confirmation Change details	Member
Member tries to open vehicle door	Attempted SmartCard door access	Member	Check reservation status	Unlock door	Vehicle
Member tries to get vehicle key	Attempted vehicle key access		Check PIN number	Produce key	Vehicle
Member starts car		Member	Begin vehicle tracking	Tracking information	Vehicle
Member drives vehicle	Successful vehicle key access	Member	Track vehicle	Tracking information	Vehicle
Reservation time begins without member access	"Reservation time"		Begin tracking vehicle		
Member refuels vehicle	Refueling information	Member	Produce refueling summary	Refueling summary	Vehicle
Member returns vehicle	Key return	Member	Produce vehicle tracking summary	Tracking summary	Vehicle
Member locks car with SmartCard	SmartCard door lock	Member	Update customer account		
Member files expense claim	New expense claim	Member	Create expense claim	Expense claim confirmation Expense claim details	Management
Management adjusts member charges	Member charge adjustment	Management	Update customer account	Charge adjustment notification Transaction	Member Bank
Member pays outstanding balance	Member payment	Member	Update customer account	Payment notification Transaction	Member Bank
Time to produce monthly bill	"End of month"		Produce monthly bill	Monthly bill	Member
Time to send late notice	Bill not paid for 30 days		Produce late notice	Late notice	Member
Time to send	"End of		Produce	Newsletter	Member

newsletter	month"		newsletter		
Time to send seasonal notification	"Beginning of new season"		Produce seasonal notification	Seasonal notification	Member
Time to produce membership report	"End of month"		Produce membership report	Membership report	Management
Time to produce preference trends report	"End of month"		Produce preference trends report	Preference trends report	Management
Time to produce vehicle usage and availability report	"End of month"		Produce vehicle usage and availability report	Vehicle usage and availability report	Management
Time to produce reservation patterns report	"End of month"		Produce reservation patterns report	Reservation patterns report	Management
Time to produce trip statistics report	"End of month"		Produce trip statistics report	Trip statistics report	Management
Management adds new service contractor	New service contractor	Management	Add new service contractor	Service contractor details Service contractor confirmation	Management
Management removes service contractor	Remove service contractor	Management	Remove service contractor		
Service contractor updates information	Service contractor account update	Service contractor	Update service contractor information		
Time to service vehicle	Time or distance since last vehicle service		Send service notification	Service notification	Service contractor
Time to check tidiness of vehicle	Time since last tidiness check		Send tidiness notification	Tidiness notification	Management
Management purchases new vehicle	New vehicle purchase	Management	Create new vehicle	Vehicle confirmation Vehicle details	Management
Management removes vehicle	Vehicle removal	Management	Remove vehicle		

from service					
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Part C: Essay Question

Imagine you want to climb Mt. Everest. Would you pack your bags and start hiking, or would you carefully plan the equipment you need, the route you will take, and any emergency situations you may encounter? Planning is key for almost any worthwhile endeavor. This is no different in the world of business, where success is something that should be planned for. The above report helps the development process of the information system for car sharing in Futureville greatly. However, even the most detailed plans cannot cover the reality of putting them into practice. Sometimes, only estimates can be made, and if these estimates are inaccurate the success of any undertaking could be at stake.

This sentiment is echoed by Satzinger, Jackson and Burd in Systems Analysis and Design in a Changing World. They identify several factors for the success of a project including “thorough and detailed project plans” and “clear system requirement definitions^[1].” For the Futureville car-sharing project, the report and table provided fulfill these two requirements for project success. Nevertheless, as mentioned, there have been some estimates made in the project that could prove fatal to the project if they are inaccurate. Specifically, the economic feasibility section provides no concrete numbers, and only a general statement of feasibility. While the pilot project itself not predicted to make a return on investment, the project is still a significant investment for the city. There could be huge potential losses that may be revealed with a more detailed examination of the numbers. However, without any planning at all, the project would seem doomed to failure before it has even begun.

Part D: Reflection

I have included my reflection upon this assignment here, and I will be posting the same text on my blog shortly after I submit the assignment.

I found this assignment quite difficult to begin. Part A was the most difficult for me because of the requirement to define the business needs of the project. I found no clear definition of what exactly business needs are in the textbook or the course materials. I looked at several online sources by searching for the term, which greatly aided me. However, I still had to re-write the section twice before I felt I had achieved a

[1] J. W. Satzinger, R. B. Jackson and S. D. Burd, *Systems Analysis and Design in a Changing World*, 5th ed. Boston, USA: Thomson Course Technology, 2009.

satisfactory result. This led to a very slow start for the assignment, but I definitely picked up steam as I moved on.

I found that part B was the easiest. It took a good amount of effort to try and plan for every use case I could think of for the event table, but having a clear guideline and a clear example from the textbook aided the process greatly. I also found parts C and D relatively easy, because I enjoy writing in a more free flowing manner when expressing my thoughts, with no strict guidelines about what exactly must be presented. This made for a more enjoyable end to the project.

For the project overall, I would recommend that everyone read through the entire assignment to get a general sense of the scope of work that will be produced. This project took me longer than I thought because I went through each part of the assignment in a step by step fashion, trying to isolate each requirement from the others. I don't think I will take the same approach for future assignments. What I think would help future students would be to have more examples of what exactly is required in each section. I have never written a business report, and a model would have greatly helped. I did try searching online for examples, but I have no idea if they really were in line with what was expected in this course, because they seemed to be modeled much differently than what was being specified in the assignment.

I have not received a mark yet for this assignment as I have just handed it in. However, I will update my blog with the results and any further reflections I may have as a result.

Good luck to others attempting this assignment!