



# RESEARCH

## OPSC7312 POE PART 1

### Abstract

This document contains the research component for the OPSC7312 module under the BCAD module at Varsity College Sandton. This document falls part of the wider Part 1 section for the POE of semester 2.

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## Introduction

The following report will outline the research carried out by our team on applications similar in either feature list, efficiency, or user interface, to the application that we have set out to develop. The report will meticulously go through every application, showcasing each applications weakness and strengths. This will ensure that our team has a solid idea of what applications are currently on the market and help us determine how we can fill any necessary gaps in said market. Furthermore, this report will serve as a guide for the rest of the applications development. The report will contain key features that we have determined are necessary to include in our iteration of the application; that allow us to effectively compete with the applications discussed in the following report. The three applications that we are going to compare, dissect, and analyse, are **Zoho Books** (Books, n.d.), **QuickBooks Commerce** (Quickbooks, n.d.), and **Fishbowl Inventory** (Fishbowl, n.d.), respectively. Each application shown above has distinguished itself in one way or another, capturing a piece of the market and thus, are suitable choices to analyse and discuss as we set out to take our own piece of the market.

## Application 1: Zoho Books

### *Overview:*

**Zoho Books** is a cloud-based accounting and inventory management software that offers users many plugins and integrations with the wider **Zoho** environment. The application is built to run on Android, IOS, and Windows. Furthermore, **Zoho Books** offers the functionality to run all of its components on a web application basis, drastically expanding the target market of the software. The application is built for small to medium-sized businesses. It allows users to do all their basic accounting such as invoicing, expense tracking, financial reporting, inventory management, and project management. This is all bundled into an affordable package, allowing for further integrations with their suite of external applications. **Zoho Books** is known for its ease-of-use, efficiency, and user experience, with a great mobile application which is handy for travelling business owners and employees. (Hoffman, 2024)

### *Strengths & Weaknesses*

#### *Strengths:*

- Free plan available
- Feature-rich accounting software
- Robust mobile application
- Impressive support options
- Efficient dashboard
- Feature rich reports and reporting
- Cloud-based platform
- Multiple users
- Premium plans available
- Integration possibilities

### Weaknesses:

- Maximum of 10 users
- Higher-level plans are required for advanced features
- Limited integration into banking
- Not compatible with larger enterprises
- Difficult to scale
- Free plan is very limited

### References for the above information:

(Baluch & Main, 2024) (Hoffman, 2024) (Books, n.d.)

### *Implementation*

**Zoho Books**, similar to many other SaaS (Software as a Service) applications, is probably developed using the usual three phases. Back-end, front-end, and database management was most likely used to develop the application. **Zoho Books** was probably written in a language such as Java or Kotlin. Furthermore, the database is most probably a relational or NoSQL database. These databases will have been used to store information with regards to the functionality of the application. Furthermore, the front-end, web application, was probably created using software such as .NET or Node.js. The mobile application was probably created in an environment similar to, or Android Studio. Using a language such as Kotlin or Java, the applications front-end connects with the database and back-end to create a fully functional application. Moreover, various API's, RESTful APIs, and microservices were used to allow for further functionality such as integrations, payment gateways, and other various functions. Finally, some form of cloud infrastructure was used to support the application. This could have been done in something like Microsoft's Azure (Microsoft, n.d.), or Amazon's Web Services (Amazon, n.d.)

## Screenshots

Figure 1:

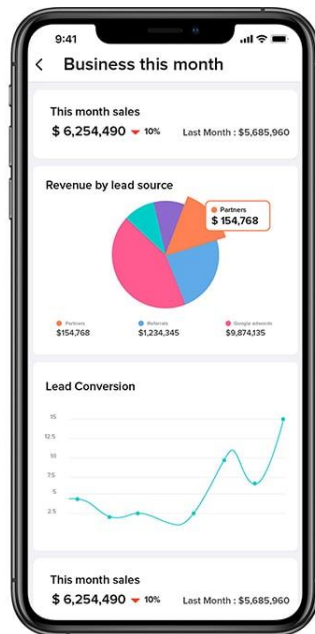


Figure 1 showcases the mobile dashboard for **Zoho Books**, this dashboard showcases total sales with a chart for lead conversion, a feature of a **Zoho Books**, integration called **CRM**. There is a pie chart showcasing revenue by lead source. The pie chart is colour coded with an amount per colour at the bottom of the chart.

