

# Money Alignment: Helping People Make Smart Money Decisions

Applied Project Final Report

By

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at the

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New York University

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## Declaration

I, Alvinya Bohora, declare that this project report submitted by me to the School of Professional Studies, New York University, in partial fulfillment of the requirement for the award of the degree of Master of Science in Management and Systems, is a record of project work carried out by me under the guidance of Dr. Andres Fortino, NYU Clinical Associate Professor of Management and Systems. I grant powers of discretion to the Division of Programs in Business, School of Professional Studies, and New York University to allow this report to be copied in part or whole without further reference to me. The permission covers only copies made for study purposes or inclusion in the Division of Programs in Business, School of Professional Studies, and New York University research publications, subject to customary acknowledgment conditions. I further declare that the work reported in this project has not been submitted and will not be submitted, either in part or in full, for the award of any other degree or diploma in this institute or any other institute or university.

## **Acknowledgements**

I sincerely thank Dr. Andres Fortino and Prof. Colin Slabach for their contribution as sponsors of this project and support during this project. I also want to thank all the Management and Systems program instructors with whom I have taken courses and learned much. Also, I would like to thank my parents and sister for their constant support.

## **Abstract**

This project aims to develop a financial management tool that provides customers of financial products with critical insights. The device will include a dashboard highlighting crucial parameters, alerts, and alarms to help users stay within their budget and avoid overspending. Additionally, it will offer a segment-wise analysis of expenses to provide a deeper understanding of spending patterns. Customers will have access to simplified financial insights, making it easier for them to track their costs and understand their spending. Setting limits and alerts on expenses will help users stay within their budget and manage their finances effectively. Moreover, the segment-wise analysis of costs will provide valuable insights for making informed financial decisions. Lastly, offering this innovative service to customers will help retain them and demonstrate the client's commitment to delivering solutions that meet their needs. The project will begin with understanding customer pain points and analyzing existing tools in the market. Based on this analysis, the device will be enhanced with additional features to provide a better version. The project will also involve designing the UI/UX for the website to ensure a user-friendly experience. The project's final deliverables will be a comprehensive financial management tool with a dashboard, alarms and alerts system, segment-wise analysis features, and UI/UX design. The device will give customers critical insights, simplify financial statements, and help them manage their finances more efficiently and effectively. In conclusion, this project aims to develop a financial management tool that empowers customers with critical insights. The projected business benefits include simplified financial insights, better budget management, improved financial decision-making, and increased customer retention. The project will analyze tools, enhance enhancing features, and design UI/UX. The final deliverables will be a comprehensive financial management tool and UI/UX design, providing value to the client and helping customers make informed financial decisions.

## Abbreviations and Definitions

- **Data visualization:** It is the graphical representation of data to help people understand complex information, patterns, and trends more quickly.
- **Tableau:** It is a powerful data visualization software that enables users to create interactive and dynamic visual representations of data for practical data analysis and decision-making.
- **UI/UX:** User Interface/User Experience is the design and interaction of digital products or systems that focus on creating a positive and efficient user experience while considering their needs, goals, and preferences.
- **AAL:** Applied Analytics Lab At New York University

# Introduction

## Background information

The Applied Analytics Lab (AAL) mission will comprise complementary elements: the education of professionals in applied analytics, as well as solving industry and organizational problems by applying analytics with the creation of applied knowledge by its practice. The AAL aims to apply best practices in applied analytics to inform decision-makers and improve organizational performance. We pursue a dual mission in support of supports: (1) To study, conduct research, and publish findings on the best methods for applied analytics and its strategic application. (2) To educate practitioners, managers, and executives on the methods and benefits of applying analytical methods to solve industry and organizational problems.

The project aims to give customers of financial products access to critical insights. A dashboard will depict the insights. Some of the features will highlight the key parameters and alert the users. Customers will also be able to analyze the segment-wise split of their expenses. The final tool developed will simplify the complex financial statements for customers.

## Company Name

Applied Analytics Lab (AAL), New York University, School of Professional Studies (NYU SPS). It is a New York, NY (USA) based learning institution.



## **Sponsor Information**

This project is Co-Sponsored by Colin Slabach, Clinical Assistant Professor, and Dr. Andres Fortino, Director of the Applied Analytics Lab at NYU School of Professional Studies.

The offices of Colin Slabach and Dr. Andres Fortino are located at NYU School of Professional Studies, 20 W 43 St, New York, NY, USA. Colin Slabach (cms10008@nyu.edu) and Dr. Andres Fortino (agf249@nyu.edu) can be reached virtually via conference calls as per project requirements.

## **Problem Description and Opportunity**

I will understand the critical pain points of the customers. Try to find out if any tools in the market are available to solve this issue. Analyze the tools and then try to add features to them to make them a better version. I will design the UI/UX of the page of the app/website. I will create the dashboard with crucial parameters displayed. Alarm and alert systems will be added. Segment-wise analysis of the expenses will be provided in the system.

### **Importance of the project**

Completing the project will bring numerous benefits to the client. Firstly, they will have access to simplified financial insights, making tracking their expenses easier and understanding where their money is being spent. Secondly, the ability to set limits and alerts on costs will help them stay within their budget and avoid overspending. Additionally, the analysis of segment-wise expenses will provide a closer understanding of the client's spending patterns, allowing them to make informed decisions about their finances. Finally, offering customers this new and valuable service will help retain them, demonstrating a commitment to providing innovative solutions that meet their needs. Overall, completing the project will bring significant value to the client, making their financial management more efficient and effective.

# Project Objectives and Metrics

## Goal of the project

The project aims to give customers of financial products access to critical insights. A dashboard will depict the insights. Some of the features will highlight the key parameters and alert the users. Customers will also be able to analyze the segment-wise split of their expenses. The final tool developed will simplify the complex financial statements for customers.

## Project Deliverables and Metrics

- Object 1 – Finalizing the functional requirement specifications of the project with the sponsor.
  - Measurement: Approval from the sponsor
  - Timeline: 2-3 weeks from the start of the project. (14<sup>th</sup> February 2023)
- Object 2 – Designing the outlay of the project dashboard
  - Measurement: Designing as per the feedback received from the sponsor.  
Getting approval from the sponsor.
  - Timeline: 3-4 weeks after the completion of the previous stage. (7<sup>th</sup> March 2023)
- Object 3 – Executing and implementing the approved design.
  - Measurement: Creating the tools as per the approved design. Getting approval from the sponsor.
  - Timeline: 3-4 weeks after the completion of the previous stage. (11<sup>th</sup> April 2023)

- Object 4 – Final delivery of the project
  - Measurement: Showcasing the work done throughout the semester and getting approval from the sponsor
  - Timeline: 1 week before the end of the project. (25<sup>th</sup> April 2023)

## **Project Evaluation**

The following steps evaluated project success:

### 1. Project schedule

The progress made on the project will be checked weekly with the approved Gantt chart.

The timelines will be closely monitored regularly. Three status reports will also be submitted to the sponsor as part of the capstone requirement.

### 2. Weekly Project status report and dashboard

Weekly the progress will be checked by comparing it with the planned deadlines of the Gantt chart. Gantt chart has all the pre-set deadlines of the milestones of the project.

### 3. Project communication plan, issues log, risk register

The client will be informed about the project's status via email or a Zoom meeting based on the availability of the client.

### 4. Project status reports

Three project status reports will be published and shared with one of the two sponsors as a part of the capstone project

## **Alternate Solutions Evaluated**

The other tools considered for the project were Power BI (Microsoft product) and Figma. Power BI was regarded as a replacement for Tableau for the visualization aspect of the project.

Tableau, more widely used in the industry, was the financial sector chosen for visualization. Power BI has excellent features, but the ease of use for the customers was also considered apart from the industry norms.

Figma is a great tool, but Axure was used to develop the UI/UX for the project's website for simplicity.

### **Solution Evaluation Criteria**

The main criterion for selecting the software for visualization was approval from the sponsor. Based on multiple parameters critical analysis, they also scored both software's scoring software. An analysis of which software is used more in the industry was done. All these factors considered together made the final decision regarding the software.

Academic projects are a similar domain that was studied. Current products in the market with similar features in the market were examined. The decision of the software which will be able to closely match the standard and quality of these products needed to be chosen

## **Selection Rationale**

Ranking based on judgment on the parameters like UI/UX, Relevant features, Frequency of Software Update, Licensing Fees Cost, Industry Usage (Usage in the financial industry), Service Support, and Difficulty in Learning. The scoring followed the norm of 1 being the best available score and 10 being the worst available score. The scoring is only based on the feasibility of this project. The constraint of being able to do the project within three months was considered. The visualization software comparison matrix is as follows:

Features/Tool	Tableau	PowerBI	Justifications
UI/UX	4	5	PowerBI is known for its modern and intuitive user interface with various interactive visualization options. Tableau also has a user-friendly interface, but it may require more effort to create advanced visualizations.
Relevant Features	2	4	PowerBI offers a broader range of features for data visualization, including advanced analytics, machine learning, and integration with other Microsoft products. Tableau has a more focused set of features for data visualization.
Frequency of Software Update	5	5	Tableau and PowerBI are regularly updated with new features, bug fixes, and performance improvements. The frequency of updates is similar for both tools.
Licensing Fees Cost	3	3	Tableau and PowerBI have licensing fees associated with their usage, and the cost is comparable for both tools.
Industry Usage	1	2	PowerBI has gained more traction in the industry, mainly integration with other Microsoft products, making it popular among organizations already using Microsoft technologies. Tableau's significant user base may have slightly lower industry usage than PowerBI.
Service Support	2	3	Tableau and PowerBI offer comprehensive support services, including online documentation, community forums, and customer support. PowerBI, being a Microsoft product, may have slightly better service support due to its more extensive user base and resources.
Difficulty in Learning	2	3	Tableau and PowerBI have a learning curve, but Tableau may have a slightly steeper learning curve due to its advanced features and customization options. PowerBI is known for its ease of use, particularly for users familiar with Microsoft products.
Overall Score	2	3	Tableau is selected as the overall choice based on the lower scores in relevant features, industry usage, service support, and difficulty in learning compared to PowerBI. However, the final choice depends on individual preferences and requirements.

## **Approach and Methodology**

Detailed analysis and review of the current practices in the financial industry were done before starting the project. Standard reporting norms and patterns were analyzed to create optimal input data for visualization. Real-life constraints were considered before setting parameters and boundaries for the data columns. The customers' simplicity and ease of use were considered before designing the flow, visualization, and website design.

The main goal of the project was to reach the customers. The insights depicted to the customers should help them understand spending and allow them money by limiting spending in that category. For this purpose, understanding the mindset of the customer was necessary.



## Results

The project aims to give customers of financial products access to critical insights. A dashboard will depict the insights. Some of the features will highlight the key parameters and alert the users. Customers will also be able to analyze the segment-wise split of their expenses. The final tool developed will simplify the complex financial statements for customers.

