



**Title: How to promote direct managed fund investment amongst retail investors in New Zealand, especially through financial technology (“FinTech”)?**

Name: Joseph Woon Sung Yap

ID: 20510229

<Email: josyap16@student.wintec.ac.nz>

Centre for Information Technology (CFIT), Waikato Institute of Technology  
INFO816 Special Topic in Information Technology  
Assignment 1

Tutor: Dr. Michael Franklin Bosu

Date: June 2023

## Abstract

The wealth management and investment management industries, particularly in New Zealand (“NZ”), should promote direct managed fund investment amongst retail investors, especially through FinTech, including utilizing robo-advisor. Findings from the four steps of data analytics on the fund under management (“FUM”) of the managed fund industry in NZ, namely descriptive, diagnostic, predictive & prescriptive analytics as depicted in our deliverables in the following sections, shows that FinTech assets under management (“AUM”) only consists of a fraction of the overall FUM of the managed fund industry in NZ. Retail unit trust consists of NZD54 billion or around 26% of the overall NZ managed fund. The motivation is to advocate direct managed fund investment amongst retail investors in New Zealand, especially through FinTech, thus balancing out the majority institutional managed fund holders. Direct investment into managed funds, i.e. through managed fund platform will encourage active participation of investors. This is in the context that the major asset classes represented in NZ managed fund are cash & deposits, long-term debt securities, listed shares, and overseas assets. By qualifying as an eligible investor, the investor will be able to invest into complex asset classes other than the above-mentioned asset classes, such as private equity, venture capital, unlisted bonds and pre-Initial Public Offer (IPO). The findings in this contribution are retail unit trust is forecasted to have positive growth for the next five years till year 2027, calling for action to be taken by stakeholders including regulator and industry players to advocate retail investor participation in direct unit trust, trailblazing disruption of traditional managed fund distribution channel and system through FinTech, including robo-advisor. FinTech fosters financial inclusion by providing wealth management to individuals who are otherwise unable or unwilling to invest in capital markets. Furthermore, investment decisions can be strengthened by algorithms that weights risks and recommend whether to invest, i.e. through robo-advisor. Benefits of robo-advisor include better investing decision algorithms yielding better return on investment, lower management fees and automated risks management i.e. minimise investment loss. In summary, it is through promotion of the advantages of FinTech (including robo-advisor), providing more affordable broadband, education & platform training, long-term value creation, reduction of fund investment loss to avoid investor attrition rate, effective implementation of open finance, and trust & usefulness of such investment system, that we would be able to promote direct managed fund investment amongst retail investors in New Zealand.

**Keywords:** managed fund, FinTech, robo-advisor, wealth management, investment management, FUM, AUM.

## 1. Introduction

According to Reserve Bank of New Zealand (“RBNZ”), the FUM of the managed fund industry in NZ is NZD251.50 billion as at December 2022. However, there is a lack of managed fund participation rate in the retail segment of NZ. Reason being, the retail industry is underinvested in the managed fund market, as with over 2.9 million members enrolled in KiwiSaver, a form of managed fund (the single largest savings asset of New Zealanders), 1.2 million members were not making contributions to their KiwiSaver as at March 2018. Hence, only

1.7 million members or 58.62% were active contributors in KiwiSaver. KiwiSaver only has a FUM of NZD91.71 billion or 44.60% (NZD205.61) of the total NZ FUM as at December 2022. Kiwisaver is a passive investment for many contributors, whilst direct managed fund investment is an active investment.

Hence, the motivation here is to enable the NZ wealth management market to develop into a matured market by further participation from the public, whom some may lack financial planning due to knowledge deficiency in such investment market and tools. In other words, majority of the population of New Zealand is not investing directly in the managed fund market, including through FinTech platform.

In addition, although KiwiSaver has many positive features, most managers focus almost solely on liquid assets due to transferability by members between schemes and daily unit pricing. Globally, pension funds are significant investors in illiquid asset classes such as real estate, private equity, infrastructure, and hedge funds, which could provide benefits through a liquidity premium, portfolio diversification and liability hedging. Without changes i.e. investors' experience in such "sophisticated" investment, KiwiSaver members will unlikely gain exposure to these growing asset classes (Financial Markets Authority, 2021).

In this academic paper, we use four types of data analytics, namely descriptive, diagnostic, predictive and prescriptive analytics, in relation to managed fund, to contribute to the growth of managed fund market in NZ, especially in the FinTech market. Through this study, we will utilise Microsoft Power BI as the contribution tool to describe the managed fund market and predict various trends observed in the managed fund industry.

Thereby, upon completion of the academic paper, we will be able to gauge the trend, going forward, on the NZ managed fund, including FinTech market, which is a nascent marketing channel, and prescribe a few key strategies to propel the growth of the managed fund market, i.e. easing access of managed fund by the general public through fintech and robo-advisor.

This is in the context that not far from NZ, Singapore and Hong Kong as well-developed financial markets have managed funds including the general asset classes like bond, equity, mixed asset & cash management, which are accessible via online platforms like fundsupermart.com, enabling retailers to invest globally, with the click of buttons, anywhere where there is internet accessibility. Inevitably, this has enhanced the AUM growth in Singapore and Hong Kong gradually if not exponentially throughout the last 5 years. Wholesale and eligible investors may also opt to invest into pre-IPO fund & private equity fund by virtue of the qualifying conditions i.e. the investor has sufficient experience in acquiring such financial products.

Furthermore, even term deposits from multiple banks can be placed through a single unified platform like investnow.co.nz, without the cumbersome need to visit a bank or placed separately via different bank applications.

Overall, the FinTech managed fund platform in NZ is still relatively small compared to the traditional managed fund industry. This is expected to change as investors seek a more convenient and low-cost investment platform.

