Mesh Food Exchange

BCIT BITMAN Consultation Project

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Introduction

Mesh's desired focus for this project is to improve current business processes, and implement new technology into the process to enhance performance, and improve the current state of the business. Three of the main areas that Mesh wanted us to target are the analysis of the company's online platform, research on ERP systems implementation, and the data visualization analysis and report.

Scope

Our overall scope of this project was to provide recommendations and support to enhance Mesh's business processes.

Areas of Focus & Methodology

Online Platform Analysis

Mesh's current online platform, CS Cart has been the main platform for the company to manage and implement on their website. It was, however, not intuitive for users (clients) despite the functionality and advanced features it provided. Therefore, the company wanted to make sure that the users are not lost or confused when using the system, as well as making sure the platform wouldn't contain any bugs during company's launch phase. To tackle these issues, we were asked to act as "Proxy Users" providing a first-time users' perspective. Our primary tasks for this analysis were to do a walkthrough of the system, analyze, and report any bugs or errors on the platform.

Methodology

The CS Cart platform was tested based on the given scenarios from Francisco (CTO), and James (Programmer). Each scenario described what a first-time user would go through and what kind of results they would expect. To record the processes, all scenarios were screenshotted and uploaded onto an online report platform called Bug Genie. In addition, encountered bugs and/or errors were documented (alongside with the screenshots) as report threads; they were also categorized as either a Pass, Fail, or Conditional Pass if the scenarios met the expected results but required enhancement.

End-to-End Scenario Test Cases - with Expected Results - v2 - Collated, Apr 5 Presentation Copy

File Edit View Insert Format Data Tools Add-ons Help Last edit was made on 4 April by Coco Badelles

Test Case ID

Test Case ID	Test Case	Test Data Package	Expected Results	Pass/Fail Coco	Notes (Coco)	Pass/Fail Scott	Notes Scott	Pass/Fail Jason	Notes Jason
CAT-02	Bulk add new catalog products	CAT-02	- the 3 new catalog products are created and displayed in the catalog product summary view - the field values for each added catalog product match the data input in the bulk add view	Pass		Pass	An instruction/information guide could be placed somewhere in the module to let the users know its purpose	Pass	
CAT-03	Edit existing catalog product	CAT-03	- Changes to Name, SKU, Retail Price and Description fields are saved in the detailed view - Changes to Name, SKU, and Retail Price fields are visible in the catalog product summary view	Pass		Pass		Pass	
CAT-04	Clone existing catalog product	CAT-04	- An exact copy of the existing catalog product is created - the cloned catalog product is visible in the catalog product summary view - the cloned catalog product can be successfully added to a Listing	Pass	Needs a save and close button after cloning. Better transition from adding from Catalogue to Listing.	Pass		Pass	
CAT-05	Delete existing catalog product	CAT-05	- the catalog product is removed from the catalog product summary view	Pass		Pass		Pass	
CAT-06	Delete multiple existing catalog products	CAT-06	- the selected catalog products are removed from the catalog product summary view	Pass		Pass	There could be a "Delete Selected" section in the drop-down list to delete multiple items at once.	Pass	
CAT-07	Import catalog products from CSV	CAT-07	- the 3 new catalog products are created and displayed in the catalog product summary view - the field values for each added catalog product match the data from the imported CSV file	Conditional Pass	User should know that Category cell must match exisitng category from server or else products will not fully import. Import of csv occured but was labeled as skipped file. New products did not show up in the catalogue. (Category is the reason why it was skipped)	Fail	Importing is quite complicated and takes quite a few steps. In addition, the category for each product must be typed on Excel as exactly as the preset categories on the system for the import process to work successfully. Images aren't added to the post and have to be added manually.	Fail	The three new catalog products are created, and all fields match, except for the Product Category, which changes it to "Products" instead of "Produce [Fruits Fresh]". The source of the issue could just be the file itself, as an exported CSV file from the website, and reimported into the website demonstrates that importing itself is working. However since it did not work with the test file, this test was categorized as a fail.
CAT-08	Export catalog products	CAT-08	- the number of records created in the exported CSV file matches the number of selected catalog products for export - the data exported for each of the selected catalog products matches the field values for each catalog product in the system	Pass		Conditional Pass		Fail	The number of records created in the exported CSV file (6) does not match the number of records selected for Export (2), Also the export function for data exports all products (Catalog + Listings, instead of just the selected catalog products). The Data for each of the selected catalog products matches the field values for each catalog product in the system

Overview | Supplier - Catalog Mgmt | Supplier - Listing Mgmt | Supplier - Message Mgmt

Figure 1: Test scenarios for CS Cart Platform

ERP System Research

Mesh has also been interested in looking for an ERP System that is suitable for its business needs and has the essential functionality to increase performance and efficiency. There are millions of ERP providers in the market, and each has their own customized version of ERP system, catered to different business needs. We were provided with links to different ERP vendors and companies, as well as the different criteria for us to base on, such as ease of implementation, price, features, etc. Our job was to research these companies, and/or gather information from additional companies that weren't listed by Mesh based on the given criteria.