Figure 2:

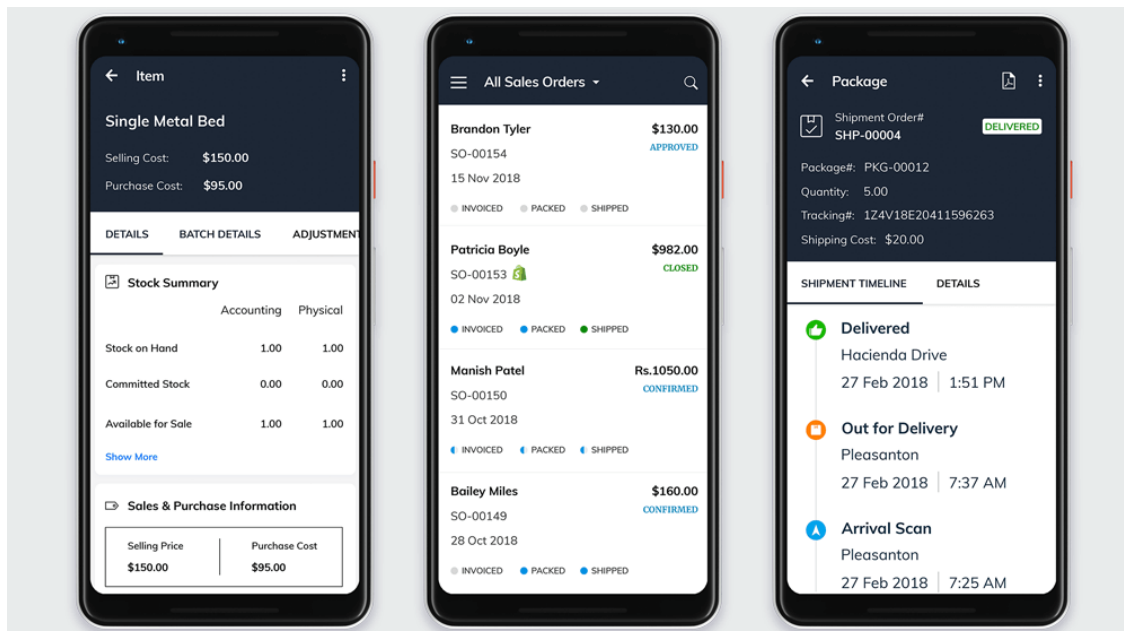


Figure 2 showcases three screenshots of multiple features on **Zoho Books**. The figure showcases the item page, showcasing stock on hand, stock committed to sales, and stock that is available for sale. Furthermore, the purchase and selling price is showcased to the user. The second screen showcases sales orders with labels such as approved, closed, and confirmed. This includes the name of the customer and sale amount. The final screen showcases the package page, allowing to view the completion of a package.

Figure 3:

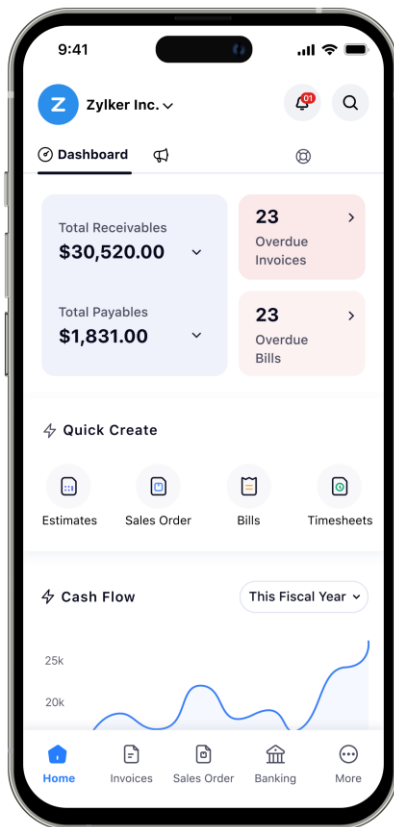


Figure 3 showcases an alternative dashboard for **Zoho Books**. The dashboard showcases the total receivables and total payables that the user is owed and owes respectively. Furthermore, there is a graph that showcases business cash flow. There are also hot buttons to quickly create quotes, sales orders, bills, and timesheets. Finally, there is an overdue invoices and overdue bills button that showcases the number of overdue bills and overdue invoices.