I will understand the critical pain points of the customers. Try to find out if any tools in the market are available to solve this issue. Analyze the tools and then try to add features to them to make them a better version. I will design the UI/UX of the page of the app/website. I will create the dashboard with crucial parameters displayed. Alarm and alert systems will be added. Segment-wise analysis of the expenses will be provided in the system.

### Repository of Data Sets

Date	Day	Month	Amount	Income/Expense	Category	Running Bal.
1	Mon	Jan	800	Income	Income/Inflows	800
3	Wed	Jan	40	Income	Income/Inflows	840
9	Thr	Jun	650	Income	Income/Inflows	1490
5	Sun	Jan	-30	Expense	Restaurants and Dining	1460
6	Sat	Jan	-70	Expense	Restaurants and Dining	1390
7	Tue	Jan	50	Income	Income/Inflows	1440
10	Thr	Feb	400	Income	Income/Inflows	1840
14	Sun	Jan	-50	Expense	Restaurants and Dining	1790
25	Mon	Apr	370	Income	Income/Inflows	2160
16	Tue	Jan	800	Income	Income/Inflows	2960
17	Wed	Jan	-30	Expense	Transportation	2930
14	Thr	Apr	200	Income	Income/Inflows	3130
20	Sat	Jan	-50	Expense	Shopping and Entertainment	3080
29	Mon	Jan	300	Income	Income/Inflows	3380
24	Wed	Jan	-80	Expense	Restaurants and Dining	3300
26	Fri	Jan	-150	Expense	Health	3150
28	Sun	Jan	-90	Expense	Personality and Family Care	3060
25	Mon	Oct	98	Income	Income/Inflows	3158
31	Tue	Jan	-20	Expense	Transportation	3138
31	Mon	Jan	-10	Expense	Health	3128

Category
Transportation
Personality and Family Care
Restaurants and Dining
Shopping and Entertainment
Health
Income/Inflows

Above is the screenshot of the sample data file used to generate the Tableau dashboard.

The parameters and filters in the data generated were kept closer to actual life circumstances.

The categories were decided based on comparing leading banks' income statements.

Standard types were chosen.

The link for the Tableau visualization and website design structure can be found on the following GitHub page: <https://github.com/AlvinyaB/Money-Alignment-Helping-People-Make-Smart-Money-Decisions>

(TableauLink: <https://public.tableau.com/app/profile/alvinya.bohora/viz/FinalVisulization/Dashbord1> Axure Link: [https://tfb7co.axshare.com/?id=600fb8&p=home\\_page](https://tfb7co.axshare.com/?id=600fb8&p=home_page))

## Summary of Results

In conclusion, charts and graphs were created for customer insights using Tableau, Categorical Analysis, Monthly Income vs. Expense, Monthly Inflows/Outflows, and Monthly Categorical Analysis.

## Risk Analysis

For any project to be successful, it is necessary to analyze all the potential risks and have a proper contingency plan. During the project, there were issues syncing user data to the dashboard. The format of the file needed to be corrected by NYU Libraries, and the FAQ section of the Tableau community was taken to tackle and solve the problem.

### Risks

Number	Risk	Probability Score (1,2 or 3)	Impact Score (1,2 or 3)
1	Loss and damage to data generated and working file	1	3
2	Cancellation of Tableau license access	1	3
3	Inability to sync user data to the dashboard	1	2
4	Virus attack on the system	1	2
5	Sponsor rejection of the project	1	3
6	The project goes over the scheduled time	1	3

**Note:** Probability: 1 means low probability, 3 represents a high probability  
 Impact: 1 means low impact, 3 represents a high impact

### Risk Matrix

		RISK (exposure)		
		1. Slight	2. Moderate	3. High
Probability (of occurrence)	1. Very Unlikely		Risk No:3,4	Risk No:1,2,5,6
	2. Possible			
	3. Expected			

## Contingency Plan

<b>Risk</b>	<b>Description</b>	<b>Probability (1-3)</b>	<b>Exposure (1-3)</b>	<b>Contingency Plan</b>
<b>1</b>	A system crash can delete all the project work and the data generated for the project	1	3	Backup storage on the cloud (Google Drive), keep files in emails and on servers at multiple locations and devices.
<b>2</b>	The project utilizes a free version of the Tableau license for NYU students. Cancellation of the license will stall the progress of the project	1	3	Buying the paid version of the license
<b>3</b>	If the file downloaded by the user from the banks is unable to be uploaded to Tableau	1	2	Formatting the file manually before uploading it to the system
<b>4</b>	Cyber-attack by external sources can halt the progress of the project	1	2	Installing anti-virus software and not clicking on suspicious emails and websites
<b>5</b>	The sponsor disapproves of the project	1	3	Continuous communication with the sponsor
<b>6</b>	The project extends the deadline	1	3	Following the approved timeline and working continuously to complete the project

## **Issues Encountered**

While working on the project, I encountered some issues. All the issues I faced were minor issues that did not significantly impact the problems. All cases were solved immediately once indicated so the project could be timely and high-quality.

While working on the project standardization of the columns (parameters) used by different banks and financial institutions, finding common aspects was a challenge. Completely the project on time was a challenge as well.

Initially, finding a suitable time for a meeting with the sponsor was difficult due to my last moment request. To encounter this issue, advantage planning for scheduling an appointment was adopted. This helped in getting the available time slot from the sponsor from their busy schedule.

## Project Chronology and Critique

The tasks and duration of the project are shown below:

WBS	Task	Lead	Start	End	Days
<b>1</b>	Finalizing the functional requirement specifications of the project with the sponsor	Alvinya Bohora	Tue 1- 24-23	Tue 2- 14-23	22
1.1	Research on the project requirements		Tue 1- 24-23	Sat 1- 28-23	5
1.2	Gathering data on previous similar projects		Sun 1- 29-23	Wed 2- 01-23	4
1.3	Preparation of project proposal		Thu 2- 02-23	Fri 2- 03-23	2
1.4	Presentation of project proposal		Sat 2- 04-23	Tue 2- 07-23	4
1.5	Discussion on project requirements		Wed 2- 08-23	Wed 2- 08-23	1
1.6	Finalization of project requirements		Thu 2- 09-23	Fri 2- 10-23	2
1.7	Approval from the sponsor		Sat 2- 11-23	Tue 2- 14-23	4
<b>2</b>	Designing the outlay of the project dashboard		Tue 2- 14-23	Sat 3- 11-23	26

2.1	Defining the scope of the design		Tue 2- 14-23	Thu 2- 16-23	3
2.2	Identifying the key features of the dashboard		Fri 2- 17-23	Mon 2- 20-23	4
2.3	Defining the design goals		Tue 2- 21-23	Tue 2- 21-23	1
2.4	Sketching the design prototypes		Wed 2- 22-23	Sun 2- 26-23	5
2.5	Reviewing the design prototypes		Mon 2- 27-23	Thu 3- 02-23	4
2.6	Incorporating feedback from the sponsor		Fri 3- 03-23	Tue 3- 07-23	5
2.7	Refining the design		Wed 3- 08-23	Thu 3- 09-23	2
2.8	Approval from the sponsor		Fri 3- 10-23	Sat 3- 11-23	2
<b>3</b>	Executing and implementing the approved design		Sat 3- 11-23	Mon 4- 24-23	45
3.1	Identifying the resources required for implementation		Sat 3- 11-23	Fri 3- 17-23	7
3.2	Defining the implementation goals		Sat 3- 18-23	Tue 4- 18-23	32

3.3	Development of the project dashboard		Wed 4- 19-23	Fri 4- 21-23	3
3.4	Integration of the tools as per the approved design		Sat 4- 22-23	Sat 4- 22-23	1
3.5	Approval from the sponsor		Mon 4- 24-23	Mon 4- 24-23	1
<b>4</b>	Final delivery of the project		Mon 4- 24-23	Tue 5- 02-23	9
4.1	Gathering all the work done throughout the project		Mon 4- 24-23	Tue 4- 25-23	2
4.2	Presentation of the project dashboard		Wed 4- 26-23	Sun 4- 30-23	5
4.3	Showcasing the work done throughout the project		Mon 5- 01-23	Mon 5- 01-23	1
4.4	Approval from the sponsor		Tue 5- 02-23	Tue 5- 02-23	1

The overall pace of completion of the project could have been faster. I could have communicated more frequently with the sponsors. Additional features could have been incorporated into the design and the project.



## Lessons Learned

The project was delivered as planned with expected quality on time, which could not have been done without the contribution and help from sponsors. It was a fantastic experience working on the project. Thanks a lot to Prof. Fortino and Prof. Colin for their constant support.

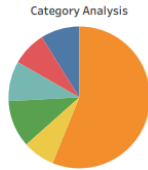
To complete the course, I got to upskill myself by doing a short LinkedIn Learning course on Tableau. I also got to learn about the UI/UX Tool Axure. Both knowledges of Tableau and Axure should have been used in the project, for reference search and free access to LinkedIn Learning courses were available to NYU students. The resources helped me make progress in my project. The in-person NYU Library Data Services also helped solve the software-related query learnings from the Management and Systems program implemented in the project. The knowledge from the Project Management Class from the course was essential in formulating the plan and successful implementation of the plan.

## Conclusion and Summary

This project brought numerous benefits to the client. Firstly, customers had access to simplified financial insights, making it easier to track their expenses. The analysis in segment-wise expenditures provided a deeper understanding of the client's spending patterns, allowing them to make informed financial decisions. Finally, by offering this new and valuable customer unique, helpful service, they demonstrate a commitment to providing innovative solutions that meet their needs. Overall, the project brought significant value to the client, making their financial management more efficient and effective.

The files are available on GitHub. Link of the files: <https://github.com/AlvinyaB/Money-Alignment-Helping-People-Make-Smart-Money-Decisions>

(TableauLink: <https://public.tableau.com/app/profile/alvinya.bohora/viz/FinalVisulization/Dashboard1> Axure Link: [https://tfb7co.axshare.com/?id=600fb8&p=home\\_page](https://tfb7co.axshare.com/?id=600fb8&p=home_page))

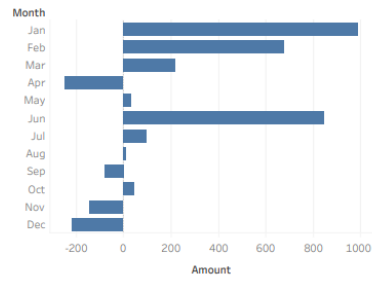


- Health
- Income/Inflows
- Personality and Family Care
- Restaurants and Dining
- Shopping and Entertainment
- Transportation

Monthly Income vs Expense

Month	Income/Expense	
	Expense	Income
Jan	-1,000	1,990
Feb	-820	1,500
Mar	-930	1,150
Apr	-1,020	770
May	-1,120	1,150
Jun	-870	1,715
Jul	-725	820
Aug	-220	230
Sep	-310	230
Oct	-405	448
Nov	-445	300
Dec	-520	300

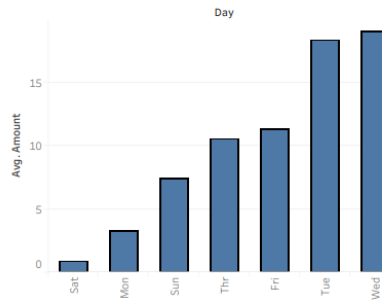
Monthly Inflows/Outflows



Monthly Categorical Analysis

Month	Category					
	Income/Infl. and Family ..	Personality and Family ..	Restaurants and Dining	Shopping and Enterta..	Health	Transp
Jan	1,990	-190	-230	-110	-360	
Feb	1,500	-150	-200	-110	-220	
Mar	1,150	-180	-250	-180	-170	
Apr	770	-280	-150	-280	-220	
May	1,150	-270	-200	-320	-200	
Jun	1,715	-85	-175	-295	-160	
Jul	770	-120	-160	-125	-135	
Aug	210	-30	-15	-65	-25	
Sep	190	-25	-25	-65	-25	
Oct	308	-25	-40	-100	-50	
Nov	180	-25	-70	-150	-15	
Dec	150	-30	-120	-120	-15	

Daily Average Spent



## Tableau Dashboard

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 Or   
Excel PDF

**Axure Website Design Execution Page**

## **Limitations, Recommendations and Scope for Future Work**

Even though this project was delivered as expected, there are still some limitations within this project. Some restrictions may be improved in similar projects at AAL and NYU SPS.