Methodology

Information such as pricing and features could be found on vendors' sites and review articles. However, we were facing a few constraints during our research. Our main constraint was the limited amount of information provided online to document. This required us to go a step further and contacted the vendors directly. We were able to reach a sales support representative to gather information on API integration as well as additional customizable tools we thought could be beneficial to Mesh and their clients. Some vendors such as Microsoft, also has online chat support as a contact option, so we used this opportunity to reach out to them to find out if their ERP System, MS Dynamics would have what Mesh's looking for.

A	D	E	F	J	K
N	http://www.pho-sys.com/	https://www.syspro.com/ca/	http://www.sage.com/ca/erp/sage-300	https://www.microsoft.com/en-us/dynamics365/nav-overview	http://justfooderp.com/
Pricing	Various pricing based on ERP systems Starting from 15k - 100k	Quote from 3rd party/referral	$150-2500/user (mostly in the higher range, starting at $250+)	$8k-250k	$10K-400K
Features	- able to handle multiple pricing and discount levels, - support for fractional pricing and choice of inventory control methods, - inventory tracking is greatly facilitated through Web-based ordering and the software's ability to accommodate bar code readers - Offers various well known ERP systems such as SYSPRO, MS Dynamics,	More transaction volume Customizable interfaces Mobility Cloud-Based Integrated modules - Accounting, Distribution, Manufacturing, Reporting&Analysis Highly Flexible	In-depth specialist training On-premise and online deployment Accounting and financial mgmt. Operation and Distribution CRM Business Intelligence and Reporting Project Management and Project job costing Inventory Optimization Good for small-med businesses/accounting department Cost of ownership is lower for small-med businesses Can host on the Cloud, on-premise, or privately	Power BI integration to tranform data Excel integration	Customer care and support managed by Food Industry professionals. Integration between accounting, warehousing, customer management, reci management, purchasing, inventory and sales 90-95% out of the box fit for most food industry partners less customization needed, less time, less expensive)

Figure 2: Top 3 most suitable ERP vendors for Mesh based on criteria comparison

Once all information has been filled out, our next step was to compare each ERP system's features to Mesh's requirement. For example, because Francisco was looking for an ERP system with open-source capability, we specifically filtered vendors with open-source software as potential options for the company. Lastly, we'd pick the top 3 vendors that we thought would be most suitable for Mesh.

Data Visualization Analysis and Report

Our last task was to analyze the 2 main BI's Data Visualization tools, Tableau and PowerBI. Mesh believed that some forms of data visualization on the storefront for clients would be an attractive feature to maintain customer relationship and enhance site's functionality.

Methodology

Our first step was to formulate metrics that fit with Mesh's business strategies. For instance, Mesh would like to find out how much sales in $ was generated in areas based on postal codes in BC; in order for us to come up with this metric for our data visualization, a sample

dataset, as well as a .shp spatial file had to be downloaded. The spatial file was derived from Statistics Sanada. We would then attempt to apply the metrics on Tableau and Power BI to see what visual contexts the tools would give us. We also worked around with different metrics to find out what kinds of limitation each tool has, and what their pros and cons were. Lastly, a deliverable with documented metrics, tools features and pros/cons, and pricing were created and presented to the company.

Figure 3: KPI Metric based on last year's sales of product categories in each province; created on Tableau.

Findings

Online Platform Analysis

As first time users CS-Cart was useable however we would like to note that there is slight learning curve to using the system. The user interface was for the most part easy to use however slight quirks in regards to the placement of options within the site prevented a smooth user experience. This to some may be no big deal as users are going to remember the placement for specific options the more that they use it, however it could be an issue when the customer has yet to be captured and may not invest the time and effort to learn about the system.

In regards to the storefront, the user interface was simple and easy to use. A few minor bugs were present, such as the tax not being added correctly, as well as not being able to directly add items into the cart, but nothing too major. The simplicity of the site made the user experience very smooth to navigate around, and also provided a lot of detail of products customers may like.

ERP Research

The main deliverable for the ERP research is an excel spreadsheet that outlines the main benefits and features of various ERP Vendors. This excel sheet is found attached. There are three main ERP platforms that were used by multiple vendors during our research. These platforms are Microsoft Dynamics, Syspro, and SAP. These ERP platforms are commonly used by other vendors who create custom modules that work to fit a business need. Out of our study of 12 ERP systems, we have narrowed down 3 ERP systems that we recommend to Mesh. As shown below.

