ISDS 553: FUNDAMENTALS OF ELECTRONIC COMMERCE: PROJECT
To
Dr. Turel

KiDs FuRniTuRe

GROUP-7

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Executive Summary

This report contains information regarding a proposed retail e-commerce opportunity and its related implementation. In addition to the general business plan, it also includes and outlines information related to the recommendations for the hardware and software that will be required in order for the business to be successful, the suggested platforms for attracting customers, and the financial aspect of starting up and operating the business.

The proposed business is that of a retailer of children's furniture that operates mainly in the counties of Orange, Los Angeles, and Riverside in the state of California. The stated mission of this company is to provide affordable and safe furniture solutions for the valued youth. This will be an appealing concept to parents, mainly mothers as they are the ones who usually make the decorating decisions, because every parent wants their child to grow up in a safe and comfortable environment. Finding affordable ways to accomplish this tends to be very attractive among customers.

A discussion of known competitors, marketing efforts, and strategies to acquire and maintain customers are discussed in depth as these relate to the barriers to entry for this particular industry/sector. A couple of ways the company will seek to set itself apart from the competition will be by focusing on gaining an edge in product delivery and creation of a mobile application that will greatly benefit customers. Marketing campaigns will be centered around the use of social media platforms, search engine marketing, discounts and other avenues to attract and maintain a large customer base.

A multi-tier client-server architecture will be utilized for separation of the multiple functions that will be carried out. This architecture will include a web-server on the front-end, a middle layer where the application server will be for the processing of content, and the database server will be on the back-end where the data will be stored and managed. Python-Django will be implemented as the chosen web framework, which allows for quick prototypes and rapid development. A five-phase implementation plans is discussed within the proposal, which also takes into account the expected percentage of the budget at each phase. A discussion of what activities will need to be outsourced and which well be kept in-house is also presented.

Within this proposal, you will also find two figures related to the financial aspect of the company. The first figure is a representation of the detailed financial plan that takes into consideration the cost of the website, marketing, insurance and other areas of interest that assist in putting the implementation of the proposed e-commerce business into quantifiable terms. The second figure is a five-year financial forecast that outlines the estimated future financial impact of the proposed business' implementation. Operating expenses, revenue, and net income from were estimated and have been provided on a yearly basis for a five-year period to provide an idea of the expected profits from this e-commerce opportunity and the potential growth from year to year.

Description of Business

The proposed e-commerce business is that of a retailer of children's furniture serving mainly Orange, Los Angeles, and Riverside counties with product shipping availability to potential customers residing in other states as well. The company's mission will be to provide affordable and safe furniture solutions for the valued youth.

The market for children's furniture provides a large opportunity for profits due to the fact that there will always be a need for these goods, it is not highly saturated, and the barriers to entry are not very high. The business will mainly focus on retail sales of beds and storage spaces but will also sell items such as mirrors and wall décor. Delivery, set-up, and installation services will be provided to customers residing in the main counties served and will include a flat rate delivery fee for these customers. An additional per mile fee for customers residing within 50 miles outside of the serviced counties will be applied to deliveries using company vehicles. All other deliveries will be made using a common courier service.

The proposed business solution is unique because of the combination of products and services offered that is currently not being offered by a retailer of strictly children's furniture in the surrounding counties. The availability of a mobile e-commerce option will also assist in setting the company apart from the competition. A mobile application will be developed to provide customers with the option of browsing the warehouse's inventory from their home while saving on time and gas consumption. This option will also serve to extend the company's footprint to out-of-state consumers.

Market Opportunity

Furniture retail in the United States has become a large influencer to the country's economy. Children's furniture products fall under a broad category and capture about 8% of the total revenue in the overall U.S. furniture market. This particular market segment focuses on an age group mostly between 0 and 12 years of age. This range is further subdivided into 0-4 and 5-12 years.

According to Thomas Russell, in a report published by *Market Research Reports*, the children's furniture market is estimated to expand by 4.5% by 2020. The estimated expenditure of American parents on their babies is around $12,000 in the first year alone. In 2013, the figure was $23 billion in regard to expenditure on baby products in the U.S. In the coming years, the global baby care market is estimated to reach more than $66.8 billion in sales according to Statista, even though there's an overall shrinking birth rate.