First, due to the limited time available, integrations of the input file via the API of Banks and Financial Institutions into the website could not be done. Phase 2 of the project can focus on the automatic input of files rather than the current manual input of the data file.

# Literature Survey

## Introduction

The project aims to provide customers with financial which analyses their finance. Incorporating visual aids with text resulted in a 92% increase in long-term memory retention compared to relying only on text. (Kothakota, 2020). Therefore, the project aims at utilizing various dashboards to depict critical insights.

Some features will highlight the critical spending parameters and alert the users. Customers will also be able to analyze the segment-wise split of their expenses. The final tool developed will simplify the complex financial statements for customers.

People with limited knowledge of finance find it challenging to understand analyses done using technical jargon. The tool will help simplify the process and explain the customer through simple visualizations. The current dashboard is complicated for the customers to understand.

The tool developed after this project will be utilized to create a new business with the mission of helping the community understands its finances better.

## Industry

Technology is rapidly transforming the financial industry and giving rise to the new “Fintech” industry. For managing personal finances, all the demographics ranging from Retired Individuals, Women, Youth, and others, need knowledge and proper support for financial planning.

Research findings have implications for retirement planning, as individuals knowledgeable about financial matters will be better equipped to discuss their financial situation with financial planners. This can ultimately lead to better retirement planning outcomes and

greater security for individuals' retirement. (Kothakota, 2020) Financial planners use complex economic tools to help earn maximum returns on their investments.

As per a study, many young people do not understand fundamental financial concepts. In a survey done within this study, only 27% of the respondents answered all financial literacy questions accurately, and just about 46% correctly responded to the two questions. These findings suggest that a lack of financial knowledge is prevalent among young individuals. (Lusardi, 2010) Financial jargon makes it difficult for this demographic to understand the true meaning of the documents.

Significant gender differences in financial literacy were observed, with women being less likely than men to provide correct responses to financial literacy questions. Specifically, there was an 11% to 12% gap in accurate response rates for the inflation and risk diversification questions between men and women. These differences between genders were statistically significant. (Lusardi, 2010) For overall growth, equal participation is required from all sections of society. Easy and simplified access to financial information will help bridge this gap.

### **The Problem**

The decision-making process in financial matters is often influenced by various factors, leading people to appear irrational when making choices under risk. This is due to the complexity of economic decisions, which requires heuristics that can introduce biases in the evaluation process. (Byrne, 2005) A clear and broad overview of the problem is needed to solve the issue at hand.

Making decisions about financial products can be complicated due to several factors. Financial products are intangible, meaning they lack a physical presence, making it difficult to

evaluate their worth. (Byrne, 2005) Misinterpreting valuations, interest rates, and other things can lead to substantial financial losses.

The outcomes of financial decisions are unpredictable, and the potential financial risks associated with a poor decision can be substantial. This complexity adds to the challenge of making sound financial decisions. (Byrne, 2005) Decisions must be taken after reviewing all the critical parameters carefully.

### **Proposed Solution**

Human Mind can retain and absorb data captured in visualization better than plain texts and numbers. Using proper visualization can significantly impact the interpretation of personal data.

Modern techniques give better insights and are more efficient for financial data than old classic ways. (Khanvilkar, 2023) Customers want their lives to be simplified. The new tool will provide them with the same simplicity they need.

Some features like loan planners, budget planners, and a dashboard to visualize their finances can be helpful for customers. (Khanvilkar, 2023) The new tool will try to have all the features mentioned and recommended.

### **The Technology**

Technology enables humans to do tasks more efficiently and effectively. The project proposes to use technology to simplify finance for the tool's users.

Some tools that can be used to create visualization are Dynamic 365 Sales, Mint, YNAB, Personal Capital, Goodbudget, Python, Django, PowerBI, and Tableau. (Khanvilkar, 2023) Different tools have various advantages and disadvantages. Based on the discussion with the sponsor, Tableau is one of the feasible options for the project. Many financial industry projects



for analyzing company financial data utilize the power of the Tableau platform for visualization. Similar techniques can be used for personal financial planning as well.

Some of the limitations of Tableau are that Tableau does not provide the feature of automatic refreshing of the reports. It also has limited Data Pre-processing. It does not support custom visual imports. (Khanvilkar, 2023) Fortunately, Tableau's drawbacks won't impact the project's deliverables. The tool's features will be adequate for the current phase se of the project.

## **Use Cases**

Stock markets, investment banks, mutual funds, pension funds, insurance companies, private equities, wealth managers, and others have used data visualization techniques to convince their clients to invest. Critical decisions are taken based on the insights drawn from the visuals.

Current financial visualization software often uses pie or donut charts; however, evidence from multiple objects research suggests that bar charts would be more appropriate for asset allocation purposes. (Kothakota, 2020) Specific parameters have unique charts to be used. However, it does not restrict the use of a particular chart; multiple diagrams can depict the data. It depends upon the data on which kind of chart will be more accurate for simplifying the insights.

Middle-class consumers often need help managing their finances due to time constraints. Many struggles to need help with their income and expenses, resorting to using credit cards and accumulating bad debt. While they may recognize the need for guidance from financial advisors, they often need more time to pay for personal finance advisory services. (Mumpuni, 2014) This issue needs to stop for the betterment of society.

## Conclusion

After reviewing the literature for the project, the importance and value of the project are known. The literature helped in understanding the behaviors and mindset of customers. The current software and data analysis tools were learned from the literature review.

For better simplifying sub-account and transaction management, financial plan calculation, investment calculation, money management, and personal financial statements web-based application is already being used. (Mumpuni, 2014) Similar solutions can be implemented for personal financial planning as well.

Inadequate management of personal finances can have significant long-term repercussions for the individual, businesses, and society. As a result, the study of personal financial management behavior has become an increasingly important focus for researchers in recent times. (Mien, 2015) For overall economic development, financial planning must be taught to everyone.

Not all demographics of people know about financial terms. It is easy for them to get confused. Simplification of the data is much needed. Visualizing the data is one of the solutions to solve this problem. Humans capture data much better when it's represented in the form of visuals.

Most of the literature reviewed concluded that data visualization would help in the financial saving of customers.

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# Appendix A - Project Acceptance Document

## Sponsor's Project Acceptance Document

*This document is the means by which your project sponsor formally agrees that your project has been satisfactorily completed and that it meets the project goal and objectives that were set at the onset of the project. It is therefore important that you describe the goal, objectives, and related metrics in the appropriate section below. The "PLAN" section is to be prepared at the beginning of the project and the "RESULTS" and "ACCEPTANCE" sections after your project has been completed. Your sponsor should provide input and sign where indicated. The signed document will also be a required section in your Project Final Report. This document is a template whose sections may be expanded as necessary.*

### PLAN

(To be filled out and signed at the start of the project)

**Project Name:** Money Alignment: Helping People Make Smart Money Decisions

**Student Name:** Alvinya Bohora

**Sponsoring Organization:** Applied Analytics Lab (AAL), New York University, School of Professional Studies (NYU SPS)

**Project Sponsor Name and Title:** Colin Slabach, Clinical Assistant Professor

**Project Sponsor Contact Information (email and phone):** cms10008@nyu.edu

**Planned Start Date:** Jan 24th, 2023

**Planned End Date:** May 2nd, 2023

### PROJECT PLAN

At project start, show the project goal; the project objectives and related metrics to be used to show successful project completion. Sponsor should sign to indicate agreement.

**Project Goal** The project aims to give customers of financial products access to critical insights. A dashboard will depict the insights. Some of the features will highlight the key parameters and alert the users. Customers will also be able to analyze the segment-wise split of their expenses. The final tool developed will simplify the complex financial statements for customers.

**Objective #1** Finalizing the functional requirement specifications of the project with the sponsor.

**Objective #2** Designing the outlay of the project dashboard

**Objective #3** Executing and implementing the approved design.

**Objective #4** Final delivery of the project

**I agree with the above planned project goal, project objectives, and related metrics.**

DocuSigned by:  
  
\_\_\_\_\_  
**Project Sponsor Signature**

2/20/2023  
\_\_\_\_\_  
**Date**

## RESULTS

(To be filled out and signed at the end of the project)

### PROJECT RESULTS

**Planned Start Date:** Jan 24th, 2023  
**Actual Start Date:** Jan 24th, 2023

**Planned End Date:** May 2nd, 2023  
**Actual End Date:** May 2nd, 2023

If actuals differ from planned dates, the revised dates (Actual) are accepted by the sponsor if initialed here: **Sponsor Initials** CS

#### Project Goal

Was the project goal achieved as planned?  Yes  No **Sponsor Initials** CS

Reason missed: \_\_\_\_\_

If NO, please explain why this is an acceptable deviation. \_\_\_\_\_

**Project Objective #1:** <as shown above in Plan section>

*Did the student's project meet this objective with associated measures and metrics as established at project inception?*

**Objective#1**  has or  has not been met. **Sponsor Initials** CS

*If not met please explain why this is or is not an acceptable deviation.*

**Project Objective #2:** <as shown above in Plan section>

*Did the student's project meet this objective with associated measures and metrics as established at project inception?*

**Objective#2**  has or  has not been met. **Sponsor Initials** CS

*If not met please explain why this is or is not an acceptable deviation.*

**Project Objective #3:** <as shown above in Plan section>

*Did the student's project meet this objective with associated measures and metrics as established at project inception?*

**Objective#3**  has or  has not been met. **Sponsor Initials** CS

*If not met please explain why this is or is not an acceptable deviation.*

**Project Objective #4:** <as shown above in Plan section>

*Did the student's project meet this objective with associated measures and metrics as established at project inception?*

**Objective#4**  has or  has not been met. **Sponsor Initials** CS

*If not met please explain why this is or is not an acceptable deviation.*

## ACCEPTANCE

(To be filled out and signed at the end of the project)

### PROJECT ACCEPTANCE

- Project was completed satisfactorily and is hereby accepted
- Project was completed satisfactorily but did not meet all objectives, as shown above. The Project is, nevertheless, accepted.

