**PROG8220 – Capstone Project Group 2 Project Description**

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**Problem**

Many existing apps for using receipts to track expenses have problems such as:

* A time consuming process for gathering data because the user has to enter data or human intervention is required to complete a scan of a receipt at all.
* After data is gathered, many apps have a limited amount of things you can do with that data, i.e. generate reports
* A long process to set up and start using the app due to the requirement to set up an online account specifically for the app and before you can start using them
* Costs that must be paid just to start using the app at all or after a very limited number of uses

Apps on the market now typically have one of these drawbacks and do not offer a solution that effectively solves all of these problems. Many apps take longer to gather data, don’t offer good reporting functions, are difficult to set up, are expensive or have several of these problems. Our goal is to combine solutions to these problems with some exciting new features in a new app.

**Our Solution**

Our app will combine these features to make expense tracking quick and easy. To do this, it will use O.C.R. to make gathering the data from paper receipts faster and easier and minimize how much work the user needs to do, and it will generate reports that allow the user to see where their money is going including for small incidentals with costs that add up over time. It will also minimize the time it takes to get the app up and running by allowing people to log in using an existing Facebook or Google account. The solution will be free and will only ask for fees when users have exceeded a certain number of receipts entered per month, but will allow more than existing apps.

The main fields that should be scanned from a receipt include the total. The name of the store, a breakdown of items and a date would also be good. These will need to be tested with care, as different stores print dates on receipts in different formats (mm-dd-yyyy or yy/dd/mm, etc.) and store names can be harder to get with O.C.R.

**Platforms**

This app will be built to work on Android devices and will also include a web app. This will make it easier for people to manage categories, tags and reports while having the convenience of scanning receipts wherever they are.

**Comparison of existing products**

To get a sense for what existing apps do, a sample of apps for scanning receipts or general document photographing and scanning with Android devices were considered. Of the ones that got some positive online reviews and had a high number of downloads, ones that were easy to install and produced test results in a reasonable time were considered in detail. Apps that proved excessively difficult and very time consuming just to get up and running on a device were not considered.

These apps were tested on a Motorola Moto E (2nd Generation) running Android version 6.0.

More detailed information is available in the Appendix. This table summarizes the comparison of these existing apps.

The star ratings provided were based on the team testing and discussing results with regard to specific features that our new app will address.

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|  | **Ease of installation and setup** | **Automatic Optical Character Recognition** | **Reports** | **Data Structure** | **Additional Features** | **Speed** | **Avg.** |
| **Expensify** | ★★½ | ★★★★ | ★★ | ★★★★★ | ★★★ | ★★½ | ★3.1 |
| **CamScanner** | ★★ | ★★ | N/A | ★★½ | ★★ | ★★½ | ★1.8 |
| **ShoeBoxed** | ★★ | ★★½ | N/A | ★★ | ★★ | ★ | ★1.6 |
| **SmartReceipts** | ★★★★★ | N/A | ★★★★ | ★★★★★ | ★★★★ | ★★★★★ | ★3.8 |
| **Receipts** | ★★★★ | N/A | ★★★★★ | ★★★★★ | ★★★★★ | ★★★★★ | ★4 |
| **GoogleDrive** | ★★★★★ | ★★★★★ | N/A | ★★½ | N/A | ★★½ | ★2.5 |

The highest rated apps here are Receipts and SmartReceipts, but the major feature both of them lack is Automatic Optical Character Recognition. Our goal is to create an app that includes that in addition to the other features compared here.

**Target Market**

By providing a solution that allows receipts to be quickly photographed, scanned and entered and provide a good variety of reports, our app will be especially useful for anyone with a significant need to track expenses and look for way to save money while minimizing the time they have to spend to track expenses. This includes parents trying to pay down mortgage debt while raising a young family, or people recovering from a layoff and trying to rebuild their savings nest egg. Other people do so temporarily as a learning exercise (i.e., some teachers of personal finance courses will tell students to very carefully track their spending for a period of time so they can learn from the data they gather).

