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# Dynamic Control Financial Supervision (OJK) for Growth Customer Behavior using KYC System

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***Abstract***

*Uncertainty to differing dealer business entertainers is particularly trademarking these days; its variations particularly rely upon the kind of business on-screen characters, particularly computerized organizations. In this paper, allude to E-Metrics, where each trader and biller are gotten in client conduct exercises under the term Financial Technology "securing". Regulations in Indonesia in financial supervision (OJK). Business on-screen characters will in general keep on contending in organizing advancement with the goal that a Know Your Customer (KYC) system is required as execution to encourage the increasing speed of manageable business under vulnerability in business openings, in difficulties of electronical kind, or purported e-measurements.*

***Keywords:*** *Star-Up, MARS, Dynamic KYC, Blockchain, Business Intelligent.*

## 1. Introduction

Digital technology of business computerized (business enterprise and social enterprise) is enormous on clients who are presently expanding in number. This is confirmed by the expanding number of benefit/incomes situated business administrators, expanding seriousness, and expanding number of vendors that have been procured electronically, so clients have numerous decisions to encourage their exchanges. Money Technology FinTech) developed as changes in individuals' ways of life are at present overwhelmed by quick paced data innovation clients [1]. As indicated by Bank Indonesia Regulation Number 19/12/PBI/2017, Fintech is the utilization of money related framework innovation that produces new items, administrations, innovation as well as plans of action that affect fiscal steadiness, budgetary framework strength, and the proficiency, smoothness, security, and dependability of instalment framework. Shippers are separated into two, singular traders and legitimate dealers.

The blockchain could likewise store directions, as a customer behaviour in Fintech, for how the substance makers would be made up for the tune or music, and how the clients can get to it [2]. The imaginative highlights that can be offered with blockchain innovation are, among others, the capacity to have profoundly customized administrations, whereby client IDs, profiles, inclinations and history will be available at whatever point required by the clients and for each medium substance that is made, expended, shared, suggested or additionally dissected, and the manageability of media substance and administrations since the blockchain innovation can ensure a long-lasting, scalable and disruptive revenue-based business model that can enhance the financial and technical sustainability of media and services. An individual trader works their business without being founded on the strategies and conditions for setting up a lawful business, while a legitimate vendor builds up their business dependent on the methodology and arrangements for the foundation of a fused business substance. N Kapsoulis et. Al (2020), Focus on his research by implementing KYC in privacy documents to provide security in contact with approved documents. Illegal behaviour also continues to develop [2,3]. Therefore, there needs to be supervision in the financial authority in Indonesia.

The blockchains depend on advanced marks (in light of cryptography) to characterize the personalities of the members in the system. In the Bitcoin arrange, for example, the wallet ID is the one which characterizes the ID of the member and, through this, somebody can look for explicit exchanges and collaborate with him/her. Making an advanced ID, consolidating the decentralized blockchain rule with personality confirmation, would go about as a computerized watermark, appointed to each online

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exchange [4,5]. This would permit associations to check character on each exchange continuously, practically disposing of misrepresentation. Blockchain's decentralized methodology can give control back to clients, forestalling extortion and boosting trust simultaneously. In any case, the blockchain approach on personality the board is somewhat limited in scope as it doesn't give full-enhanced character the executives usefulness and potential outcomes to connect with outsider off-chain administrations. This is an examination theme which is taken care of in the present paper [6,7].

The examination to be done spotlights on the use of Know Your Customer Principles (KYCP) are standards applied by monetary assistance foundations to discover the personality of clients. The advancement of money related innovation for instalment exchanges, just as computerized based mechanical innovation, particularly in the field of deals, keeps on creating varying [8,9]. Organizations additionally need to get ready for expectation in deciding feasible business given the inexorably tight rivalry. So, a Dynamic KYCP system is expected to take care of the perplexing issues identified with Fintech client conduct [10,11]. In view of this foundation, the plan of the issue that must be settled with socioeconomics of various client conduct that are spread over the North Sumatera locale - Indonesia. Vulnerability emerging from supportable business administrators by considering parts of Business Metrics identified with the differing conduct of clients [12,13]. Building a Business Canvas Model in deciding contenders for different shippers and billers [14,15]. With this exceptional examination, it is trusted that another strategy will be gotten to disentangle data identified with Fintech client conduct by using Knowledge Acceleration utilizing Business Metrics [16,17].