DocuSigned by:  
*Colin Slaback*  
Project Sponsor Signature

4/22/2023  
Date

AlvinyaB  
Student Signature

15th Feb, 2023  
Date

# Appendix B - Project Sponsor Agreement

## New York University MS in Management and Systems Applied Project Project Sponsor Agreement

### Goals of the Program

#### For Participating Organizations

- Begin relationship with New York University
- Receive help from highly trained NYU graduate student
- Provide internship opportunity for NYU graduate student
- Receive assistance at no cost

#### For NYU Graduate Students

- Manage and implement a meaningful project aligned with their professional and educational goals
- Hands-on experience interacting with a start-up or operational small business or organization
- Earn credit toward completion of graduate degree by conducting an unpaid Applied Project under the mentorship of an NYU-SCPS professor.

### Project Sponsor and Student Responsibilities

- Student prepares project planning documents
- Sponsor reviews and approves student's project plan
- Student submits project plan to faculty supervisors for approval
- Student conducts project according to plan
- At predetermined milestones sponsor reviews and approves status reports submitted by student
- Status reports reviewed and evaluated by faculty supervisors to assure student effort and project meet course requirements
- Project sponsor and student participate in periodic project reviews with NYU
- At project completion project sponsor completes evaluation forms
- Student prepares final report

### Project Selection Process

- Project Evaluation Committee reviews proposed projects
- Projects are:
  - Relevant to MS degree course content
  - Significant to the participating organization
  - Substantial in terms of duration and scope
  - Challenging to the student
  - Capable of being measured against predetermined goals

### The MS in Management and Systems

#### Concentrations in:

- Strategy and Leadership
- Systems Management
- Database Technologies
- Enterprise Risk Management

#### Typical Participating Student Profile

- Students selected to participate in this program meet stringent criteria
- Have completed all coursework
- High achievers with highest level GPAs and strong academic credentials
- 2-10 years of business experience



## Sponsor and Project Information

Type of Organization	<input type="checkbox"/> For Profit <input checked="" type="checkbox"/> Not for Profit				
Name of Organization	Applied Analytics Lab (AAL), New York University, School of Professional Studies (NYU SPS)				
Address	20 W 43 St				
City	New York	State	NY	Zip	10036
Project Sponsor	First Name	Colin	Last Name	Slabach	
Title	Clinical Assistant Professor				
Phone					
Email	cms10008@nyu.edu				
Web Site	<a href="https://www.sps.nyu.edu/">https://www.sps.nyu.edu/</a>				
Type of Business	Educational Institute				

Student Name	Alvinya Bohora
Project Title	Money Alignment: Helping People Make Smart Money Decisions

Description of Project	
<p>The mission of the Applied Analytics Lab (AAL) will comprise complementary elements: the education of professionals in applied analytics, as well as solving industry and organizational problems by applying analytics with the creation of applied knowledge by its practice. The purpose of the AAL is to apply best practices in applied analytics to inform decision-makers and improve organizational performance. We pursue a dual mission in support of organizations: (1) To study, conduct research, and publish findings on the best methods for applied analytics and its strategic application. (2) To educate practitioners, managers, and executives on the methods and benefits of applying analytical methods to solve industry and organizational problems.</p>	
Estimated Hours of Student Participation	20 hours per week, approximately 300 hours in total.

Anticipated Results
<ul style="list-style-type: none"> <li>• The dashboard's ability to help customers make informed decisions.</li> <li>• Customers can set their financial priorities and thus be more financially educated.</li> </ul>

<p>Knowledge and expertise student will need to be able to complete the project</p> <ul style="list-style-type: none"> <li>• I will be the project manager for this project. I will define the project scope, set schedules, develop the project plan, and coordinate the project.</li> <li>• I will also develop a dashboard representing simplified critical components of financial statements.</li> <li>• As communication manager, I will be responsible for all the communication with the stakeholders. I will finally present the project to stakeholders.</li> <li>• I will also be the web designer for this project. After collecting all the information, I need to start the project, I will use either Axure or FIGMA to design the interaction of the new tool. I will design the web layout and content.</li> </ul>
---

<p>Will the project sponsor be available for periodic meetings with NYU to review progress, address questions and concerns with the professor supervising the program? <i>This is a requirement for the program</i></p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>Describe the form and frequency of supervision of the student by the Project Sponsor.</p> <p>Biweekly Meeting via zoom. Based on the criticality of the decisions to be made, additional meetings can be arranged</p>	

**Sponsor Agreement**

Students are interns, not professional consultants. NYU is not responsible for the outcomes of projects undertaken by students. Work is on a best-efforts basis; no guarantees or warranties are expressed or implied. Organization is responsible for evaluating work presented, determining its value and whether to use it or not. Some projects may require on-going management or even re-work by the Organization after the student completes their Applied Project.

Please note that in order to post an unpaid position, the internship must encompass all 6 components below:

1. The internship, even though it includes actual operation of the facilities of the employer, is similar to training which would be given in an educational environment;
2. The internship experience is for the benefit of the intern;
3. The intern does not displace regular employees, but works under close supervision of existing staff;
4. The employer that provides the training derives no immediate advantage from the activities of the intern; and on occasion its operations may actually be impeded;
5. The intern is not necessarily entitled to a job at the conclusion of the internship; and
6. The employer and the intern understand that the intern is not entitled to wages for the time spent in the internship.

I have read and agree with the information shown in the Terms and Conditions for employers contained on the following web page(s): <http://www.nyu.edu/life/resources-and-services/career-development/employers/post-a-job/terms-and-conditions.html>

Please complete and sign this form in the space provided below and return to the course professor via the student who will upload the document to the course drop-box. For any questions, please email the professor: Prof. Israel Moskowitz [im36@nyu.edu](mailto:im36@nyu.edu).

I agree to all of the above

Participating Organization New York University, School of Professional Studies

Date: 2/20/2023

By (signature): \_\_\_\_\_

DocuSigned by:

*Colin Slaback*

280D03A3D0934DE...

Project Sponsor

Printed Name: \_\_\_\_\_

CS

Title: Clinical Assistant Professor

### Student Agreement

Students who are planning to conduct an unpaid Applied Project must read and agree to the "Important Considerations Before Accepting a Job or Internship" contained on the following web page(s): <http://www.nyu.edu/life/resources-and-services/career-development/find-a-job-or-internship/important-considerations-before-accepting-a-job-or-internship.html>.

**Students do not register their Applied Project with the Wasserman Center.**

I agree to the all of the above

Student Name (Print) Alvinya Bohora Date: 15<sup>th</sup> February, 2023

Signature: AlvinyaB

## Appendix C - Project Charter

Project Manager: Alvinya Bohora

Sponsor: Colin Slabach

Prepared by: Alvinya Bohora

Name and Location of Client Organization: Applied Analytics Lab (AAL), New York University, School of Professional Studies (NYU SPS). It is a New York, NY (USA)

### 1. Project Goal

The project aims to give customers of financial products access to critical insights. A dashboard will depict the insights. Some of the features will highlight the key parameters and alert the users. Customers will also be able to analyze the segment-wise split of their expenses. The final tool developed will simplify the complex financial statements for customers.

### 2. Problem/Opportunity Definition

The current dashboard is complicated for the customers to understand. People with limited knowledge of finance find it challenging to comprehend analyses done using technical jargon. The tool will help simplify the process and explain the customer through simple visualizations.

### 3. Proposed Project Description

I will understand the critical pain points of the customers. Try to find out if any tools in the market are available to solve this issue. Analyze the tools and then try to add features to them to make them a better version. I will design the UI/UX of the page of the app/website. I will create the dashboard with crucial parameters displayed. Alarm and alert systems will be added. Segment-wise analysis of the expenses will be provided in the system.

### 4. Project Sponsor

Name and Title: Primary Sponsor Colin Slabach, Clinical Assistant Professor, Secondary Sponsor Dr. Andres Fortino, Director, Applied Analytics Lab

Role within the organization: Professor and Director

Position on the project: Sponsor

### 5. Objectives

- Object 1 – Finalizing the functional requirement specifications of the project with the sponsor.
  - Measurement: Approval from the sponsor
  - Timeline: 2-3 weeks from the start of the project. (14<sup>th</sup> February 2023)
- Object 2 – Designing the outlay of the project dashboard

- Measurement: Designing as per the feedback received from the sponsor. Getting approval from the sponsor.
- Timeline: 3-4 weeks after the completion of the previous stage. (7<sup>th</sup> March 2023)
- Object 3 – Executing and implementing the approved design.
  - Measurement: Creating the tools as per the approved design. Getting approval from the sponsor.
  - Timeline: 3-4 weeks after the completion of the previous stage. (11<sup>th</sup> April 2023)
- Object 4 – Final delivery of the project
  - Measurement: Showcasing the work done throughout the semester and getting approval from the sponsor
  - Timeline: 1 week before the end of the project. (25<sup>th</sup> April 2023)

## 6. Project Selection & Ranking Criteria

Project benefit category:

	Compliance/Regulatory
X	Efficiency/Cost reduction
	Revenue increase

The project is an efficiency/cost reduction improvement type of project. Implementing the project as an app with help its customers reduce their expenses by close segment-wise monitoring and alarm system. The tool's customers will have better capability to increase their financial efficiencies by reducing unnecessary costs.

Portfolio Fit and Interdependencies.

One of the future goals is to create a tool by which the business can help the community get access to visualize their spending more straightforwardly. Consumers will have access to the best industry practices at an affordable rate. Charts and graphs will replace financial jargon for simplicity. It will be a perfect fit both for the business and the consumers of the services of the tool.

Project urgency

The project will initiate the new business of analyzing personal finance. The tool is required for the startup to be operational in the future. It is always good to stay ahead in the adoption of technology. Better the adoption of technology in personal finance, the better will provide cost savings. The earlier the project is done, the sooner the business can start making money and recover from the tool's expenses.

## 7. Cost/Benefit Analysis

### Tangible Benefits

#### Benefit:

Saving income will be the main benefit. The customers using the tool after the launch can avoid unwanted expenses by consciously being aware of the segmental analysis and alert system.

#### Value & Probability:

It is a high-value impact project. The probability is high as well.

#### Assumptions Driving Value:

Once the customer knows the nonessential expenses, they will change their lifestyle to save money. It's human nature to save money wherever possible

### Intangible Benefits

#### Benefit:

We will be able to create a new business. It would be a unique opportunity to make a profit.

#### Value & Probability

It is a high-value impact project. The probability is high as well.

#### Assumptions Driving Value

The product built will be of added value to customers using the tool. The driving assumption is the customer's willingness to pay to avail of the device's services.