**Distinct Features**

The intent of this project is to include a combination of features that the existing apps that were studied do not offer in just one app. Some of them have some of the individual features but our combination of features will be different. This will consist of:

1) Photographing receipts

2) Putting the photographed receipts through an O.C.R. engine and letting the user correct any errors. This will allow the data to be captured quickly, without a requirement for the service provider to supply human intervention which is very time consuming and increases the cost of an app.

3) Viewing the gathered data on the device and on a web app

4) Organizing data with categories and letting the user view reports based on these categories and time. For example, tracking how much money one spent in a certain category over a specific number of months.

**Possible Additional Features**

1. **The app will** generate more than basic reports, offering different styles of graphs and charts.

**The benefit of this will** be satisfying different users’ preferences for how they like to view their data.

1. **The app will** allow people to record transactions without receipts and automate recording repetitive ones like having the same coffee from the same shop every day.

**The benefit of this is will be** keeping track of small, regularly occurring expenses that can add up to a lot of money over weeks and years.

1. **The app will** allow users to track data not just for individuals but for groups.

**The benefit of this is will be** families or business being able to work together closely to track expenses and see how best to save money together.

1. **The app will** track not just totals but specific items on a receipt and report on money spent on those items.

**The benefit of this will be** users will be able to see how much they spend on these items over time, this is especially useful when buying lots of groceries that are on one long receipt.

1. **The app will** allow users to add tags as well as categories.

**The benefit of this will be** users will have the option to add multiple tags to receipts and then generate reports that incorporate those tags to get a more detailed level of reporting.

1. **The app will** include reports that include averages for certain demographic groups.

**The benefit of this will be** for users who like to know how they compare to other people, this gives people ideas about whether they can save more money if other people are able to do so. This feature could only be implemented if privacy laws are appropriately respected and users give their consent for their data being used in this way.

1. **The app will** distinguish between business and personal accounts and only charge fees for users who have reached a threshold number of records.

**The benefit of this will be** giving users long enough to try the app and see if they like it before considering using a paid version, as opposed to other apps that start charging after a small amount of use.

1. **The app will** combine several images taken of a long receipt into one receipt record.

**The benefit of this will be** shopping at stores with many departments and purchasing a lot of items will have one receipt record in the system based on the single transaction.

1. **The app will** let users import and export data.

**The benefit of this will be** it is another option for making backups and sharing data with other apps, which is a convenience if switching from another app.

**References**

1. <https://play.google.com/store/apps/details?id=org.me.mobiexpensifyg&hl=en>
2. <https://play.google.com/store/apps/details?id=com.intsig.camscanner&hl=en>
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5. <https://drive.googleblog.com/2013/05/a-smoother-drive-app-for-android.html>
6. <http://www.techrepublic.com/blog/five-apps/five-apps-for-managing-your-receipts/>
7. <http://www.tidalpool.ca/receipts/manual.html>
8. <https://www.expensify.com/>
9. <https://www.camscanner.com/>
10. <https://www.shoeboxed.com/?utm_source=google_play_store&utm_medium=text&utm_campaign=website>

**Appendix – Detailed Comments on existing apps.**

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| **App** | Expensify |
| **Ease of installation** | Does ask for some special permissions, requires you to use a confirmation e-mail to complete process and set up account online. |
| **Automatic Optical Character Recognition** | Available. Takes a few minutes but actually works with accuracy far better than any other app I tested. |
| **Reports** | Allows you to create your own reports and start adding expenses to them. |
| **Data organization** | Has pre-defined categories for expenses. |
| **Additional Features** | You can select your currency, i.e. Canadian Dollars or others, there is a long list to choose from. |
| **Link** | [Expensify](https://play.google.com/store/apps/details?id=org.me.mobiexpensifyg&hl=en) (https://play.google.com/store/apps/details?id=org.me.mobiexpensifyg&hl=en) |
| **Comments** | Scanning process takes time, but works well, better than other apps. But, it only shows a total, not a breakdown with sales tax, etc. It is not clear from their web site whether it is using human verification like Shoeboxed or not. |