There is a developing robo-advisor system that could replace the need for fund managers to manage funds profitably going forward. A digital platform known as a "robo-advisor" (sometimes spelt "roboadvisor") offers automated, algorithm-driven financial planning and investment services with little to no human oversight (Frankenfield, J., 2023). A typical robo-advisor will conduct an online survey to enquire about your financial state and future objectives. The data is then used to provide advice and carry out automated investing on your behalf. Easy account setup, thorough goal planning, account services, and portfolio management are all features of robo-advisors. Some of them also provide reasonable prices, thorough education, and security measures. Robo-advisor may also be known as FinTech applications for investment management.

## **2. Methodology**

The methodology we are using is **CR**oss Industry **S**tandard **P**rocess for **D**ata **M**ining ("CRISP-DM"). The data analytics lifecycle for this academic article is the process of a data analytics project, which has six key steps based on the CRISP-DM method, which is a process model that serves as the base for data science: -

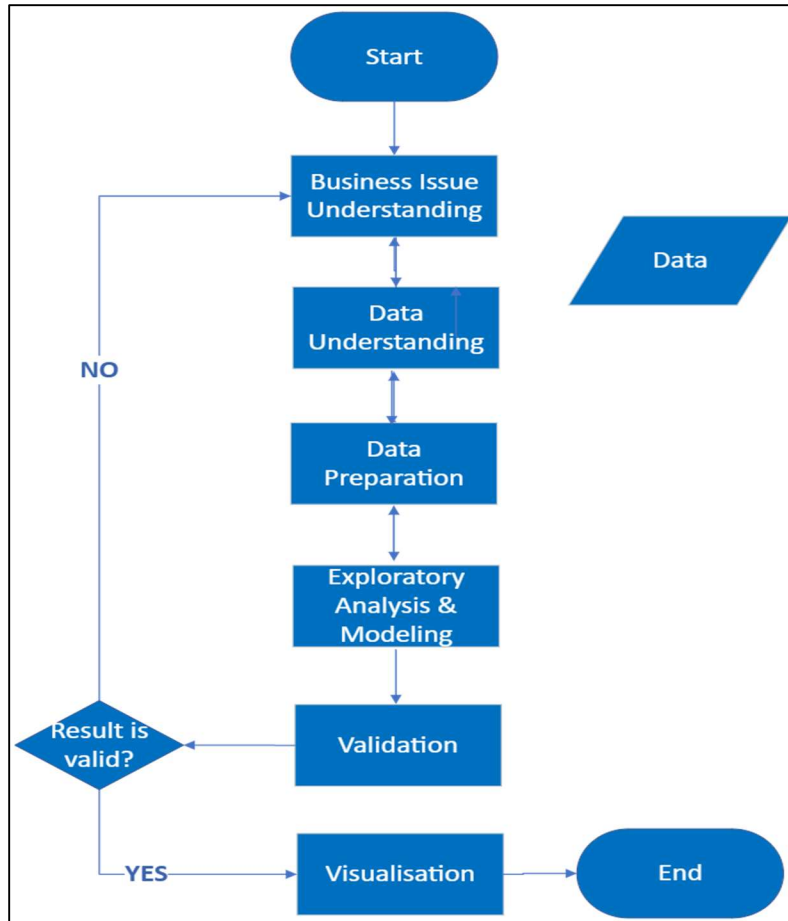


Fig 1: CRISP-DM data analytics process flowchart

To understand the issue of lack of direct retail participation in NZ managed fund, we determine the business problem first, then we understand the relevant data by collecting & describing the data, explore and verify data quality (in this case the data is derived from Reserve Bank of New Zealand, the regulatory central bank of New Zealand). Thirdly, we select the data that will give a discerning hindsight on the current situation of NZ managed fund, and format the data accordingly. This is followed by analysis & modeling, where tables of information are linked. Thereafter, assessment is done on whether the result is valid for visualisation.

Set out below are the four different types of analytics, namely descriptive, diagnostic, predictive and prescriptive analytics, to address the problem of “less active investment participation from retail investors into managed funds in New Zealand, providing hindsight, insight & foresight through data analytics of “how to promote retail participation into managed fund in New Zealand, especially through FinTech”: -

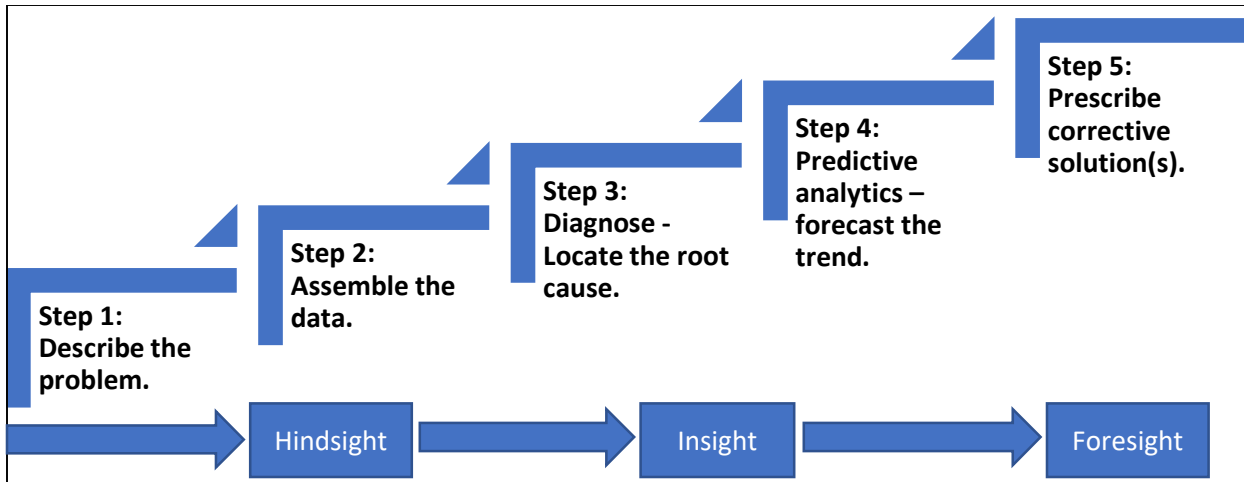


Fig 2: Four different data analytics – descriptive, diagnostic, predictive and prescriptive.