The children market's bigger and more successful companyies have reported large increases in sales in the past few years, further signaling that parents are indeed spending more money than ever before. In 2013, Graco, a successful retailer of baby items such as car seats, high chairs, and strollers managed to accumulate around $119 million in sales. Also, there are higher-level competitors in the baby market like Pampers, Proctor & Gamble's diaper brand, that together have reported sales of $10.7 billion in baby products for 2013. Since acquiring BuyBuy Baby

over a decade ago, Bed Bath & Beyond Inc.'s sales are double what they were prior to the acquisition. Considering these facts and figures and that they are indicative of annual increases of babies being born, it is evident that there is potential for future growth in the children's furniture industry.

Competition

The company's direct competitors are small-scale, local children's furniture companies, such as kidsfurnituresuperstore.us, kidsonlyfurniture.com, kidsroomoc.com, and bedspluskidsstuff.com. The strength of these companies is that they are already established retailers of children's furniture. These companies have a competitive advantage because they are a first mover into the local children's furniture marketplace. Moreover, these companies have gained experience and are aware of the trends related to the furniture needs of the children. They also seem to possess large inventories. However, these local companies have several weaknesses. Most of them only offer service for the Los Angeles and Orange County areas. There are also weaknesses in relation to their online presence as their webpages lack the look of professionalism, quality, and appealing design. In order to set the company apart from these competitors, increased focus will be placed on providing delivery to multiple counties within and outside of this state. In addition, a mobile application will be developed to better facilitate mobile customers and provide an easier shopping experience for customers that are usually always on the move.

Other indirect competitors are local, general furniture stores such as LA Furniture Store, Buena Vista Furniture, Casa Linda Furniture, and Modani Furniture. These companies do not specifically target the children's furniture market, but their general furniture offering does include some children products. They also have websites that offer online services and provide delivery to the customer's home. However, they do not offer a mobile application.

Marketing

As aforementioned, the target customers are children in the Orange, Los Angeles, and Riverside counties of California with a scope to expand to other states. As of 2016, the population of children in California was estimated at approximately 9 million. A brief population statistic of children in the targeted counties of Orange, LA, and Riverside as of 2016 is shown below. Based on this statistic, the total number of potential customers in these three counties as of 2018 is likely more than 3,621,431, which represents the cumulative total in 2016.
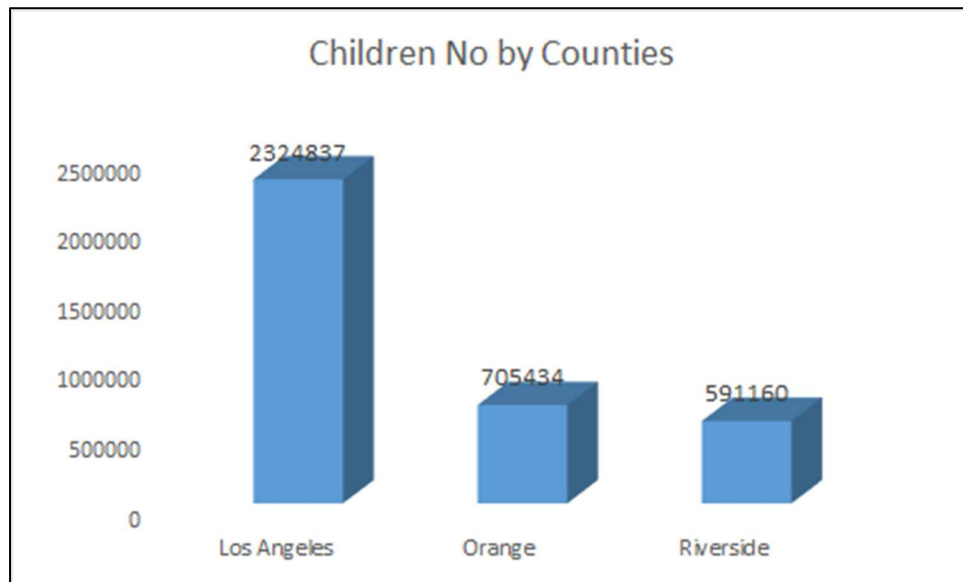
Figure 1.