### Cost Categories

Amount: \$11,250

\$7500 (300 Hours with a basic hourly wage of \$25 (300\*25))

1.5 times multiplier for including admin charges (1.5\*7,500)

Internal Labor hours: 300 hours

External costs: 0 (All work done by me, no external vendor)

Labor (consultants, contract labor): I am the only person responsible for the project

Equipment, hardware, or software: My laptop

List other costs such as travel & training: No traveling involved. Training is free with LinkedIn learning for NYU students.

### Financial Return

The paid version of the tools can quickly recover \$11,250 of investment. It is expected to break even within six months of the launch (Conservative calculations). The revenue will be via sponsored, monthly, and yearly subscriptions to use the tool.

## **8. Assumptions**

1. The sponsor is available for a meeting regularly. Critical decisions may be delayed due to a lack of availability.
2. Proper IT Tools (open-sourced or free to use) for the project would be available without any license fees
3. The project will be completed within the given timeline
4. There will be no scope change during the execution of the project. The mutually approved steps will be followed.

## **9. Scope**

### Quality

The output will be per the agreed-upon standards in the project agreement document. The tool will be functional to perform its desired functions.

### Time

The project will start on Jan 24th, 2023, and the final version will be delivered on May 2nd, 2023. I will be working on the project for 20 hours per week. Approximately 300 hours would be required to complete the project.

### Resource Allocation

My laptop will be used for this project. Tableau Desktop version (free with NYU student membership) and other required IT tools will be used. Apart from this, no major equipment will be required. Only I will be working on the project based on the inputs for both sponsors.

### Out-of-scope activities

1. Integrations of personal financial statements will not be included in this project.
2. Feature to stop the credit/debit card from doing transactions will not be a part of this project.

### Constraints

1. Ability to use and work with IT tools (Tableau and others)
2. Limited time available for completion of the project
3. Availability of Sponsors is also a constraint. Based on the availability of the sponsor, critical decisions may be delayed due to a lack of availability.
4. Availability of IT Tools can be a challenge as well

## **10. Risks and Mitigation Strategies**

1. Nonavailability of free version of Tableau Desktop. The account was created using NYU credentials
2. Nonavailability of Sponsor: Setup a meeting time much before the actual meet
3. Virus threat to the personal laptop. Antivirus is installed on the device.

## **11. Communications Plan**

1. Frequency Biweekly. The update will be communicated via email, or a Zoom meeting will be set up.
2. Method. Email or Zoom
3. Content: Status update of the project, approval, plans, and seeking advice and feedback.

## **12. Schedule Overview**

Project Start Date: Jan 24th, 2023

Estimated Project Completion Date: May 2nd, 2023

### Major Milestones

1. Finalizing the functional requirement specifications of the project with the sponsor.
2. Designing the outlay of the project dashboard.
3. Executing and implementing the approved design.
4. Final delivery of the project

### External Milestones Affecting the Project

1. First Sponsor Meet
2. Signing of Sponsor Agreement
3. Signing of Acceptance of Project

## **13. Impact of Late Delivery**

The impact the project was supposed to have on the new incoming student batch of Fall 2023 will be lost. The marketing for admissions will take a hit. The currently graduating student batch will not be able to utilize the tool. If I am unable to complete the project, I will not be able to complete my master's program, and I will not graduate.



## 14. Resources Required

Personnel:

Role	Responsibilities	Duration of work	Qualifications needed
Project Manager	Planning and scheduling of project	150 Hours	Knowledge of project management techniques
Business Analyst	Execution and implementation of the plan created by the project manager	150 Hours	Knowledge and experience in Tableau, Excel, Quantitative and Analytical skills

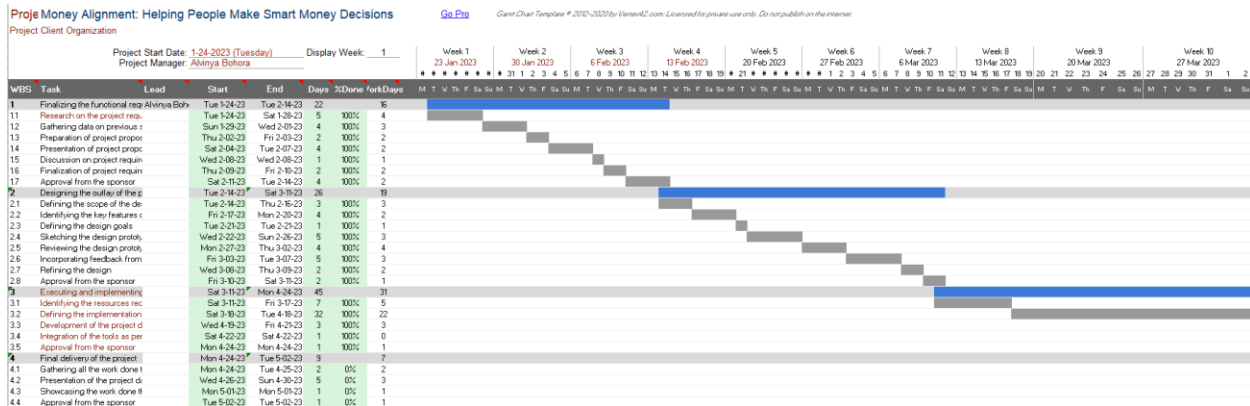
Facilities, Software, Hardware, and other Resources

Tableau and Excel for analyzing and implementing the project

Procedures/ Methodology

Instead of the traditional software development life cycle approach, the Agile method of continuous feedback and improvement (Communicating with the sponsor regularly) will be followed for better execution of the plan.

## 15. Project Plan, Gantt



## 16. Project Evaluation (How the project will be evaluated)

### 5. Project schedule

The progress made on the project will be checked weekly with the approved Gantt chart. The timelines will be closely monitored regularly. Three status reports will also be submitted to the sponsor as part of the capstone requirement.

6. Weekly Project status report and dashboard

Weekly the progress will be checked by comparing it with the planned deadlines of the Gantt chart. Gantt chart has all the pre-set deadlines of the milestones of the project.

7. Project communication plan, issues log, risk register

The client will be informed about the project's status via email or a Zoom meeting based on the availability of the client.

8. Project status reports

Three project status reports will be published and shared with one of the two sponsors as a part of the capstone project.

# Appendix D - Project Plan

## Project Tasks Outline

### **I. Object 1: Finalizing the functional requirement specifications of the project with the sponsor**

- A. Preparation for the sponsor meeting
  - 1. Research on the project requirements (28th Jan 2023)
  - 2. Gathering data on previous similar projects (30th Jan 2023)
  - 3. Preparation of project proposal (3rd Feb 2023)
- B. Meeting with the sponsor
  - 1. Presentation of the project proposal (7th Feb 2023)
  - 2. Discussion on project requirements (8th Feb 2023)
  - 3. Finalization of project requirements (10th Feb 2023)
- C. Approval from the sponsor (14th Feb 2023)

### **II. Object 2: Designing the outlay of the project dashboard**

- A. Preparation for the design phase
  - 1. Defining the scope of the design (16th Feb 2023)
  - 2. Identifying the key features of the dashboard (20th Feb 2023)
  - 3. Defining the design goals (21st Feb 2023)
- B. Creation of design prototypes
  - 1. Sketching the design prototypes (26th Feb 2023)
  - 2. Reviewing the design prototypes (2nd Mar 2023)
- C. Design refinement based on feedback
  - 1. Incorporating feedback from the sponsor (7th Mar 2023)
  - 2. Refining the design (9th Mar 2023)
- D. Approval from the sponsor (11th Mar 2023)

### **III. Object 3: Executing and implementing the approved design**

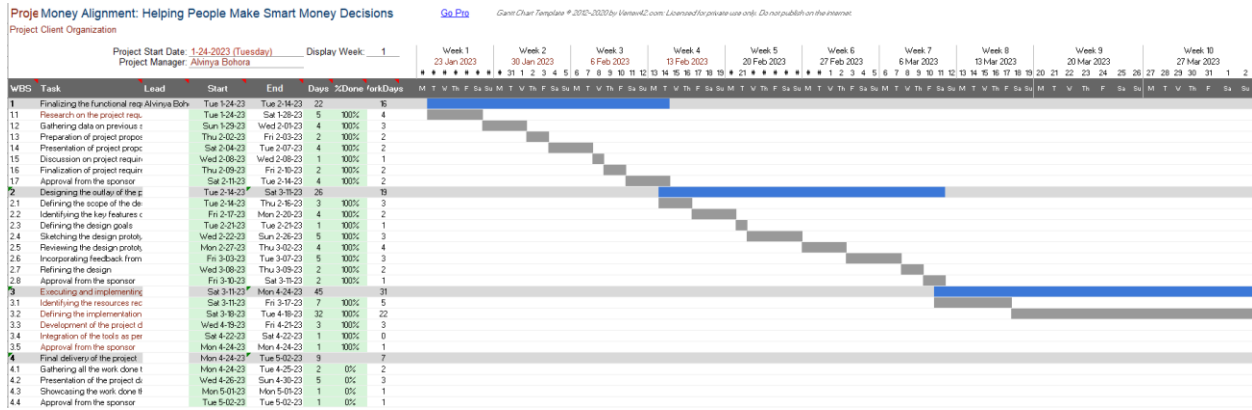
- A. Preparation for the implementation phase
  - 1. Identifying the resources required for implementation (17th Mar)
  - 2. Defining the implementation goals (21st Mar 2023)
- B. Implementation of the design
  - 1. Development of the project dashboard (18th Apr 2023)
  - 2. Integration of the tools as per the approved design (21st April 2023)
- C. Approval from the sponsor (24<sup>th</sup> April 2023)

### **IV. Object 4: Final delivery of the project**

- A. Preparation for the final delivery
  - 1. Gathering all the work done throughout the project (25th April 2023)
- B. Final delivery
  - 1. Presentation of the project dashboard (30<sup>th</sup> April 2023)

2. Showcasing the work done throughout the project (1st May 2023)  
 C. Approval from the sponsor (2nd May 2023)

### Project Plan, Gantt



## Appendix E - Risk Management Plan

### Project

Money Alignment: Helping People Make Smart Money Decisions

The project aims to give customers of financial products access to critical insights. A dashboard will depict the insights. Customers will also be able to analyze the segment-wise split of their expenses. The final tool developed will simplify the complex financial statements for customers.