### 3. Contribution/Deliverables

(Reserve Bank of New Zealand, 2023)

#### 3.1 Descriptive and Diagnostic Analytics in relation to NZ Managed Fund

Below is the descriptive analytics trendline in relation to NZ managed fund FUM: -

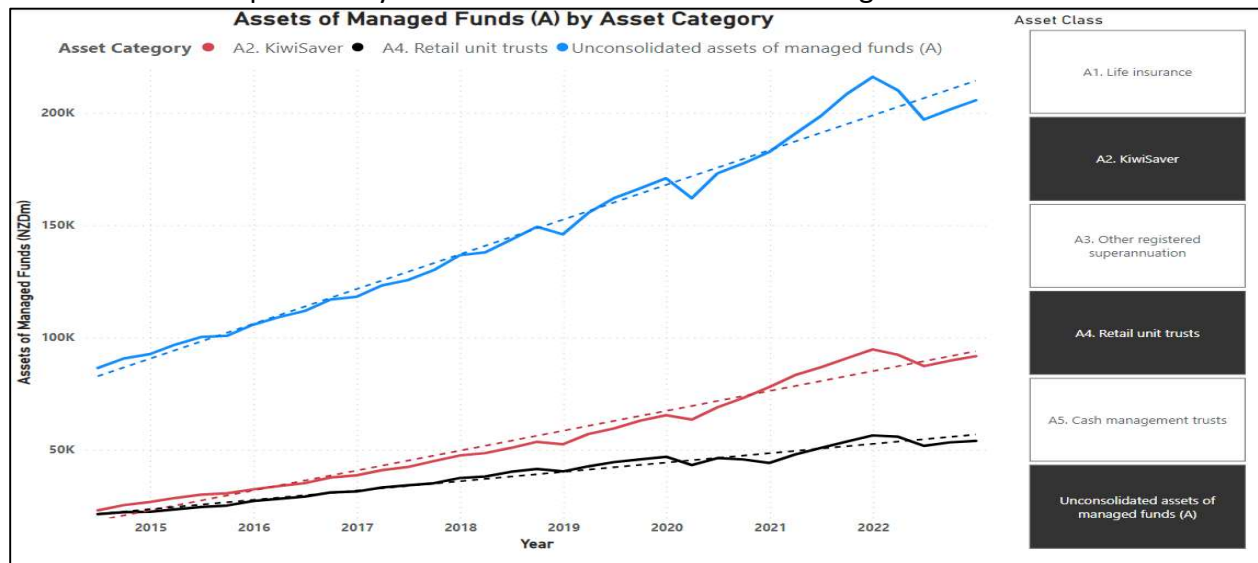


Fig 3: Descriptive analytics in relation to NZ Managed fund FUM.

The above chart shows that retail unit trusts only consist of NZD54billion (around 26%) out of NZD205billion assets of managed funds in New Zealand. Going forward, FinTech platforms will invite new money into managed funds actively versus KiwiSaver as passive & “traditional” savings. Institutional investors which consist of life insurance, Kiwisaver, other superannuation and cash management trusts, is the majority managed fund investors at NZD152billion or around 74% of the total managed fund.

Below are the interactive charts (descriptive) in relation to NZ managed fund FUM. To access the Power BI chart, kindly click [https://app.powerbi.com/links/nH0bxAX4S5?ctid=5170356b-bfad-4bc8-a290-97a0ca7bb641&pbi\\_source=linkShare](https://app.powerbi.com/links/nH0bxAX4S5?ctid=5170356b-bfad-4bc8-a290-97a0ca7bb641&pbi_source=linkShare). Please see the documentation on how to access after clicking on the above hyperlink, on page 15: -