* Retail sales for furniture specialists include any non-furniture sales, so the percentages are indicative only. Consumer spending is adjusted to strip out sales tax at average annual rates.
** Includes homewares such as cookware and kitchenware as well as household textiles, lighting and furniture.
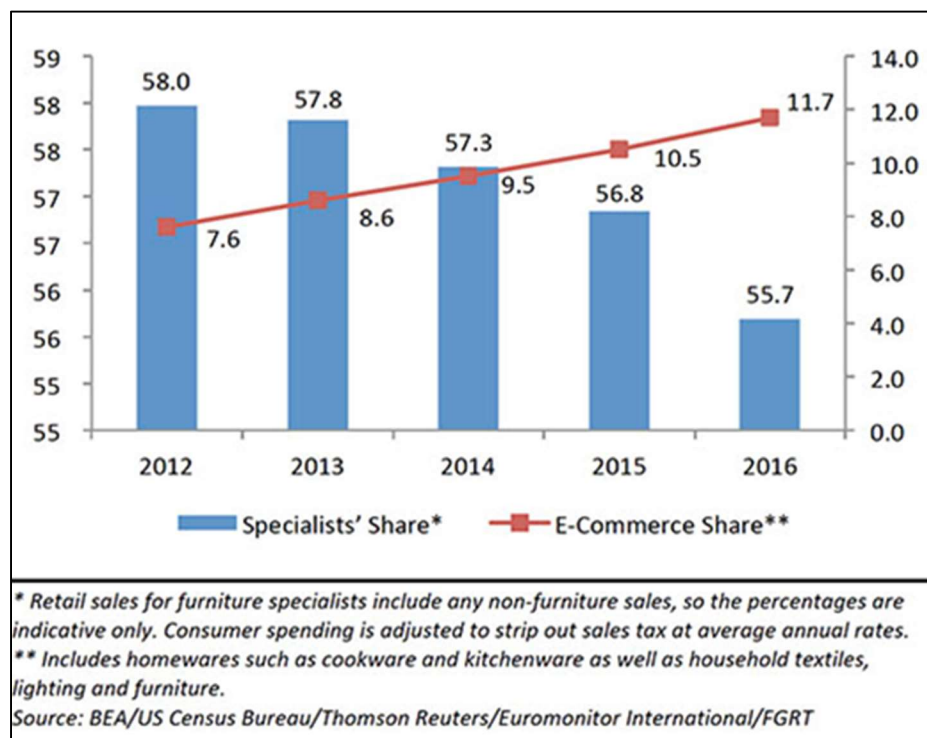Source: BEA/US Census Bureau/Thomson Reuters/Euromonitor International/FGRT

Figure 2.

As shown in figure 2 above, e-commerce accounted for about 12% of sales related to homewares and home furnishings and is expected to grow to about 13% in 2017 as per market research firm, Euromonitor International. Market share of e-commerce companies are increasing as compared to brick and mortar companies. The proposed company will build an interactive website and a mobile application to target the millennial customers.

Strategies to Acquire Customers

Referral and Promotions

Referral programs and promotional offers certainly provide an extra edge when it comes to the launch of a new product. These programs will help to create a sense of interest especially in the targeted three counties. If implemented effectively, referrals and promotions can spread through word of mouth and conversion rates can be very high as the desired conversion often cannot be achieved by just posting messages on social media platforms. As a KiDs FuRniTuRe referral policy, every referrer and the new user will get either points or a discount on furniture purchases through either the app or website by using the referrer's code.

Group Discounts

Group or bulk order discounts can also be offered in an effort to attract more customers. Freebies with purchase of a particular item can also help in gaining the attention of the target audience. It can also be combined with several offers like seasonal discounts during Christmas, beginning of school sale, or payments in installments.

Social Media Campaigns

Nowadays, the most commonly used medium for almost every launch campaign of a product is the use of social media. The desired message can be conveyed through almost a zero-cost marketing campaign, and it also helps in efficiently reaching out to the desired target customers. Initial marketing can be done through most popular social media platforms such as Facebook and Instagram. A Facebook page outlining all the information related to the website and app can be created to help increase awareness. Further, product and pricing information can be frequently updated through Facebook and Instagram.