Figure 4:

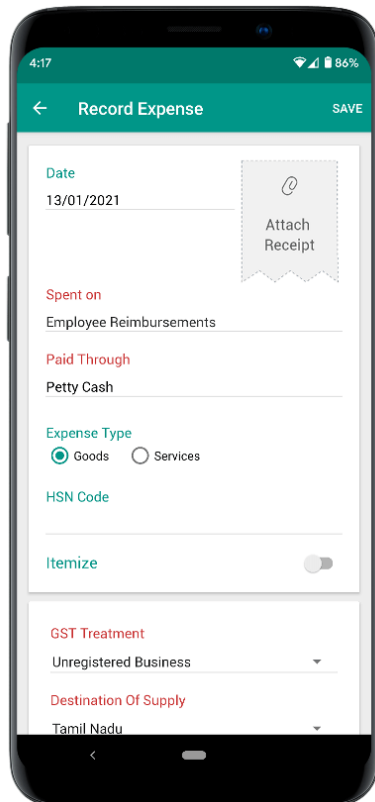


Figure 4 showcases a feature of **Zoho Books**, the record expense page. The page allows a user to record and expense using the date, the expense account, the paid account, as well as allowing the user to select between a good or service. Furthermore, the page allows a user to attach a pdf receipt to the expense.



## Application 2: QuickBooks

### Overview:

QuickBooks delivers powerful, straightforward tools that nearly any business could use to better manage its inventory. The software allows for real-time inventory management, which, frankly, is a must-have feature for any inventory control system worth its salt. It lets businesses track their inventory in real time. Low-stock alerts are an invaluable feature for any business. When you set this up in QuickBooks, it allows you to create a low-stock alert for any item you designate. The software supplies stock valuation methods, such as First In, First Out; Last In, First Out; or average cost, which are vital for financial reports and for keeping costs under control. You can make adjustments to inventory manually if you're using a system that doesn't integrate with QuickBooks, but the good news is that QuickBooks can interface with a number of third-party applications that you might be using, like payment processors and customer relationship management systems. Those adjustments become part of the bookkeeping that QuickBooks does for your business. In totality, QuickBooks presents an all-encompassing answer to the dual problems of accounting and inventory control. It allows companies to handle both functions in a singular, unified manner and does so in a way that requires very little effort on the part of the user. (Quickbooks, n.d.)

### Strengths & Weaknesses

#### Strengths:

- Widely used with bookkeepers and accountants
- Easy to track finances
- Straightforward implementation
- Solid inventory management

#### Weaknesses:

- Expensive subscription
- Limited support
- Drastic learning curve and difficult integration

#### References for the above information:

(Quickbooks, n.d.) (Leonard & Watts, 2024)

## Implementation

The Android app for QuickBooks is created with Android Studio, the primary development environment for Android applications. For the coding part, the developers mostly use either Kotlin or Java, with Kotlin being the most popular choice lately due to its modern features. The app's interface is built with XML, which allows the developers to define the layout and appearance of many different screens within the app, such as dashboards and financial reports. The design of the QuickBooks Android app follows the same overarching principle as the Intuit Financial Tools app: it is supposed to be intuitive and easy to use. The application employs the Room library for data management. This library assists in local storage of data on the user's device, whether it be a phone or a tablet. The development team made a conscious effort to ensure that users can access data anytime, anywhere, and without an internet connection. However, local storage is only part of the solution; the app also communicates with QuickBooks' cloud servers to provide real-time syncing for vital financial information. The combination of these two storage methods makes the app a reliable tool for all users.

## Screenshots

Figure 1:

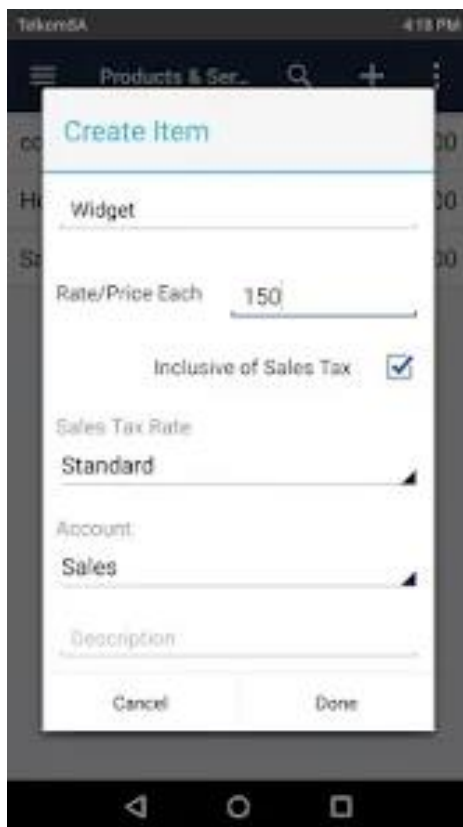


Figure 1 showcases how an item can be created within the QuickBooks mobile application.