### Risks

Number	Risk	Probability Score (1,2 or 3)	Impact Score (1,2 or 3)
1	Loss and damage to data generated and working file	1	3
2	Cancellation of Tableau license access	1	3
3	Inability to sync user data to the dashboard	1	2
4	Virus attack on the system	1	2
5	Sponsor rejection of the project	1	3
6	The project goes over the scheduled time	1	3

**Note:** Probability: 1 means low probability, 3 represents a high probability  
Impact: 1 means low impact, 3 represents a high impact

### Risk Matrix

		RISK (exposure)		
		1. Slight	2. Moderate	3. High
Probability (of occurrence)	1. Very Unlikely		Risk No: 3,4	Risk No: 1,2,5,6
	2. Possible			
	3. Expected			

## Contingency Plan

<b>Risk</b>	<b>Description</b>	<b>Probability (1-3)</b>	<b>Exposure (1-3)</b>	<b>Contingency Plan</b>
<b>1</b>	A system crash can delete all the project work and the data generated for the project	1	3	Backup storage on the cloud (Google Drive), keep files in emails and on servers at multiple locations and devices.
<b>2</b>	The project utilizes a free version of the Tableau license for NYU students. Cancellation of the license will stall the progress of the project	1	3	Buying the paid version of the license
<b>3</b>	If the file downloaded by the user from the banks is unable to be uploaded to Tableau	1	2	Formatting the file manually before uploading it to the system
<b>4</b>	Cyber-attack by external sources can halt the progress of the project	1	2	Installing anti-virus software and not clicking on suspicious emails and websites
<b>5</b>	The sponsor disapproves of the project	1	3	Continuous communication with the sponsor
<b>6</b>	The project extends the deadline	1	3	Following the approved timeline and working continuously to complete the project

# Appendix F - Status Report







## Project Status Report

Your Name: Alvinya Bohora

Project Title: Money Alignment: Helping People Make Smart Money Decisions

Date of report: 15<sup>th</sup> February, 2023

### 1. Project Status and Explanation:

Project Status Area	Status (RYG)	Explanation
1. Overall Project Status		The progress of the project is a bit slow. I was trying to learn how to use the tools (Tableau and others) required for the project. 1 <sup>st</sup> Draft of the Functional Requirement Specification is sent to the sponsor for review. I will try to catch up with the progress as soon as possible.
2. Project Schedule		The project is running only a bit late from the planned schedule.
3. Project Deliverables		Only the draft of functional requirement specifications is sent to the sponsor. Sponsor approval pending
4. Resources & Collaboration		Using NYU LinkedIn Learning Resources to learn how to use tools required for the project
5. Changes		No significant challenges so far
6. Communication		The sponsor is updated about all the progress of the project.

For status above, indicate **Red**, **Orange**, or **Green**:

- **Red**: Critical issues, serious risks to project, significant intervention must occur to achieve success, potential for stoppage of project activity. Project slipping by 5+ days, and resources uncommitted to meet deliverables
- **Orange**: Some major issues, moderate risk to project, must monitor closely, some internal or/and external dissatisfaction with progress. Project plan slipping by 2+ days.
- **Green**: No major issues, minimal risk to project, on target with expected outcomes, project on schedule, everyone satisfied with progress.

**2. List All Completed Project Tasks:**

- Initial meeting with sponsor
- 1<sup>st</sup> Draft of the Functional Requirement Specification is sent to the sponsor for review.
- Signing of the agreements
- Work Breakdown Structure
- Gantt Chart
- Upskilling and learning of tools (Tableau and others) required for the project

**3. List any concerns or issues that need the professor's involvement:**

- Not at the moment. I am a bit slow in terms of completion of task for the project. I am trying to catchup and speed up the work.


**4. Next series of tasks to complete:**

- Designing the outlay of the project dashboard
- Executing and implementing the approved design.
- Final delivery of the project

**5. Sponsor Signoff**

Sponsor indicates agreement with the above status report:

By (signature):

DocuSigned by:  
  
280C03A3D9934DE  
Project Sponsor

Printed Name:

Colin Slabach









## Project Status Report

Your Name: Alvinya Bohora

Project Title: Money Alignment: Helping People Make Smart Money Decisions

Date of report: 21<sup>st</sup> March, 2023

### 1. Project Status and Explanation:

Project Status Area	Status (RYG)	Explanation
1. Overall Project Status		The project is almost going as per the scheduled plan. After the feedback from the sponsor, a sample dataset is created, and the initial design of the outlay of the project dashboard is currently underway. The project charter, along with the literature review, has been submitted as a part of the class assignment.
2. Project Schedule		The project is almost as per the planned schedule
3. Project Deliverables		2 <sup>nd</sup> Objective of designing the outlay of the project dashboard is currently underway.
4. Resources & Collaboration		Using NYU LinkedIn Learning Resources to learn how to use tools required for the project
5. Changes		No significant changes so far
6. Communication		The sponsor has been updated about all the progress of the project.

For status above, indicate **Red**, **Orange**, or **Green**:

- **Red**: Critical issues, serious risks to project, significant intervention must occur to achieve success, potential for stoppage of project activity. Project slipping by 5+ days, and resources uncommitted to meet deliverables
- **Orange**: Some major issues, moderate risk to project, must monitor closely, some internal or/and external dissatisfaction with progress. Project plan slipping by 2+ days.
- **Green**: No major issues, minimal risk to project, on target with expected outcomes, project on schedule, everyone satisfied with progress.

**2. List All Completed Project Tasks:**

- Multiple meetings with sponsor
- Approval of Functional Requirement Specification
- Signing of the agreements with the sponsor
- Work Breakdown Structure
- Gantt Chart
- Project Charter
- Literature Review
- Upskilling and learning of tools (Tableau and others) required for the project
- Creation of a standard dataset
- Initial template of the dashboard

**3. List any concerns or issues that need the professor's involvement:**

- Not at the moment. Only a bit slow in terms of the completion of tasks for the project. I am trying to cplusplus and speed up the work.

**4. Next series of tasks to complete:**

- Approval of initial designs
- Incorporating the feedback of the sponsor in the designs
- Delivery of the final project

**5. Sponsor Signoff**

Sponsor indicates agreement with the above status report:

By (signature):

Designed by:  
  
Project Sponsor

Printed Name:

Colin Slabach







## Project Status Report

**Your Name:** Alvinya Bohora

**Project Title:** Money Alignment: Helping People Make Smart Money Decisions

**Date of report:** 11<sup>th</sup> April 2023

### 1. Project Status and Explanation:

Project Status Area	Status (RYG)	Explanation
1. Overall Project Status		The project is almost going as per the scheduled plan. After the feedback from the sponsor, a sample dataset is converted into a full database, and the initial design of the outlay of the project dashboard is done.
2. Project Schedule		The project is almost as per the planned schedule.
3. Project Deliverables		Object 3 – Executing and implementing the approved design is underway
4. Resources & Collaboration		Using NYU LinkedIn Learning Resources to learn how to use tools required for the project.
5. Changes		No significant changes so far.
6. Communication		The sponsor has been updated about the progress of the project.

For status above, indicate **Red**, **Orange**, or **Green**:

- **Red:** Critical issues, serious risks to project, significant intervention must occur to achieve success, potential for stoppage of project activity. Project slipping by 5+ days, and resources uncommitted to meet deliverables
- **Orange:** Some major issues, moderate risk to project, must monitor closely, some internal or/and external dissatisfaction with progress. Project plan slipping by 2+ days.
- **Green:** No major issues, minimal risk to project, on target with expected outcomes, project on schedule, everyone satisfied with progress.

**2. List All Completed Project Tasks:**

- Multiple meetings with the sponsor
- Approval of Functional Requirement Specification
- Signing of the agreements with the sponsor
- Work Breakdown Structure
- Gantt Chart
- Project Charter
- Literature Review
- Upskilling and learning of tools (Tableau and others) required for the project
- Creation of dataset
- Multiple versions of the dashboard

**3. List any concerns or issues that need the professor's involvement:**

- Not at the moment. Almost in the final stages of completion

**4. Next series of tasks to complete:**

- Creation of the mobile version of the dashboard and UX/UI of the layout of the app is underway
- Final version of the dashboard

**5. Sponsor Signoff**

Sponsor indicates agreement with the above status report:

By (signature):

DocuSigned by:  
*Colin Slabach*  
Project Sponsor

Printed Name:

Colin Slabach

## Appendix G - Annotated Bibliography

1. Altfest, L. (2004). Personal financial planning: Origins, developments, and a plan for future direction. *The American Economist*, 48(2), 53-60.

### **Abstract**

Personal financial planning (PFP) is a relatively new and growing discipline. Its origins are in the underacknowledged contribution by Modigliani and by, Becker and Markowitz. PFP deserves academic recognition and additional academic research in the area. It would be beneficial if a different personal financial planning theory were articulated. The author presents building blocks for that theory. Furthermore, PFP coursework and textbooks should be elevated in academic content to place them on par with the corporate finance and investments areas. With proper support, PFP will likely achieve the greater prominence it deserves alongside other well-recognized academic, financial sites, and other professional disciplines.

### **Summary**

The article by Lewis Altfest provides a detailed overview of the origins and development of personal financial planning, as well as a plan for its future direction. The author traces the history of financial planning from the early 20th century to the present day, highlighting the challenges faced by practitioners and proposing solutions such as standardization and regulation. He also emphasizes the importance of technology, adapting to changing client needs, and the potential for financial planning to become more holistic by incorporating psychology and behavioral economics. The article provides valuable insights for practitioners and researchers in personal financial planning.

### **Researcher comments**

This paper talks about personal financial planning. Detailed insights are available in this paper to deeply understand the project. It also suggests how technology can be used to solve pending issues.

2. Byrne, K. (2005, January 1). How do consumers evaluate risk in financial products? *JOURNAL OF FINANCIAL SERVICES MARKETING*, 10(1), 21–36.

### **Abstract**

Decision-making processes consumers use in investing lump sums are reviewed, focusing on how investment risk is perceived and assessed. Primary research was undertaken with investment customers to explore the role of evaluating investment risk by risk perceptions and propensity. The literature review and research findings indicate risk perceptions' central role in financial decisions. Sitkin and Weingart's risk model is used as a research framework. Risk propensity and risk perception were found to be negatively correlated. However, deposit accounts were selected for investment irrespective of how risky a respondent considered them to be. Risk perceptions and expected return were positively correlated for all asset types apart from property. Further investigation revealed that experts exhibited a positive correlation in risk-return judgments, but novices showed no correlation. There was no correlation between risk and return for either beginners or experts for the property. Return expectations were positively correlated with investment allocation. The provision of past performance information appears to create an expectation for future returns around the same level as past returns. Research findings suggest that outcome history is a predictor variable, with a Positive outcome history leading to higher risk Propensity. The story of risk customers are assuming shows a significantly increasing trend.

### **Summary**

Byrne's (2005) paper explores how consumers evaluate risk in financial products. The study highlights the role of both cognitive and emotional factors in shaping risk perceptions and preferences. The author discusses various factors that influence risk perception, including the type of financial product, the level of financial literacy, personal experience, and social influence. The study also discusses the implications of risk perception for marketing financial products and emphasizes the importance of addressing consumers' risk concerns and offering them appropriate risk management strategies. Overall, the paper provides insights into the complex nature of risk evaluation in financial decision-making and suggests avenues for future research.

### **Researcher comments**

Risk management is vital for any financial task, especially personal finance, as the stakes are too high. Humans are evolved to be selfish and protect their hard-earned income. They also tend to take calculated risks to gain higher returns.

3. Dew, J., & Xiao, J. J. (2011). The financial management behavior scale: Development and validation. *Journal of Financial Counseling and Planning*, 22(1), 43.