Website and App Landing Pages

In digital marketing, website and app landing pages are created to serve as the home base for marketing and advertising campaigns. These are the first pages the user will come across, thus optimization of these pages with keywords, without being flooded with too much solid, informational content, will be a powerful way to encourage organic traffic to the landing page and app. The app and website will be based on these principles with simple design features.

Search Engine Marketing

With organic search engine optimization, more customers can be attracted towards the website. This can also be achieved through content creation and keyword enhancement. Use of both positive and negative keywords will help in increasing the website traffic. Google AdWords can be used to advertise and track the results. Additionally, the campaign can be more efficient by setting up particular times or days for the ads to pop up. E.g., more during weekends, no ads during night time etc.

Building the E-commerce Website

Hardware

KiDs FuRniTuRe will utilize a multi-tier architecture that will include several layers to perform specific tasks. The web server layer will be used to fetch the requested information. The web server will receive the arriving HTTP requests and will return the original source as HTTP response. The application server will be found in the middle layer, and the database server will be found on the back-end and will be used to store all the information provided by the users and information provided to the users. Media servers will be deployed to increase the scalability. Further, load balancers will be implemented to increase capacity and reliability of the architecture. On the backend, PostgreSQL will be used to support highly optimized Object Relational Mapping (ORM) queries. The front-end architecture will use AngularJS for website users and Android SDK will be used for mobile clients.
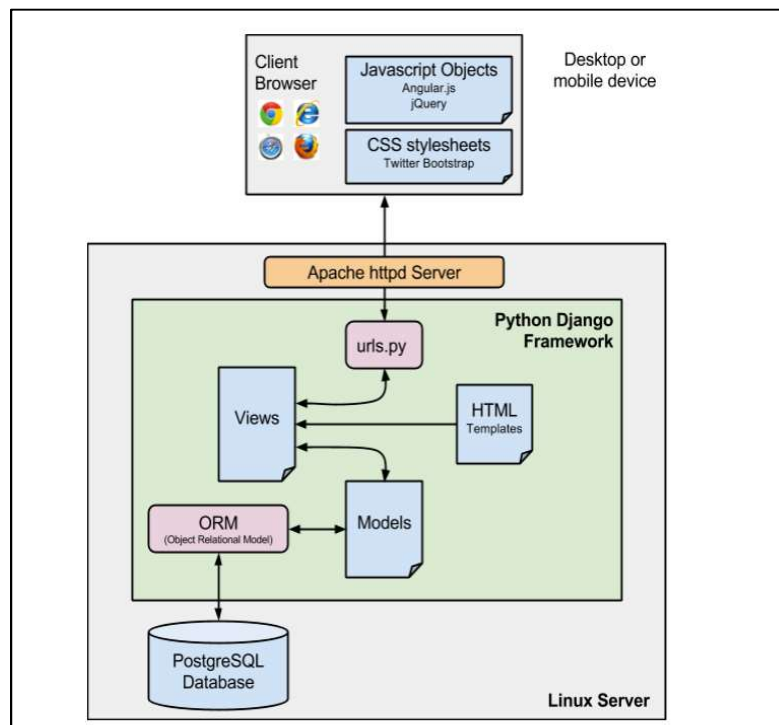
Figure 3.

As shown in figure 3 above, the user will perform an action on the Django--powered site and a request will be sent to the Apache httpd web server. Next, Django's URL dispatcher matches the URL requested by the user with URL patterns in the urls.py file. This invokes the (view) Python callback function. The view obtains data from the PostgreSQL database and loads an HTML template with the data mapped to variable template names. The view then returns a response object with the template and requested information.

Software

On the server side, Python-Django is the chosen web framework which allows for quick prototypes and rapid development without worrying about the website and mobile application designs. A high-level Python will be used to allow for the creation of interactive pages. Also, it is cost effective because it is free and open source. Java will be used on the client side because it works on both android and iOS platforms. Apache is the software that will be used for the web server because it will satisfy the support requirements for both the website and mobile application. Apache is also free, open-source software and can be downloaded from many websites. Because Apache is WSGI compliant, it will support the running of Python WSGI applications on the Apache HTTP Server. Django supports many databases using its ORM, therefore SQL will be used for the business model. The Android SDK tool in conjunction with the Python-Django framework will be used to build the mobile application.