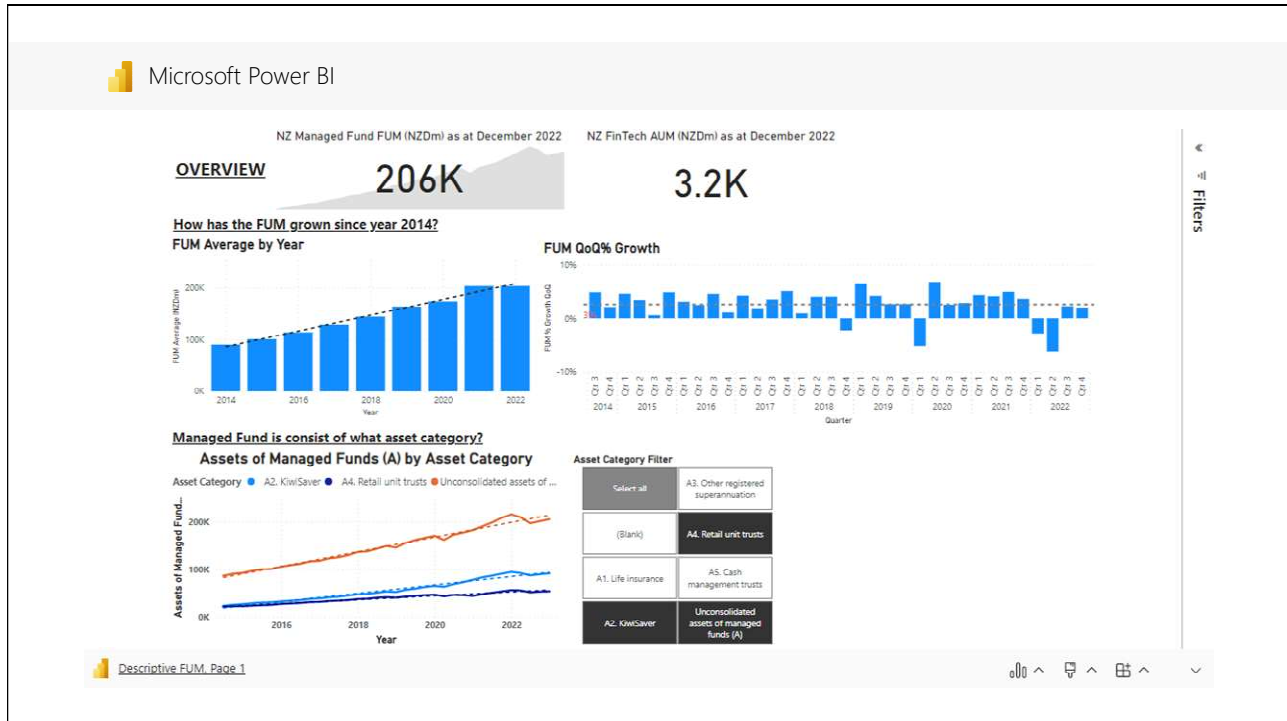


Fig 4: Interactive chart (slide 1) in relation to the descriptive trendline of NZ managed fund FUM and FinTech assets under management (“AUM”) from year 2014 to 2022.

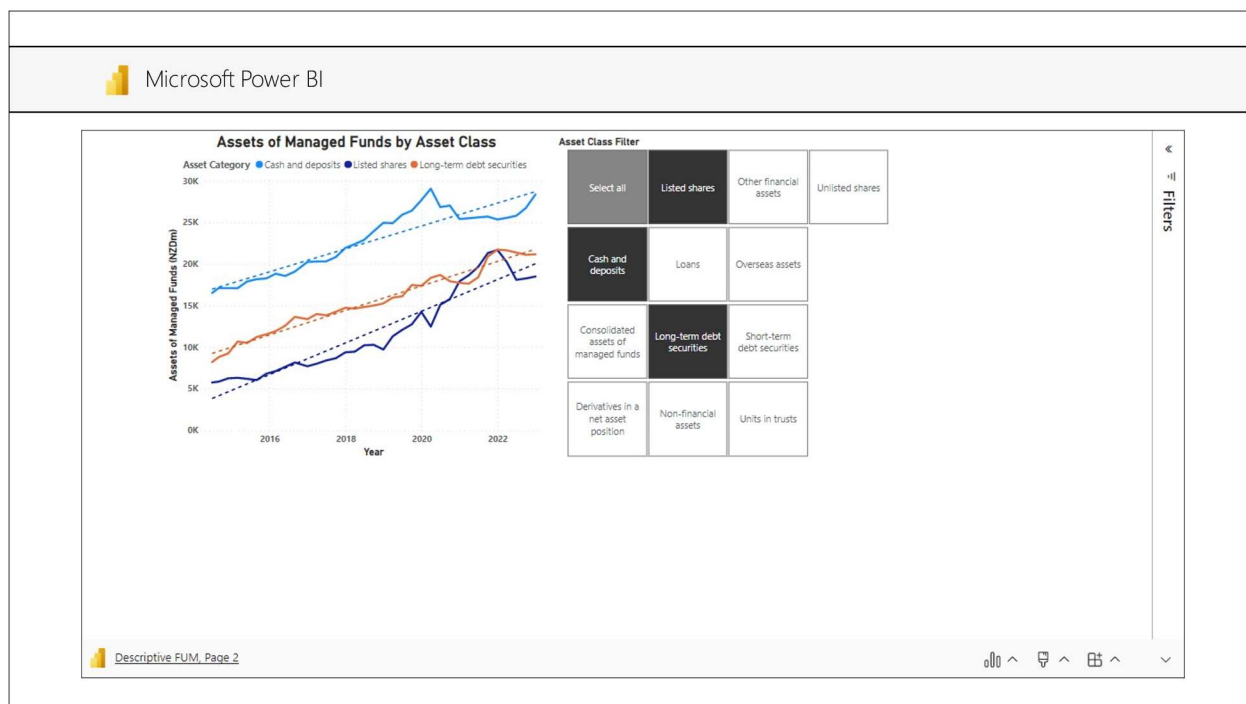


Fig 5: Chart (slide 2) in relation to the descriptive trendline of NZ managed fund FUM by asset class from year 2014 to 2022.

From the chart (Fig 4) above, we may deduce that NZ FinTech AUM has much room to grow, as compared to managed fund FUM, where it consists of only 1.55% (NZD3.2billion through the InvestNow and Sharesies platform) of managed fund FUM of NZD206bil as of December 2022. The NZ AUM for InvestNow is NZD1.40 billion as at September 2022 (Tibshraeny, 2022), and Sharesies is NZD1.80 billion as at October 2022 (Carroll, 2021). Hence, there is a need to promote the growth of FinTech AUM through regulatory framework, digital marketing and FinTech adoption amongst retail and even corporate as well as institutional investors. And some background on the FinTech platforms, InvestNow is partnered with 28 fund managers, along with 6 leading NZ banks who have picked InvestNow as part of their term deposit distribution strategy. On the other hand, Sharesies is a wealth development platform that has over half a million investors in New Zealand and Australia.

Managed fund on average is growing at 3% per annum from 2014 to 2022, though there are four quarters that have negative FUM growth, especially during the first half of year 2022. In other words, there were large withdrawals during Q1 & Q2 of 2022, reason being investors required funding as COVID caused a lockdown, and hence, reduction of income. Kiwisaver which is New Zealand's savings scheme for employees consists of 45% of the total managed fund FUM as at December 2022. However, Kiwisaver is generally not an active investment scheme for New Zealand investors, rather a passive one.

From the chart (Fig 5) above, we note that the major asset classes represented in the managed fund in December 2022 are, cash & deposits (15%), long-term debt securities (11%), listed shares (10%), and overseas assets (51%) (Reserve Bank of New Zealand, 2023).



### 3.2 Predictive Analytics in relation to NZ Managed Fund

From Fig 6 below, we can see that at 95% confidence interval, the NZ FUM is forecasted to be at NZD282.66 billion as of 31 December 2027, as compared to NZD205.61 billion as at 31 December 2022, an increase of NZD77.05 billion or 37.47% over a five year period.