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| **App** | CamScanner |
| **Ease of installation** | Does require special permissions and setting up an account. Account setup requires Activation E-mail, then you enter activation code and app will request permissions. |
| **Automatic Optical Character Recognition** | Yes but does not work particularly well. |
| **Reports** | No but this is a general document scanner with OCR rather than a specific receipt scanner. |
| **Data organization** | Can upload pdfs to Google Drive but not documents that have been scanned with OCR without upgrading and paying for premium version. |
| **Additional Features** | Fairly basic app, not a lot of extra features. |
| **Link** | [CamScanner](https://play.google.com/store/apps/details?id=com.intsig.camscanner&hl=en) (https://play.google.com/store/apps/details?id=com.intsig.camscanner&hl=en) |
| **Comments** | Logging in to online account does not work after set up of account on cellphone. |

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| **App** | ShoeBoxed |
| **Ease of installation** | Asks for a LOT of permissions to access things on your phone, more than some people might be  comfortable with. AND requires you to have an account. |
| **Automatic Optical Character Recognition** | Yes, but the service puts it through human verification. |
| **Reports** | Can’t find reports functions here. |
| **Data organization** | Can add note to a receipt but not put in categories. |
| **Additional Features** | Also includes trip tracker to record distances. |
| **Link** | [Shoeboxed](https://play.google.com/store/apps/details?id=com.shoeboxed.android.phonegapapp&hl=en)  (https://play.google.com/store/apps/details?id=com.shoeboxed.android.phonegapapp&hl=en) |
| **Comments** | Does not seem to have as many features and options as other apps. |

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| **App** | SmartReceipts |
| **Ease of installation** | Easy to install and start using on Android Phone. No special permissions, no need for an account. |
| **Automatic Optical Character Recognition** | No |
| **Reports** | You can generate PDFs, CSV files or a JPG. It was tested by creating a report in PDF format. It was easy to do this, although the expense report did not include the receipt name that was entered, just the category. |
| **Data organization** | Receipts can be put into pre-defined categories, including an “Other” category. But, no obvious way to add a new category. |
| **Additional Features** | Has an import/export function for making and loading from backups. |
| **Link** | [SmartReceipts](file:///C:\Users\Nicholas\Backups\College%202015%20-%202016\Capstone%20Project\Project%20Description.5.20.2016.6.00pm.docx\SmartReceipts)(https://play.google.com/store/apps/details?id=wb.receipts&hl=en) |
| **Comments** | Has a long list of settings you can use, many options. |

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| **App** | Receipts |
| **Ease of installation** | Easy to install and start using on Android Phone. No need for an account, but does require quite a few special permissions. |
| **Automatic Optical Character Recognition** | No |
| **Reports** | You can generate a nice variety of reports. |
| **Data organization** | Receipts can be put into pre-defined categories, and you can add new categories. |
| **Additional Features** | Although it does not employ O.C.R., you can take a photo of a receipt and save it as an attachment. |
| **Link** | [Receipts](https://play.google.com/store/apps/details?id=com.tidalpoolsoftware.receiptspro&hl=en)(<https://play.google.com/store/apps/details?id=com.tidalpoolsoftware.receiptspro&hl=en>) |
| **Comments** | Has a long list of settings you can use, many options. |

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| **App** | Google Drive |
| **Ease of installation** | Already installed |
| **Automatic Optical Character Recognition** | Yes but does not work for receipts. When you upload a scan onto Google Drive, you can search for it based on key terms the OCR found, but I tested this with a receipt and it did not work until I opened up the receipt as a Google Doc, and then the OCR did not work well. |
| **Reports** | No, but this is not specifically a receipt tracker. |
| **Data organization** | Just loads the scan onto Google Drive. |
| **Additional Features** |  |
| **Link** | [Google Drive Blog](https://drive.googleblog.com/2013/05/a-smoother-drive-app-for-android.html) (https://drive.googleblog.com/2013/05/a-smoother-drive-app-for-android.html) |
| **Comments** | I tried this because it can be used to scan documents and is supposed to have OCR. |