Phoenix Systems (Food Chain ERP)

- Syspro Based Solution
- Has modules dedicated for
    - Inventory management
    - Food Safety (Spoilage)
    - Order and Tracking
- Costs: 10-15k (not including deployment costs) billed annually.
- Commission for referrals: N/A

Sage 300
- Has modules dedicated for
    - Inventory
    - Business Intelligence and Reporting
    - Customer Relationship Management (CRM)
- Costs: Subscription based, $150-$2500 per user
- Commision for referrals:
    - $200 first 2-5 users
    - $500 6-10 users
    - $1000 11+ users

JustfoodERP
- Based on microsoft Dynamics NAV
- Costs: USD 55k (Implementation), $300 per user / Month.
- Has modules dedicated for
    - Inventory Tracking
    - Expiration Management
    - Supply Chain Management
- Commissions for referrals: none

Cost

In relation to the costing of ERP systems, In our research, Implementation costs we're hard to find. This is due to the nature of ERP systems being highly customized for each individual business and purpose instead of a standard system that can be deployed for multiple businesses. Most business' also only offered a pricing after an in-person consultation, something that was out of the scope of our study. There are also 2 cost structures that we have come across during the our ERP research.

1. Monthly / Annual Licensing
    a. Higher Upfront Costs
    b. Multiple Users (But capped amount of simultaneous users)

2. Monthly / Annual Subscription Model (Per User Based)
    a. Lower Upfront costs, however each user is required to pay
    b. Multiple users are allowed however each individual user is required to pay

After contacting multiple ERP systems, we have determined that the lowest tier of most ERP systems started at around $10-$15k for the licensing pricing structure. As for the Subscription based model the cost range per user started at $150 - $2500 per month, depending on which ERP system was selected. These costs do not take into consideration the implementation costs, which varies for business need and ERP system selected.

Data Visualization

The data visualization portion of the project spanned 4 weeks, from April 16th to May 6th. During this span, the focus of the research centred on several aspects based on an initial meeting with Jessica, Francisco and Rachel. Numerous benefits of integrating a business intelligence tool include better business decision making, identification of trends in the industry, understand market conditions, and the ability to interact and manipulate a business's' data.

The main deliverables include the following:

Research on industry and companies such as Tableau and Microsoft Power BI

Metrics for Mesh to visualize (Excel Database)

Database of online resources to pass on (Excel Database)

Live Demo and Presentation

The research took an in depth look into the data visualization industry and its main players; Tableau and Microsoft Power BI. These two tools for data visualization offer a wide range of

features which was compiled in a pros and cons list in the live demo and presentation powerpoint. Several of these features were displayed in a live demo and were considered in the creation of the final recommendation.

A metrics database was also created to provide a guide for Mesh to visualize certain metrics than can help Mesh understand its business better. Currently there are 16 in the database which is accompanied by a description of the metric and the reasons they are important for Mesh to look at.

As a final recommendation, We suggest that Mesh considers choosing Microsoft Power BI for several reasons such as ease of use and on boarding process, cheaper price point, and weekly updates based on community suggestions.

Highlights

Data visualization

Originally tasked with researching and creating metrics with Tableau, we decided to expand our scope to include PowerBI, the reasoning behind this will be discussed further below.

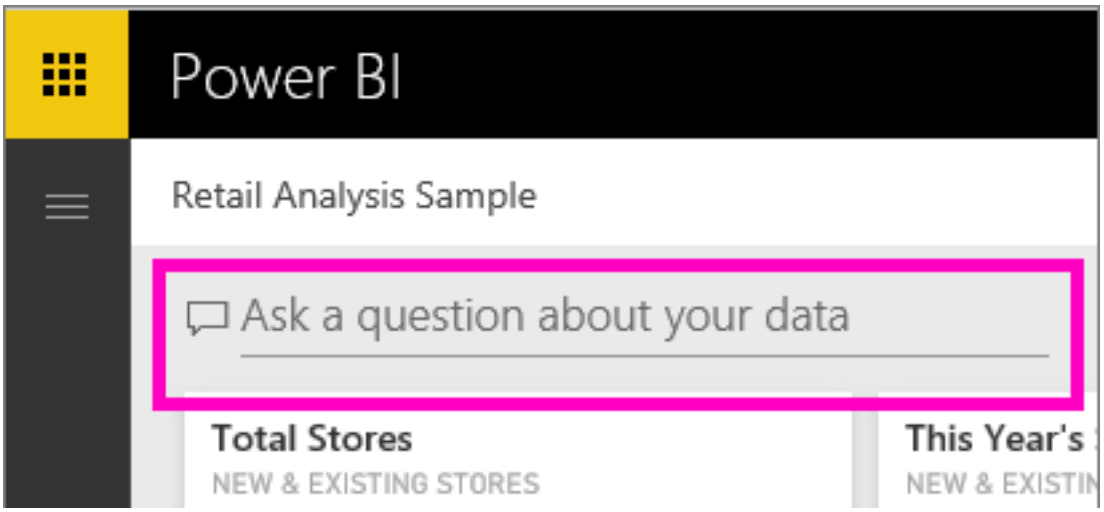
Tableau:

Tableau is intuitive. It operates by dragging and dropping fields in order to create visualizations, and is also highly customizable. Its pricing model is $35 USD a month, for a personal license and $70 USD per month for a professional license, note that these are per user, and is billed annually. Tableau exceeds Power BI in comprehension of data, allowing the user to select different types of 'joins' which dictate the type of data that will be imported into Tableau. This is something that powerBI lacks the ability to do. In terms of intuitiveness Tableau operates with a drag a drop model with data visualizations automatically being

created. However, Tableau currently lacks an automatic KPI visualization, something that powerBI has. In order to create a KPI in tableau, formulas have to be created however this is easy to learn.

PowerBI:

PowerBI, created by Microsoft is considered as a new entrant to the Data Visualization industry which started operations in 2011. Like Tableau Power BI is highly intuitive by featuring the same drag and drop model to create visualizations. PowerBI also features a questions and answers input box to quickly generate visualisations on the fly as well as a KPI visualization tool. Pricing is at $10 USD per user per month.



Though slightly behind in Tableau in terms of the depthness of data that can be visualized, Power BI is sufficient enough to visualize metrics for the Administration Page, Vendor Page, and Storefront.

Online Platform Analysis

CS-Cart is a useful tool that is able to gather a lot of details that is necessary for e-commerce vendors and partners. However its main drawbacks are in regards to the unintuitive

placement of buttons as well as the minor bugs that affect its User experience. This may be a cause to concern when trying to retain new customers.

In contrast, the storefront is easy to navigate through. It's simple-orientated design is a big plus that promotes convenience all the while still providing a lot of detail on products and orders.

Recommendations

Scenario Testing

Scenario testing spanned 4 weeks from March 19th - April 15th. This testing simulated the understanding of what a vendor & customer would experience. The degree of research and time with Mesh software was very valuable in knowing and learning first hand the user experience with the Mesh software while understanding the purpose of the business.

Recommendation

As changes are made to the software, we recommend having more user testing with the purpose of assessing intuitiveness. Based on our experience, the input from a first time user is valuable to assess how vendors and customers will be using the software. Since changes are still being created, we believe that further assessment from a first time user perspective would be very beneficial.

Next steps

Given more time, Our team would conduct more scenario testing on more of the admin functions and several of the functions that Mesh is still thinking of adding or removing to the finished product. This would give further feedback to Mesh on features that it should keep and features that are not essential to users. Certain features deemed valuable would be

assessed as possible recommendations for premium users.

ERP Analysis

The ERP analysis consisted of 2 weeks of research spanning from April 16th to April 29th. Our research looked at industry wide used systems to integrate company departments with the purpose of creating efficiency and better management of business and customers. Due to a lack of time, the degree of testing was minimal. Approximately 2 full days of research and information compilation was substantial to create a quick recommendation. Although the research was brief, a list of over 10 systems were researched and a top 3 list was created with more detailed information on an excel spreadsheet.

Recommendation

Since implementation requires long-term commitment. We suggest for Mesh to adopt a wait-and-see approach to see what ERP systems majority of Mesh users are using. Once Mesh launches their software and has several businesses on board, an evaluation of the need for an ERP system would be ideal at that time.

Next steps

GIven more time, our team would conduct a more in depth analysis with more communication with ERP companies in terms of understanding their specifications and hardware requirements. We would also look into possible sit downs with ERP representatives from companies to run through their demo and ask questions regarding the integration of Mesh's software to the ERP system.

Data Visualization

Research on data visualization spanned 4 weeks from April 16th - May 6th, simultaneous to

the ERP research we conducted. The data visualization research looked at how business intelligence helped companies manage data and how software can be leveraged to help make business decisions and assess a company's current situation. The degree of testing conducted for this aspect of the project included thorough research and testing equating to solid recommendations.

Recommendation

Based on the current state of the company and ease of use and implementation, Power BI is a better alternative because of price (monthly instead of lump sum) and regular updates based on user feedback. This option would give Mesh the tools needed to further analyze their business based on the minimal amount of data the company currently keeps track of while at the same time possess the option to scale up to a higher end BI (Business Intelligence) tool such as Tableau later down the road when more of Mesh's data is available to study.

Next steps

GIven more time, more research into integration with CS-Cart and other data sources such as Mysql (which Mesh uses as the main data source) would be conducted. A recommendation of a process to manage and keep track of actual data to create visualizations for public users on the Mesh website, vendors and managerial use would also be developed.