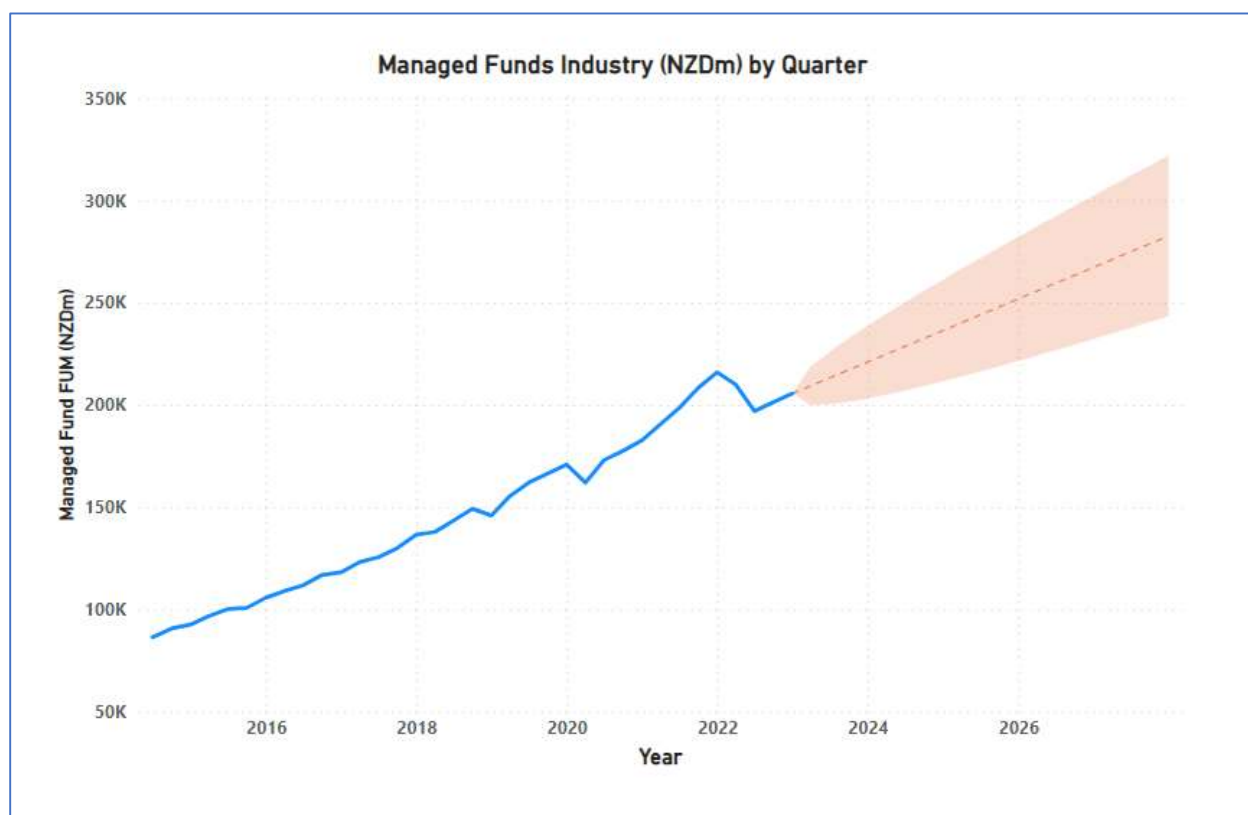


Fig 6: Predictive analytics in relation to NZ managed fund FUM for the next five years (2023 - 2027).

Below is the interactive chart (predictive analytics) in relation to NZ managed fund FUM. To access the Power BI chart, kindly click [https://app.powerbi.com/links/OqHilzJ6AN?ctid=5170356b-bfad-4bc8-a290-97a0ca7bb641&pbi\\_source=linkShare](https://app.powerbi.com/links/OqHilzJ6AN?ctid=5170356b-bfad-4bc8-a290-97a0ca7bb641&pbi_source=linkShare): -