Security and Payment Gateway

The Django Python web framework supports neat design and provides efficient tools to developers to build scalable web applications. Django takes security very seriously and has many built-in protections against various malicious attacks. However, customization is required to deploy it. For example, its Cross-Site Request Forgery (CSRF) protection ensures that a malicious user cannot easily "replay" a form POST to the website with another active user unintentionally submitting the form. To protect the website from a malicious user, user-specific (using a cookie) protocols will be implemented. In the case of the website for KiDs FuRniTuRe, HTTPS will be used as it provides additional security by using HTTP Strict Transport Security (HSTS) for supported browsers. Secure cookies and CSRF settings will be utilized in session, along with HTTPS.

For simple design and easy transactions in an authorized environment, an integration of Django and PayU Payment Gateway is proposed. This package is referred to as "django-payu" and is a pluggable Django application. In order to begin the integration process, registration as merchant or seller and the filling out and submission of the proper forms for the product is required. A bank account for the company will be established, along with a PAN card and other details. Simple HTML pages will be created for payment display information, including amount, email

id, product and other details fetched from system. The necessary parameters, such as key, txnid, hash, amount, email, firstname, phone, productinfo, surl (success URL), furl (failure URL) and service provider will be added to ensure security. When a customer hits the pay now button, he or she will be directed to PayU's payment page where check function will be used to accept or reject the invoice order after receiving PayU's response. The django-payu" package has many other functions to Capture, Refund, Cancel etc.

Other Tools

As the business grows and because the framework is scalable, other media servers such as Nginx can be added to optimize static media delivery. To handle potential server failure and to distribute traffic, scaling up will be an available option. The use of perlbal load balancer and Memcached to increase storage will be beneficial in keeping the site running in heavy traffic. A shopping cart will be added using django-cart which is a simple feature that lets add and remove items from a session-based cart. Django-cart uses the power of the Django content type framework to enable you to have your own product model and associate with the cart without having to change anything.

Implementation Plan

After system planning and by the completion of system design phase, the actual coding to develop the suggested system will begin. During the development phase, the database will be structured first in order to facilitate better system connection, smooth transfer of data and provide suitable data types that align with the backend system. After the database is structured, the client-side program will be developed, followed by the web services that permit the mobile client-side program to communicate with the server. Finally, the mobile client-side client program will be created. During the testing phase, to determine system accuracy and reliability, numerous test cases will be carried out. To further review any possible weaknesses of the system, a testing report will be generated based on the implemented test cases. During and after the stages of deployment, informational classes and training seminars will be held for employees and other key staff that will utilize the system. The training will be centered around learning how to operate the system and procedures for handling specific events that might occur. The Agile methodology will be used as the basis for building the model. Each function will be released within the span of three weeks, and as the requirements grow along with the business, the design will be scaled up. Basic hardware and software requirements need to start the development are:

RAM: 2GB

Operating System: Linux, Windows

Programming Language: Python 3.0, Django, Java

Web Server: Apache Httpd

Database: PostgreSQL

Tool Kit: Android SDK tool kit

Phase 1: Planning

The mission for this company is to create a one-stop shop for kids' furniture. As the project goes by, the project mission may grow in scope and be improved upon as it moves along. A key tool that can help with the planning is surveys. Survey samples of the target market can be used to ensure that mission goals are in line with what customers want. The budget for this phase will involve the salaries of the developers who are planning the system, software purchases, and the cost of gathering customer data. There will be no additional cost in this phase. The projected budget for this phase is 5% of the allocated funds.

Phase 2: Website/Mobile App Development

The website will be built with a mobile first approach. The goal is to have the website assembled using HTML5 responsive web design techniques. With this approach, a mobile app can be created based on the mobile ready website. In this phase, it will also be determined where the website will be hosted, and what platform it will be built on. This phase also involves three areas of the SDLC which are system design, building the system, and testing. The budget for this phase includes the software and designs the system. Moreover, a testing environment needs to be created for development and troubleshooting. The costs for this phase is estimated to be roughly 30% of the budget.

Phase 3: Website/Mobile App Implementation

The website will be optimized for search engines. It will be easily searchable by Google and other search engines, starting by putting keywords and meta tags in the website. The website should use AdWords to promote it within search engines. This phase involves three areas of the SDLC which are building the system, testing, and implementation. Budgets for this phase include the actual costs of running a live website, along with the cost for social media optimization. This phase is projected to be 40% of the overall budget.