Furthermore, the application showcases the name of the product or item being added, the rate of each, inclusive or exclusive of sales tax, in the case of South Africa, VAT, the account that the item will fall on if sold, and the description of the item.

Figure 2:



Figure 2 depicts the dashboard of the QuickBooks mobile application. This showcases the profit and loss made during a specific period of time. Furthermore, there is an income and expense bar graph showcasing the total income and expenses for that specific set of time. Moreover, there is a graph below the bar graph that showcases the expenses in the previous 30 days. There are also buttons to quickly view a profit and loss statement as well as the recent transactions of the enterprise.

## Application 3: Fishbowl Inventory

### Overview:

**Fishbowl Inventory** is a cloud-based inventory management software. **Fishbowl Inventory** is developed with small to medium-sized businesses in mind. It assembles all the necessary software components for fulfilling and managing orders, as well as the manufacturing process. A business can assemble its orders with the help of **Fishbowl Inventory**, as well as keep track of the stock it has. If the business has multiple warehouses or inventory stored in different places, **Fishbowl** can help it manage that as well. If users are primarily concerned with the stock level of a particular item, the software allows users to look and see how many there are, and whether or not they are in a given business's possession. (Fishbowl, n.d.)

### Strengths & Weaknesses

#### Strengths:

- One time software purchase
- Easy imports from other software such as QuickBooks
- Integration and migration support
- Relatively easy implementation
- Feature rich software
- Separate products for warehousing and manufacturing
- Cloud-based
- Simple user interface

#### Weaknesses:

- Limited customization
- High up-front cost
- Unreliable customer support
- Somewhat buggy shipping software
- Buggy general use
- Average costing on products as opposed to First in, First Out

#### References for the above information:

(Fishbowl, n.d.) (Kerai, 2023)

### Implementation

**Fishbowl Inventory** was most likely developed using Android Studio or some other form of Android development software. The database management was probably implemented with some form of Relational or NoSQL database. This is evident as data is stored on the cloud. Further evidence for this is that changes made on an Android system is quickly reflected on an IOS or Windows system. The application most likely uses various third party or published API's, REST API's, and other external libraries to implement some of the features of the application. Furthermore, the application most likely has a native API developed to communicate between the various cloud and local systems, used to congregate data on every platform in real time.

### Screenshots

Figure 1:

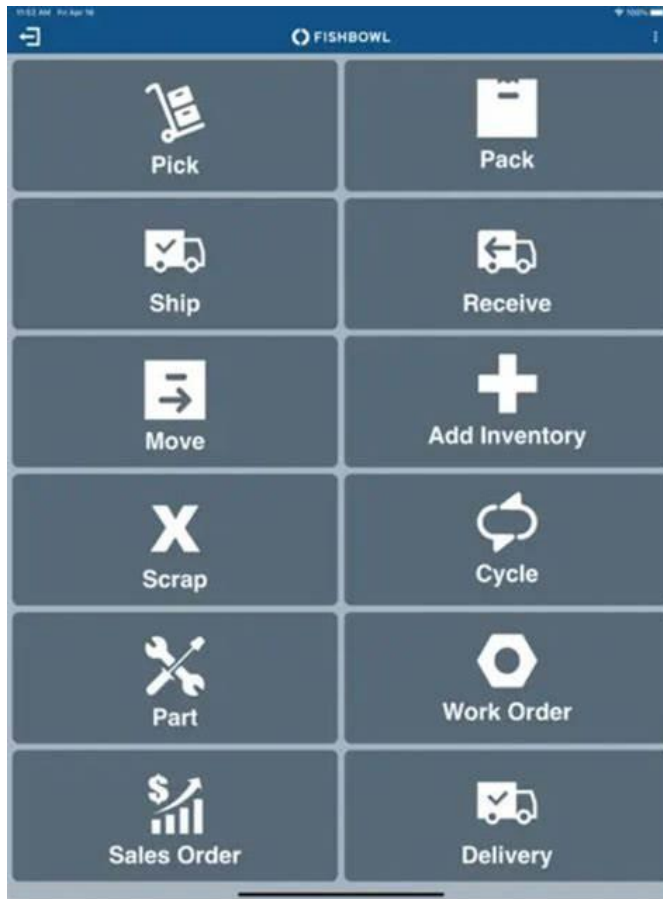


Figure 1 depicts the dashboard of the mobile application. There are various buttons that link to specific functions of the application. These include pick, pack, ship, receive, move, add inventory, scrap, cycle, part, work order, sales order, and delivery. Moreover, the page has an exit button on the top left of the screen. The page is relatively simple with only the bare minimum in terms of fonts, colours, and other aesthetic luxuries.

Figure 2:

The screenshot shows the 'Add Inventory' page of a mobile application. At the top is a blue header bar with a back arrow, the title 'Add Inventory', a barcode icon, and a menu icon. Below the header are several input fields: 'Location' with a dropdown menu showing 'LA-Stock', 'Part' with a dropdown menu showing 'B201', 'Quantity' with a text input field containing '1', 'UOM' with a dropdown menu showing 'ea', 'Unit Cost' with a text input field containing '\$8.29796', 'Note' with a text input field, and 'Customer' with a dropdown menu. A status bar at the top of the form area displays 'On hand inventory: 0 ea | Location: LA-Stock'. At the bottom center of the screen is a large dark grey button with a white plus sign.

Figure 2 depicts the add inventory page of the mobile application. The page allows users to choose a specific location for the inventory. Furthermore, the page allows the user to choose the specific part number, similar to the popular SKU (Stock Control Unit). The page allows for the quantity, unit cost, note, and customer of the specific stock or inventory. The page also showcases a drawer menu on the top right of the screen and a barcode button, that allows users to scan the barcode into inventory without finding the specific part number.

# Comparison

Graph showing the comparison of the applications mentioned above:

APPLICATION COMPARISON			
	Zoho	QuickBooks	Fishbowl
Free Version Available	✓	No	✓
Profit & Loss	✓	✓	No
Extensive Reporting & Reports	✓	✓	✓
Monetization Type	Subscription	Subscription	One Time Payment
Inventory Management	✓	✓	✓
Inventory Management Barcoding	✓	No	✓
Integration Capabilities	✓	✓	✓
Native Android Application	✓	✓	✓
Native IOS Application	✓	✓	✓
Native Windows Application	✗	✓	✓
Data Storage (Cloud-Based) or (Local)	Cloud-Based	Cloud-Based	Cloud-Based
Search Feature In Mobile Application	✓	✓	✓
Company Size Use Cases	Small-Medium	Small-Medium-Large	Medium-Large
User Interface	8/10	4/10	6/10

## List of the best features of the applications:

The best features that we want to from the above applications are as follows:

### PDF Export – **Zoho Books**

This feature allows users to export invoices and bills as pdfs for easy sending. Also allows packing lists to be exported.

### Low-Stock Notifications – **Fishbowl Inventory**

This feature allows users to receive notifications when their inventory levels are low on specific items. This is vital to any inventory management application.

### Inventory Calculator (Overstock & Understock) – **QuickBooks**

This feature ensures that no item is overstocked or understocked. This is vital to ensure that users do not overstock unpopular items or understock popular items. It is an efficient means of ensuring stock availability and profitability.

### Inventory Valuation Report – **Zoho Books**

This report allows users to view the total value of their inventory at the cost price of the items. This means that users can get a real-time view of their assets.

### Export Inventory as CSV – **QuickBooks**

This feature allows users to export their inventory lists to a CSV file to be opened in a spreadsheet software such as Google's Sheets or Microsoft's Excel. This will aid in analysing inventory data as well as adjusting fields for further analysis.



## Conclusion

All the applications covered in the report are relevant to small, medium and larger scale businesses in either goods or services markets. The three applications covered all cater to a specific segment of the market. On the one hand Zoho Books allows for easy add-ons to supplement the already solid base for small businesses, whilst on the other hand, QuickBooks allows users to have the full functionality out of the box. However, all applications serve to cater their specific market. Each application brings with it a feature rich list that can inspire our application and provide a baseline for what the market and, more broadly, users expect. An application in a modern South Africa should be both robust and precise. Predictable, yet enjoyable. Functional, yet beautiful.

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