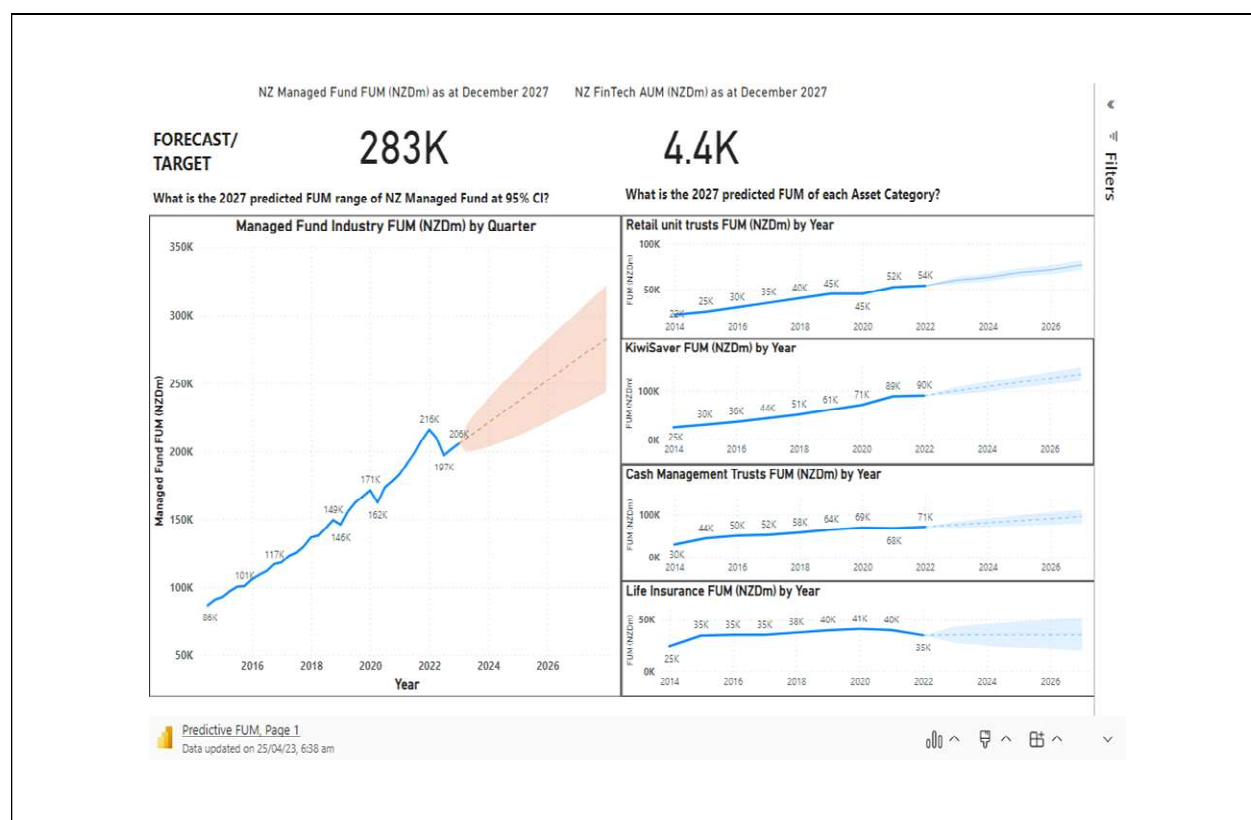


Fig 7: Interactive chart in relation to the forecast of NZ managed fund and FinTech AUM as of December 2027.

From the left chart above (Fig 7), we can see that the forecast range bound of managed fund FUM is NZD244bil to NZD322bil as of December 2027. And, based on the equal percentage of 37.47% growth over NZD3.2bil for FinTech AUM in Dec2022, the Dec2027 FinTech AUM is targeted to be at NZD4.4bil.

From the right charts above (Fig 7), all the stated asset categories are forecasted to register positive growth for the five years from year 2022 except life insurance FUM, where the lower bound for Dec 2027 is NZD20bil versus NZD35bil for Dec 2022.

### 3.3 Prescriptive Analytics in relation to NZ Managed Fund

From Fig 4 above, the trendline average for FUM quarter-over-quarter growth is a steady 3% from year 2014 to 2022, resulting in a positive correlation of linear managed fund FUM growth for the same period from NZD86.50 billion to NZD205.61 billion. Active retail participation through FinTech, disrupting the traditional wealth management industry should also have at least 3% growth per year. Financial Markets Authority (“FMA”) regulates the financial markets in New Zealand. Promotion of FinTech through regulatory framework, digital marketing and FinTech adoption will propel the AUM amongst direct retail investors.

Investment decisions can be strengthened by algorithms that weight risks and recommend whether to invest. One example is testing the effectiveness of an algorithm's decision on which company to invest into (Cote, C., 2021). The algorithm outperformed novice investors who were less experienced at investing. This experiment sheds light on the complementary role prescriptive analytics must play in making decisions and its potential to aid decision-making when experience isn't present and cognitive biases need red flag.

The positive trajectory can be seen in retail unit trust from 2023 to 2027, calling for action to be taken by stakeholders including regulator and industry players to advocate retail investor participation in direct unit trust, amongst others, trailblazing disruption through FinTech and robo-advisor.

According to Forbes (Curry, B. et. al, 2022), since they first appeared more than ten years ago, robo-advisors have revolutionised the financial industry. Despite having originally begun as automated portfolio managers, they have developed to offer a wide range of benefits and services, including access to human financial advisors, tax-loss harvesting, and cash management. The top 3 robo-advisors in the United States of America, according to their company AUM are Vanguard Robo-Advisors (Company AUM: USD206.6bil), Schwab Intelligent Portfolios (Company AUM: USD65.8bil) and Betterment (Company AUM: USD26.8bil). Benefits of robo-advisors include better investing decision algorithms yielding better return on investment, lower management fees due to lesser working hours for fund managers, and automated risks management i.e. minimise investment loss.

Research by Chung, D. et. al (2023) indicates that in order to persuade acceptance of robo-advisor, perceived pleasure or experience by investors using the investment management system is of paramount importance i.e. personify the system's interaction to each investor. The notion that maximising technical usefulness of such system is most important is challenged. Asset management companies should aim to build pertinent technical breakthroughs from the consumers' perspectives because most consumers are typically inexperienced with AI-enabled technologies such as FinTech. Businesses that fail to carefully consider how consumers will adopt and use new technologies, as well as how they will perceive their privacy, may find it difficult to increase consumer adoption and, as a result, firm performance. This is because consumers may reject such services and turn elsewhere. The empirical findings showed that customer views and actual service use are highly influenced by trust when services are linked to new technology.

Hence, New Zealand's FinTech industry need to embrace the resources required to capture the incoming demand for wealth management through FinTech, including robo-advisors, addressing those that have little to no wealth management planning i.e. retirement planning. Kiwisaver digital advice is one solution to address such shortcoming, where Nikko Asset Management New Zealand has launched its digital investment advice platform "GoalsGetter", a robo-advisor catering to New Zealanders. Research by Chen, X. et al. (2021) showed that the selected fund price comparison between the actual value and predicted value had a high degree of similarity. This means that its spatiotemporal ensemble deep learning model generated a good

prediction for fund price, which suggests its model can provide a proper application for robo-advisor in terms of predicting fund price movements. This affirms the reliability of robo-advisor.

#### 4. Discussion

We need to address the disadvantage of impediment of trust and unfamiliarity with FinTech, whilst capitalising on the advantage of such technology including robo-advisor, which would complement human fund managers in risks management i.e. algorithm may red-flag and sell a NYSE-listed equity holding automatically and immediately upon the trigger of a major event like the previous lockdown in 2020 in USA, even when New Zealand timezone was at night. Wealth management adoption and inclusion could be enhanced through such endeavours, further improving financial well-being of the underbanked. FinTech fosters financial inclusion by providing wealth management to individuals who are otherwise unable or unwilling to invest in capital markets. In China, online investment through Ant Group's FinTech mutual fund has improved household risk-taking and financial inclusion (Hong et al., 2021).