### **Abstract**

Although research on financial management behavior is expected, few financial management behavior scales exist that are simultaneously multi-dimensional, psychometrically validated, and validated using nationally representative data. Using data from a nationally representative sample of adults, this study developed and examined the psychometric properties of a new scale of financial management behaviors. The Financial Management Behavior Scale (FMBS) displayed adequate reliability ( $\alpha = .81$ ). The FMBS was highly associated with other measures of financial management behaviors and was predictive of participants' actual savings and consumer debt levels. These findings suggest that the full FMBS is a reliable and valid measure of financial management behaviors, though the subscales need refinement.

### **Summary**

The article describes developing and validating the Financial Management Behavior Scale (FMBS), a personal financial management behavior measure. The authors utilized a sample of 612 individuals and conducted exploratory and confirmatory factor analyses to develop a 15-item scale. The scale demonstrated good internal consistency and test-retest reliability. The authors conclude that the FMBS is a reliable and valid measure of financial management behavior that can be used in research and practice to assess and improve individuals' financial behaviors.

### **Researcher comments**

This study developed and examined the psychometric properties of a new scale of financial management behaviors. It is a critical part of the project to analyze.

4. Goyal, K., Kumar, S., & Xiao, J. J. (2021). Antecedents and consequences of personal financial management behavior: a systematic literature review and future research agenda. *International Journal of Bank Marketing*, 39(7), 1166-1207.

### **Abstract**

**Purpose** – This paper aims to investigate the current research on Personal Financial Management Behavior (PFMB), focusing on its antecedents and consequences. By analyzing the research trends, methods, determinants, and outcomes, the PFMB literature is synthesized, and agenda for future research are suggested. A framework that portrays PFMB's antecedents and consequences is presented, further specifying the mediation and moderation linkages. **Design/methodology/approach** – The review is based on 160 articles published during 1970–2020. It follows a systematic approach and presents the definitions and theories of PFMB, publication trends based on time, region, sample population, research designs, data collection, analysis techniques, and antecedents and outcomes through content analysis. **Findings** –The synthesis draws upon factors affecting PFMB, such as demographics, socio-economic, psychological, social, cultural, financial experience, financial literacy (FL), and technological factors. The superior outcomes of PFMB include financial satisfaction, relationship satisfaction, quality of life, financial success, happiness, financial vulnerability/resilience, and financial well-being. The future research agenda summarizes the recommendations in the form of research questions on variables and their linkages, followed by methodological advancements. **Originality/value** – This paper covers the scholarly work done in this area in the past 51 years. To the best of the authors' knowledge, this is the first attempt to offer the most com.

### **Summary**

The paper presents a systematic literature review of antecedents and consequences of personal financial management behavior. The authors identify various factors influencing individual financial management behavior, including demographic variables, financial knowledge, and attitudes toward money. They also examine the consequences of financial management behavior, such as economic well-being and satisfaction. The paper concludes with a future research agenda, highlighting the need for further research on the

relationship between financial management behavior and mental health outcomes, as well as the role of technology in personal financial management.

### **Researcher comments**

The consequences of personal financial management behavior are discussed in this paper. It supports the hypothesis that customers need support to analyze their finances. It showcases the demographics, socio-economic, psychological, social, cultural, financial experience, financial literacy (FL), and technological factors.

5. Joseph-Richard, P., & Jaffrey, A. (2020, January). Students as Lead Designers of Learning Analytics Dashboards: Lessons Learned in a Northern Irish University. In 2nd International Conference on Research in Teaching and Education.

### **Abstract**

There is an increasing scholarly and practitioner interest in developing user-centered, personalized learning analytics dashboards (LADs) in higher education institutions to support student success and improve learning and teaching. In most implementation efforts, however, a teacher-centric, institutional view tends to drive dashboard designs while using students only as data providers. We stretched our engagement approach by empowering them to be the lead designers of LADs to learn what data they would like presented in a dashboard and how. Using a novel card-sorting technique, we asked 42 Northern Irish university students to construct dashboards that reflect their priorities. We collected data on student-constructed dashboards using observation, photography, and semi-structured interviews. Content analysis of students' constructions revealed a strong preference for including personal financial data (money spent so far vs. resources utilized), among others, and the exclusion of social media data. Thematic analysis of qualitative data uncovered within-group variations in students' LAD-related assumptions, particularly between undergraduates and postgraduates and between international and home students. Participants challenged institutional overreliance on measurable digital footprints as proxies for academic success and emphasized the need to include the success stories of their peers and seniors in future dashboards. In advocating story-integrated LADs, we call for designs that better reflect learners' everyday needs and priorities. Despite being helpful, we caution that offering simple control and oversight to students for designing LADs might be more complex than currently assumed in the literature. We discuss pedagogical implications for teachers and LA designers in advancing student-led LA designs.

### **Summary**

This research paper discusses the potential benefits and challenges of involving students in the design process of learning analytics dashboards in a higher education setting. The report presents a case study conducted at Ulster University in Northern Ireland. A group of undergraduate students was tasked with designing a learning analytics dashboard for a module they were enrolled in. The paper offers four key lessons from this case study, including the value of student insights into dashboard design, the importance of collaboration, the need for clear communication and well-defined roles, and the crucial role of iterative design and testing. The paper concludes that involving students in the design process of learning analytics dashboards can lead to more effective and student-centered dashboards and recommends further exploring this approach in other higher education settings.

### **Researcher comments**

The paper explains how the students use dashboards to visualize data creatively. Insights into how the project can use innovative tools for developing interactive dashboards for customers. Some financial-related visualizations can also be used.

6. Khanvilkar, A., Naik, P., & Kurhade, T. FINANZEVERSE (2023, February). The Personal Finance Manager.

### **Abstract**

Personal finance plays a significant role in achieving financial freedom. The key to successful financial decisions in today's fast-paced world is managing money effectively by planning, organizing, directing, and

controlling funds. With good planning, we could pay off debts and credit and adequately pay our payments. Developing an interface that will provide an effective and optimal manner of acquiring insights into personal finances to accomplish tasks such as tracking, analyzing, planning, and so on offers a feasible solution to this problem; this interface will benefit all ordinary people.

### **Summary**

The research paper "FINANZEVERSE – THE PERSONAL FINANCE MANAGER" presents a personal finance management system developed by a team of students from the Department of Information Technology at the Vidyalkar Institute of Technology in Mumbai, India. The paper describes the features of the system, which include the ability to track income, expenses, and investments, as well as set financial goals and receive alerts when those goals are met. The system also offers data visualization tools to help users better understand their financial data. The paper concludes that the system has the potential to be a valuable tool for individuals looking to manage their finances more effectively. It suggests that further research and development could enhance its functionality and usability.

### **Researcher comments**

The paper will help me know the data visualization tools which can be used for financial industry data. It also provides guidance on what parameters need to be showcased during visualization.

7. Kothakota, M. G., & Kiss, D. E. (2020). Use of Visualization Tools to Improve Financial Knowledge: An Experimental Approach. *Journal of Financial Counseling & Planning*, 31(2), 193–208. <https://doi.org/10.1891/JFCP-18-00070>

### **Abstract**

This study examined data visualization to improve financial literacy in adults. Using financial knowledge questions as test items, this study used an experimental approach. Poisson regression was conducted on responses from 1,797 participants to an online survey via SurveyMonkey. Approximately one-third of respondents were assigned to a text-only group explaining a financial concept, one-third to a group that received a visualization plus text explanation, and one-third to a control group with no intervention. The findings suggest that visualization of data assists in the assimilation of financial knowledge compared to no intervention and to-text interventions. The study has implications for financial education programs attempting to implement interventions to improve financial understanding.

### **Summary**

The article explores using visualization tools to improve financial knowledge among college students. The authors used a pre-test and post-test design to compare the effects of a visualization tool (a personal finance dashboard) and a text-based information sheet on financial knowledge. The results indicate that the group that received the personal finance dashboard intervention significantly increased financial knowledge compared to the text-based information sheet group. The authors suggest that visualization tools can improve financial knowledge among college students and offer implications for educators and financial planners. The article provides valuable insights into the potential of visualization tools in financial education and planning.

### **Researcher comments**

The study talks about the use of visualization tools to improve financial knowledge. This is in alignment with the goal of the project. It will help in the better creation of the device.

8. Lusardi, A., Mitchell, O. S., & Curto, V. (2010). Financial Literacy among the Young. *Journal of Consumer Affairs*, 44(2), 358–380. <https://doi.org/10.1111/j.1745-6606.2010.01173.x>

### **Abstract**

We examined financial literacy among the young using the most recent wave of the 1997 National Longitudinal Survey of Youth. We showed low financial literacy; fewer than one-third of young adults possess basic knowledge of interest rates, inflation, and risk diversification. Financial literacy was strongly related to sociodemographic characteristics and family financial sophistication. Specifically, a college-educated male whose parents had stocks and retirement savings was about 45 percentage points more likely to know about risk diversification than a female with less than a high school education whose parents were not wealthy.



## **Summary**

Lusardi, Mitchell, and Curto's (2010) paper investigates the financial literacy of young adults in the United States. The study finds that economic literacy levels could be higher among young adults, highlighting the significant gaps in knowledge and understanding of basic financial concepts. The authors argue that improving financial literacy among young adults is crucial for their economic well-being and the economy. The paper discusses the implications of low financial literacy for personal financial management and decision-making, such as higher levels of debt and lower savings rates. The call calls for more comprehensive financial education programs for young adults, tailored to their specific needs and delivered through multiple channels.

## **Researcher comments**

Financial literacy is essential to have an overview of personal finance. One of the primary demographics, the youth, and how comfortable they are with financial terms is discussed in the study. For the product to succeed, one of the primary target audiences, the youth's behavior, must be analyzed.

9. Marghescu, D. (2007). *Multidimensional data visualization techniques for financial performance data: A review*. Turku Centre for Computer Science.

## **Abstract**

In this paper, we review 11 visualization techniques that can be used to explore multidimensional financial data visually. We illustrate the use of these techniques in studying the financial performance of companies from the pulp and paper industry. We also show using visualization techniques for detecting outliers and other financial performance data patterns in clusters, relationships, and trends. We highlight the potential benefits of using multiple visualization techniques to get insight into financial performance data.

## **Summary**

This paper reviews various techniques for visualizing financial performance data using multidimensional data visualization. The author discusses the challenges of analyzing financial data, such as the complexity of data sets and the need for practical visualization tools. The paper presents several visualization techniques, including scatterplots, parallel coordinate plots, and tree maps, and evaluates their strengths and weaknesses for financial data analysis. The author concludes that no single visualization technique is ideal for all types of financial data and that choosing the appropriate method depends on the data's characteristics and the analysis's goals.

## **Researcher comments**

The article helps get a broader view of the visual exploration of multidimensional financial data. While doing the project, many parameters will be multidimensional, and the techniques mentioned in this article will help create better visuals.

10. Mien, N. T. N., & Thao, T. P. (2015, July). Factors affecting personal financial management behaviors: Evidence from Vietnam. In *Proceedings of the Second Asia-Pacific Conference on Global Business, Economics, Finance and Social Sciences (AP15Vietnam Conference)* (Vol. 10, No. 5, pp. 1-16).