Phase 4: Social Media Plan

In this phase, a social media marketing campaign will be planned. The social media platforms the target market uses will need to be identified. Apps such as Pinterest and Instagram are viewed as being good places to reach the target customers. There are no significant charges in this phase. The salaries of the employees involved in planning should only be considered, which will be 5% of the total budget.

Phase 5: Social Media Implementation

In this phase, social media presence will begin. Starting out, the presence will be the strongest with Instagram, Pinterest, and Facebook pages. Twitter may also be utilized if through planning it is found that the target market tends to use this service. Video and rich media ads will also be relied upon. All the promotions and advertisements will connect to the webpage so that customers can easily find the online store. The budget for this phase includes the development

and usage of rich media ads or video ads. There are also some additional costs for branding and social media utilization. 20% of the overall budget is estimated for this phase.

Outsourcing and In-house Development

The initial starting process will be outsourced to 1 senior architect and 1 senior consultant who has worked on Python-Django framework. The payment gateway will be outsourced to PayU money. Most of the technologies that will be deployed are open source and free on the market. Application and development support will be provided from in-house. As the business grows, more services may need to be outsourced.

Financial Plan

To understand the profitability of the company, a financial plan was developed for initial investment costs and a five-year forecast. The numbers are based on research and reasonable predictions.

Setup cost is the sum of monetary expenditure of materialized labor and live labor in the process of construction. It basically includes the cost of configuring the machine, purchasing materials or components, and testing if the initial outcome meets the requirements. As a result, the start-up costs of KiDs FuRniTuRe will involve hardware, software, marketing expenses and associated costs of establishing a website.

Description	Amount	Cost per unit	Total Cost
Website			
Web Design	1	1500	1500
Domain Registration	1	150	150
Web Development		3000	3000
SSL Certificate	1	200	200
Hardware			
Computer	20	600	18000
Server	2	1000	2000
Desk Phone	10	50	500
Software			
Sales/Inventory system	1	2000	2000
Microsoft License	1	500	500
Payment Gateway	1	1000	1000
Cloud Hosting	1	300	300
Marketing			
Advertisement		3000	3000
Promotion		1000	1000
Insurance			
General Liability		1000	1000
Worker's Compensation		1000	1000
Miscellaneous			
Office Rent		5000	5000
Office Supply		1000	1000
Business License		500	500
Total			41650

Figure 4: *Financial Plan*

The following is a 5-year financial forecast which includes operating expenses and revenue. According to an industry-wide analysis from ReportLinker, which includes the current situation and the growth forecasts of the children's furniture market in the US for 2016-2020, the developed forecast data is referenced to industry data as a baseline, which adjusts the industry data according to the projected performance results that are hope to be achieved.

		Year 1	Year 2	Year 3	Year 4	Year 5
Operating Expense						
	Maintenance	10000	12000	14400	17280	20736
	Utility	2000	3000	4500	6750	10125
	Marketing	3000	4000	5000	6000	6500
	Insurance	3500	3500	3500	3500	3500
	Payroll&Payroll Tax	13000	15000	17500	20000	23000
	Administrative Fee	500	500	500	500	500
	License	500	500	500	500	500
	Property Tax	1200	1200	1200	1200	1200
	Purchasing Cost	120000	144000	172800	207360	248832
	Total Expense	153700	183700	219900	263090	314893
Revenue						
	Bed	150000	165000	198000	237600	285120
	Mattress	85000	93500	102850	113135	124448.5
	Nightstand	45000	49500	54450	59895	65884.5
	Dresser	40000	44000	48400	53240	58564
	Desk and Chair	60000	66000	72600	79860	87846
	Accessory	50000	55000	60500	66550	73205
	Total Revenue	430000	473000	536800	610280	695068
Net Income		276300	289300	316900	347190	380175

Figure 5: *Five-year Financial Forecast*

Conclusion

In conclusion, the proposed e-commerce business opportunity has the potential to perform very well in its market based on the analysis conducted. The barriers to entry are considered to be moderate enough to allow for a new business to start up, develop its operations, and gain a substantial amount of the market share. There will always be a market for children's furniture, and customers are always likely to seek affordable solutions that provide benefits to both their children and their financial goals.