One interesting finding from the research by Hong et al., 2021 is, the distribution of Ant Group investors tilts toward female and the young population; 61% of investors on the Ant platform are female and the average age is 30.4 years old. For context purpose, Ant Group started to offer mutual fund distribution in 2014, enabling investors to access in almost the entire universe of mutual funds in China. Ant Group's sales and net income from mutual fund distribution are RMB2.23 trillion and RMB10.5 billion respectively in 2017. The asset class available in Ant Group are money market, bond, equity, mixed asset, index and gold funds.

However, investment risk-taking needs to be balanced with risks management with regards to investing through FinTech platforms. According to Morales et al. (2022), the speed of FinTech sector development has led to the emergence of significant risks associated with investing through such platforms, especially with many investors going online during COVID-19 period. The findings of the research indicate that there is a significant regulatory framework gap that must be filled to maintain effective FinTech governance and adequate sector development in the face of very ambitious growth possibilities worldwide generally.

Of paramount importance to the success of a FinTech platform is implementing best practices. The best practices for FinTech investment i.e. e-managed fund, are regulation and compliance through e-KYC/AML (Know Your Client/Anti-Money Laundering), licensing & requirements process, minimum financial company capitalisation requirement, trustee/custodian appointments, legal terms & conditions defined and approved, privacy & data protection, and complaints standard operating procedures, amongst others (Davis, K. et al., 2017).

A study conducted by Kasemharuethaisuk, H. et al. (2023) tries to pinpoint the elements that motivate individual investors to adopt digital investment services. Based on the Technology Acceptance Model (TAM2) and pertinent research on FinTech and financial behaviour, it has created a conceptual model with seven variables and six assumptions. In order to collect data, it used a questionnaire survey of Thai investors using partial least square structural equation

modelling (PLS-SEM). The findings demonstrate that individual investors' perceptions of the usefulness of digital investing services have a considerable influence on their propensity to use those services. Additionally, this purpose is affected by additional elements including comfort, trust, and subjective norm, but not by perceived usability.

Broadband and mobile data costs in New Zealand should also be made more affordable to encourage a higher usage rate amongst FinTech managed fund clients and lower barrier of entry to potential clients. Point in case, according to a publication from stuff.co.nz (Bowen, 2021), NZ's mobile data is the third most expensive in the world after Belgium and Canada.

## 5. Conclusion

Open finance provides a lynchpin to bring inclusion of investment through managed funds for all New Zealanders, be it through FinTech platform like investnow or traditional platform like KiwiSavers (FinTechNZ, 2022). Open finance empowers consumers to allow authorised third-party service providers to securely access their financial data beyond just bank accounts, but extend to other accounts i.e. FinTech platforms, insurance, KiwiSaver, investments, etc.

Additionally, in a survey by Gelb, J. et al. (2023), the respondents i.e. intrinsic investors make clear that their funds prioritise sustainable value creation over short-term financial performance and favour Chief Investment Officers who move quickly and boldly to reallocate a company's capital to enable value-creating growth. The question here would be, is a fund manager able to implement the above investment strategies with such speed and accuracy, without the assistance of a robust system?

Undoubtedly, the complexity and diversity of the financial markets, as well as the constantly shifting dynamics of the financial and economic systems, present a formidable task to macroprudential regulators. The 2008 financial crisis has reaffirmed an old lesson – “good data and good analysis are the lifeblood of effective surveillance and policy responses at both the national and international levels,” as stated by the joint Financial Stability Board (FSB) and the International Monetary Fund (IMF) in their 2009 report (FSB-IMF). (Morales, L. et al., 2022)

The above factors affirm that the promotion of managed fund amongst investors, in particular retail investors, require a robust system in place to manage the many variables encompassing a value creation investment system for investors, at the same time complying to regulations. There have been quite a few underperformed funds in the market, especially through the financial crisis in 2008 and COVID-19 era in early 2020, which left numerous investors suffered investment losses. One of the disruptive FinTech platforms to the investment management industry, that will likely match such robust investment system is robo-advisor as deliberated in our discussion and prescriptive analytics section above. Robo-advisors with their algorithms and data-driven artificial intelligence, could assist fund managers to manage their investment portfolios with better speed and accuracy, especially when the direction of capital markets is getting more and more unpredictable, with the increasing big data volume from the financial and capital markets.

To reiterate the topic: how could we promote direct managed fund investment amongst retail investors in New Zealand, especially through FinTech? It is through promotion of the advantages of FinTech (including robo-advisor), providing more affordable broadband, education & platform training, long-term value creation, reduction of fund investment loss to avoid investor attrition rate, effective implementation of open finance, and trust & usefulness of such investment system.

## Documentation

All Power BI charts may be accessed by clicking on the Power BI Service hyperlink on page 7 & page 9 in this article, then logging in to [freq77@freq77.onmicrosoft.com](mailto:freq77@freq77.onmicrosoft.com) with the password: Pass2277 (an email code may be sent for logging in), click on the tab “My Workspace” as below, and click on the Reports: 1. Descriptive FUM and 2. Predictive FUM, where Predictive FUM has two pages, as per the Fig 8 below: -

The screenshot shows the Power BI Service 'My workspace' interface. The top navigation bar includes 'Power BI My workspace', a trial status 'Trial: 47 days left', and a search bar. The left sidebar contains icons for Home, Create, Browse, Data hub, Metrics, Apps, Deployment pipelines, Learn, Workspaces, and My workspace. The main content area shows a notification 'We updated the look of workspaces' and a table of workspace items.