## **Abstract**

This study investigates factors affecting personal financial management behaviors by examining the relationships among four factors: personal financial attitude, financial knowledge, locus of control, and financial management behaviors. The research model is investigated by using a survey approach on the youth in Vietnam. The paper used Cronbach's alpha, exploratory factor analysis, and confirmatory factor analysis to test the measurement scale, while structural equation modeling was used for measuring the relationships. The findings suggest that all three key factors directly affect financial management behaviors, which explained 62.1% of the variance of financial management behaviors of respondents. Financial attitude and financial knowledge are significantly positively related to financial management behaviors. Besides, the person with a more external locus of control leads to worse financial management behaviors. In addition, the results do not support the indirect effect of economic knowledge on financial management behavior through the locus of control and the moderated role of financial knowledge on the relationship between financial attitude and financial management behavior. These findings could be helpful to references for related organizations and

financial institutes interested in developing personal financial management in the context of emerging economies like Vietnam.

### **Summary**

The article "Factors Affecting Personal Financial Management Behaviors: Evidence from Vietnam" investigates the factors influencing personal financial management behaviors in Vietnam based on a sample of 387 respondents through a self-administered survey. The study found that financial knowledge, behavior, and attitude, as well as age, income, education level, and gender, significantly impact personal financial management behaviors. The authors suggest that policymakers consider these factors when developing economic policies and regulations. Education programs should be designed to increase financial knowledge and promote positive financial behaviors and attitudes. Overall, the study provides valuable insights into the factors influencing personal financial management behaviors in Vietnam and can inform policy and educational initiatives to improve financial literacy and behaviors.

### **Researcher comments**

The paper helps recognize the mindset of the customers. Insights into how people react and make decisions related to finance can be comprehended.

11. Mumpuni, M., & Sukarno, S. (2014). Design and implementation money management web-based application for personal and family proposed for CV. X. *Procedia-Social and Behavioral Sciences*, 115, 444-459.

### **Abstract**

Indonesian middle-class numbers continue to increase significantly. Some of them plan for their future, including their future finance. Middle-class consumers need more time to manage their finance. Some of them are not able to manage their income and outcome. Although they realize they need advice from the advisor, they do not want to pay the personal finance advisory services because they are relatively expensive. They need easy and quick money management services. Financial planning solutions that are practical and comprehensive have become necessary for the middle class. As a techno entrepreneur, Mr. Steven, CEO of CV.X, wants to fulfill the need for personal finance software, which will become a solution for the customer to do a new business, CV. X needs a business model that is suitable for the new business unit. The Author and developers' team in the CV. X has done a study and development of personal finance software. The software has four main features: sub-account and transaction management, financial plan calculation, investment calculation, and money management, as well as financial statements. The software applied personal finance tools and knowledge: time value of money, financial report, and individual finance calculation (debt, life insurance, retirement fund, etc.). Software development uses a rational unified process (RUP) framework. CV. X has to invest Rp 30.000.000 to develop the software and Rp 105.190.000 to run the business. The customer segments of the software are middle class in Indonesia. CV. X tries to make community relationships among their member. The software will deliver to customers via the Internet through the website. The software's value proposition is a cheap, fun, and intelligent way to manage personal finance. Help customers to reach their financial goals. The community can speak out about personal finances. The software also provides up-to-date, accurate information related to personal finance. Key activities of the business are education, marketing, selling, research, and development. Essential Resources of the business are people, cash, and knowledge about personal finance. The company's key partners are financial planners, financial institutions, financial publications, and domain providers. The costs of the project are investment cost, operational cost, development cost, and technical support. Member fees and advertising create revenue.

### **Summary**

The article presents the design and implementation of a web-based personal and family money management application proposed for CV. X. The authors utilized a waterfall software development process and developed a system that allows users to record their income and expenses, set financial goals, and generate reports. The system was evaluated using a sample of 10 users who provided positive feedback and suggestions for improvement. The authors conclude that the web-based application is a valuable tool for personal and family money management and recommend further development to include additional features and functionality.

### **Researcher comments**

The article talks about the design and implementation of money management via technology. It shows how the tool can manage middle-class house's income and financial outcomes. It has a similar goal to the project.

12. Olafsson, A., & Pagel, M. (2018). The liquid hand-to-mouth: Evidence from personal finance management software. *The Review of Financial Studies*, 31(11), 4398-4446.

### **Abstract**

We use a very accurate panel of all individual spending, income, balances, and credit limits from personal finance software to document spending responses to the arrival of both regular and irregular income. These payday responses are robust and homogeneous for all income and spending categories throughout the income distribution. Moreover, we find that few people hold little or no liquidity. We then analyze whether people have liquidity cushions to cope with future liquidity constraints. However, we find that peoples' responses are consistent with standard models without illiquid savings, in which neither present nor future liquidity constraints are frequently binding.

### **Summary**

The paper "The Liquid Hand-to-Mouth: Evidence from Personal Finance Management Software" examines the behavior of individuals using personal finance management software to track their spending and savings. The authors analyze data from a large sample of users of a popular unique finance management software and find that many individuals live a "liquid hand-to-mouth" lifestyle, meaning they spend their income quickly and have little savings. The authors also find that income volatility, financial literacy, and credit constraints are important factors affecting this behavior. The paper contributes to understanding household economic behavior and has implications for policymakers and financial institutions seeking to promote financial stability and well-being.

### **Researcher comments**

The paper helps acknowledge the current technology used for the same problem that the project is trying to solve. An essential spending, lifestyle, and savings narrative will help better customize the tool. It is critical to accept the customer's behavior before starting the project.

13. Prihartono, M. R. D., & Asandimitra, N. (2018). Analysis factors influencing financial management behavior. *International Journal of Academic Research in Business and Social Sciences*, 8(8), 308-326.

### **Abstract**

This study examines the effect of income, higher education learning, financial knowledge, financial literacy, financial attitude, and the locus of control toward financial management behavior on Economics Faculty students. The population is 264 respondents that are selected by judgmental sampling. The characteristics of respondents are Economics Faculty students who have taken at least two semesters during the lecture. The analysis technique used by the researcher is multiple regression analysis. The results show that income affects financial management behavior. Higher Education learning does not involve financial management behavior. Financial knowledge does not affect financial management behavior. Economic literacy effects on financial management behavior. Financial attitude affects financial management behavior. Locus of control does not involve financial management behavior.

### **Summary**

The article "Analysis factors influencing financial management behavior" investigates the factors influencing financial management behavior among Indonesian university students. The study collected data from 300 respondents through a self-administered survey and analyzed the data using structural equation modeling. The study found that financial knowledge, financial attitude, financial behavior, and financial socialization significantly impact financial management behavior. The study also found that age, gender, income, and academic major significantly moderate the relationship between these factors and financial management behavior. The authors suggest that financial education programs should be developed to promote financial knowledge, attitudes, and behaviors among university students and that policies should be implemented to encourage financial socialization. The study provides important insights into the factors influencing financial

management behavior among university students in Indonesia. It has implications for policymakers and educators seeking to promote financial literacy and well-being.

#### **Researcher comments**

Significant trends in the factors influencing financial management behavior are captured in this article. While creating the dashboard and the tool, these factors will help better build the visualizations.

14. Rukhiran, M., & Netinant, P. (2020). A Practical Model from Multidimensional Layering: Personal Finance Information Framework Using Mobile Software Interface Operations. *Journal of Information & Communication Technology*, 19(3), 321–349. <https://doi.org/10.32890/jict2020.19.3.2>

#### **Abstract**

End-user involvement is crucial in improving software development processes. Hence, nowadays, user interface (UI) and user experience (UX) are mainly concerned with end-user interactions in many software designs, as most methodologies have inconsistencies between design and implementation. Besides, it is relatively difficult to change complex software, and personal finance application is one of the more complex software to design, develop, and adapt. This paper proposes the development of a unique mobile finance application using informative multidimensional layering. We have separated operational data across the relationships of three categories and datasets showing operational semantics of dimensions and combined layers of three-dimensional information, including aspect elements through components. This study concerns the corresponsive composition of end-user features using visual interfaces. It is illustrated in a Three-layer User Interface Composition Model to transfer and compose layers, valuable data, aspect elements, and components to Graphical User Interfaces (GUIs). Therefore, an integrated view of the software system would make the design and implementation consistent with supporting our framework more straightforwardly. A few studies have presented practical models of mobile informative multidimensional layering. This research applied aspect orientation and informative multidimensional layering to give a better features model for mobile personal finance applications. We deliver a practical framework in the application in all four phases of analysis, design, implementation, and evaluation. In addressing the gap, this research proposes a more precise operation of three-dimensional models, operational data, and aspect elements that cut across through informative multidimensional layering.

#### **Summary**

The article proposes a practical personal finance information management model using mobile software interface operations. The authors utilize a multidimensional layering approach to develop a framework that includes user input, data processing, and output. The model incorporates various features such as personal financial management, investment tracking, and financial education. The authors suggest that the model can be implemented using mobile applications, providing users with a convenient and accessible tool for managing their finances. The article offers a detailed description of the proposed model and its features and suggests directions for future research.

#### **Researcher comments**

The user experience should be the best when the project is launched. The mobile interface aspect discussed in the article will be essential in developing the project. The insights will help create better results.

15. Yang, Y. (2020). Facilitating Game-Based Design in Personal Finance: The Design Process and Framework of Gamification Design in Personal Saving.

#### **Abstract**

Personal financial health determines most daily decisions, but managing it could be uninspiring, stressful, and hard to insist on. It is incredibly challenging for those with professional financial knowledge and chrematistic habits. Gamification is introduced as the approach to simplify financial terminology and employs game design elements to impel the users to engage more efforts in managing personal finance. This study aims at applying a participatory design approach to gamify a financial saving service, employed with design activities including an online survey, interviews, ideation workshops, prototyping, and usability tests in the research process. The findings exposed the primary pain points in personal savings, including nebulous or evening missing saving goals, insufficient protection knowledge, and lack of social information, guiding the three gamification settings

and interactive gamified systems. The gamification design guidance in personal saving was proposed in two facets, where the gamification design process was concluded as finding the triggers, defining the target users, offering gamification settings and interactive game systems, and evaluating the prototype; the gamification design framework was generalized in four gamification settings and user types. The results would guide the design process and streamline the future gamification design work in the personal financial domain, which would attach efficiency and integration to the application of gamification in private savings.

### **Summary**

The article discusses gamification design's design process and framework in personal saving, aiming to facilitate game-based creation in personal finance. The author utilizes a literature review to identify the key elements of gamification and applies them to the design of an individual saving application. The proposed framework includes five steps: goal setting, understanding users, designing game mechanics, integrating feedback, and evaluation. The author suggests that gamification design can enhance individuals' engagement and motivation in personal finance and offers practical guidelines for designers to implement gamification design in unique saving applications. The article provides a helpful framework and guidelines for designers and researchers interested in integrating gamification into personal finance.

### **Researcher comments**

The article talks about how gamification is utilized to get customers' attention. The methodology learned here can be used on a larger scale for the project.