Name	Type	Owner	Refreshed	Next refresh	Endorsement	Sensitivity
Descriptive FUM	Report	Joseph Woon Sung Yap	4/27/23, 10:13:08 AM	—	—	—
Descriptive FUM	Dataset	Joseph Woon Sung Yap	4/27/23, 10:13:08 AM	N/A	—	—
Descriptive FUM.pbix	Dashboard	Joseph Woon Sung Yap	—	—	—	—
Predictive FUM	Report	Joseph Woon Sung Yap	4/25/23, 6:38:16 AM	—	—	—
Predictive FUM	Dataset	Joseph Woon Sung Yap	4/25/23, 6:38:16 AM	N/A	—	—
Predictive FUM.pbix	Dashboard	Joseph Woon Sung Yap	—	—	—	—

Fig 8: Power BI Service – My workspace access for the data analytics contribution.

## References

Bowen, P. (2021). New Zealand's mobile data is third most expensive in the world (sort of). *Stuff.co.nz*.

Retrieved from

<https://www.stuff.co.nz/technology/thebit-nz/300357970/new-zealands-mobile-data-is-third-most-expensive-in-the-world-sort-of#:~:text=The%20study%20shows%20that%20New,where%20data%20is%20more%20expensive.>

Carroll, M. (2021). Sharesies raises \$50 million, says it's now valued at \$500m. *Stuff.co.nz*.

Retrieved from

<https://www.stuff.co.nz/business/industries/126805580/sharesies-raises-50-million-says-its-now-valued-at-500m>

Chen, X., Ye, S., Huang, C. (2021). Cluster-Based Mutual Fund Classification and Price Prediction Using Machine Learning for Robo-Advisors. *Computational Intelligence and Neuroscience*. 2021, 1-14. <https://doi.org/10.1155/2021/4984265>

Chung, D., Jeong, P., Kwon, D., Han, H. (2023). Technology acceptance prediction of robo-advisors by machine learning. *Intelligent Systems with Applications*. <https://doi.org/10.1016/j.iswa.2023.200197>

Cote, C. (2021). WHAT IS PRESCRIPTIVE ANALYTICS? 6 EXAMPLES. *Harvard Business School Online*.

Retrieved from

<https://online.hbs.edu/blog/post/prescriptive-analytics>

Curry, B., Friedberg, B. (2022). Top-10 Robo-Advisors By Assets Under Management. *Forbes Media LLC*.

Retrieved from

<https://www.forbes.com/advisor/investing/top-robo-advisors-by-aum/>

Davis, K., Maddock, R. and Foo, M. (2017). Catching up with Indonesia's fintech industry. *Law and Financial Markets Review*. 11(1), 33-40. <https://doi.org/10.1080/17521440.2017.1336398>

Financial Markets Authority (2021). KiwiSaver Annual Report 2021. *Financial Markets Authority*.

Retrieved from

<https://www.fma.govt.nz/assets/Reports/Kiwisaver-AR-2021.pdf>



FinTech Open Finance Report 2022 (2022). Aotearoa Open Finance and Digital Equity: THE PATH TO FAIRER FINANCE AND A MORE INCLUSIVE NEW ZEALAND. *The New Zealand Financial Innovation and Technology Association (FinTechNZ)*.

Retrieved from

[https://fintechnz.org.nz/wp-content/uploads/sites/5/2022/03/FinTechNZ-Report-2022\\_digital\\_03.22.pdf](https://fintechnz.org.nz/wp-content/uploads/sites/5/2022/03/FinTechNZ-Report-2022_digital_03.22.pdf)

Frankenfield, J. (2023). Robo-Advisor. *Investopedia*.

Retrieved from

[https://www.investopedia.com/terms/r/roboadvisor-roboadvisor.asp#:~:text=Other%20common%20designations%20for%20robo,technology\)%20a pplications%20for%20investment%20management.](https://www.investopedia.com/terms/r/roboadvisor-roboadvisor.asp#:~:text=Other%20common%20designations%20for%20robo,technology)%20a pplications%20for%20investment%20management.)

Gelb, J., McCarthy, R., Rehm, W., Voronin, A (2023). The investors that matter still want you to focus on the long term. *McKinsey & Company*.

Retrieved from

<https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/the-investors-that-matter-still-want-you-to-focus-on-the-long-term>

Graduate Program Staff (2020). How Do I Start a Data Project: Understanding a Project Lifecycle. *Northeastern University*.

Retrieved from

<https://www.northeastern.edu/graduate/blog/data-analysis-project-lifecycle/>

Hong, C., Lu, X., & Pan, J. (2021). FinTech Adoption and Household Risk-Taking. *Social Science Research Network*. <https://doi.org/10.2139/ssrn.3950152>

InvestNow (n.d.). Build and manage your investment portfolio online with InvestNow. *InvestNow*. <https://investnow.co.nz/>

Morales, L., Gray, G. and Rajmil, D. (2022). Emerging Risks in the FinTech Industry – Insights from Data Science and Financial Econometrics Analysis. *Economics, Management and Financial Markets*. 17(2), 9. <https://doi.org/10.22381/emfm17220221>

Plan for Life Actuaries & Researchers (2021). New Zealand Retail Managed Funds grow by NZ\$4.5bn during September Quarter 2021. *Plan for Life Actuaries & Researchers*.

Retrieved from

<https://www.pflresearch.com/news/2022/2/1/new-zealand-retail-managed-funds-grow-by-nz45bn-during-september-quarter-2021>

Reserve Bank of New Zealand (2023). Managed funds: Assets by sector (T41). *Reserve Bank of New Zealand*.

Retrieved from

<https://www.rbnz.govt.nz/statistics/series/non-banks-and-other-financial-institutions/managed-funds-assets-by-sector>

Tibshraeny, J. (2022). Retail investment platform InvestNow to be sold to global giant. *NZ Herald*.

Retrieved from

<https://www.nzherald.co.nz/business/retail-investment-platform-investnow-to-be-sold-to-global-giant/47BU2VHMK2KLAZYI36URBS2V5E/>