## 2. Research Purpose

Resources Data right now information acquired through an auxiliary database that has been gotten from the Fintech application which we call "Client Monitoring at FinTech" [18,19]. In any case, multi-variety information will be introduced, yet right now, seeing the example of unstructured information, it becomes organized information and afterward the information will be masterminded by the technique used to rearrange the data as laid out in the information base examination [20,21]. Coming up next are multivariate information as computerized instalments made by clients and specialists who direct business electronically [22,23]. Portrayals are assembled dependent on client connections and serious rivalry with computerized businesses.

*Figure 1.* Depiction of acquisition is the underlying unstructured information that will be procured electronically through advanced installment innovation. In this research, advanced installment application was manufactured and furthermore a model of introducing data to draw information on e-measurements for clients and help organizations, so it can without much of a stretch profile any examples that offer ascent to convoluted and serious client relations with dealers in making exchange forms unmistakable [24,25,26]. In this paper, a model of a procedure of dealing with an enormous number of clients, seriousness likewise increments so it needs a suitable administration model that is proper and compelling with the oddity strategy approach that is acknowledged in industry and general society in getting data [27,28].

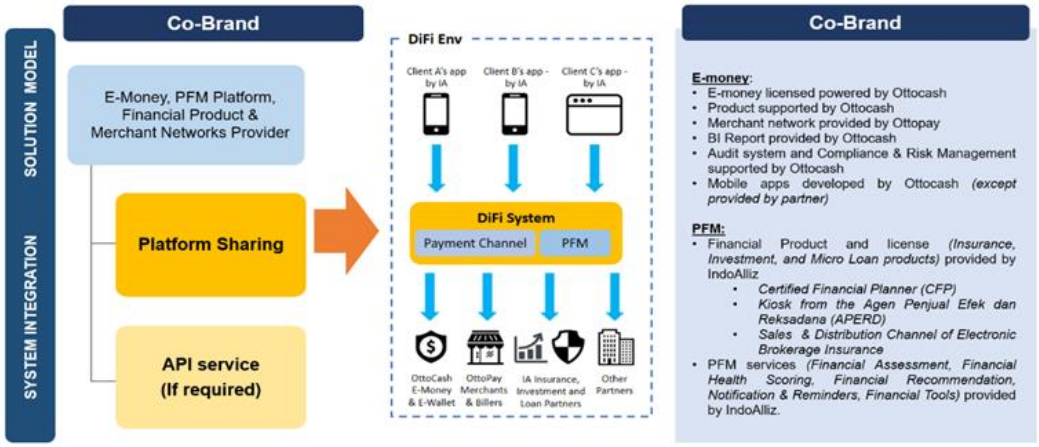


**Figure 1.** Manage Proses E-Money Apps Model


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*Figure 1.* Oversee compositions e-cash traders fill in not surprisingly, in particular serving their clients as indicated by the standards of the framework set by the bank. The initial step taken by forthcoming shippers is to enlist first as an accomplice by presenting the necessary information accurately. This information will consequently be put away in the organization database as an ID that shows that the dealer has authoritatively coordinated by first consenting to the terms and states of the organization. After the enlistment procedure is finished, the vendor presently has a virtual office that capacities as a go between in getting virtual rebate exchanges and virtual monetary standards moved by imminent purchasers [29,30]. Right now, personality of the purchaser will be effectively perceived by the shipper on the grounds that the two gatherings definitely know how a lot of the virtual markdown or virtual cash will be moved to the vendor's virtual office [31,32]. The subsequent stage is the Merchant legitimately sends the item in the structure, sum and transporting cost concurred by the two gatherings.

## 3. Result and Discussion

### *3.1 KYC System Principles*

Know Your Customer Principles (KYCP) are standards applied by monetary assistance foundations to discover the personality of clients, screen client exchange exercises including revealing suspicious exchanges and it is the commitment of money related help organizations to execute them. the application model was assembled dependent on a contextual analysis in the North Sumatra locale. Notwithstanding, the phases of the procedure and client system that will be utilized here, we fabricate a FinTech application to catch client information by e-measurements, at that point we construct a depiction of the information got. Information got from Source Big Data, which is right now. The information model that we will utilize is constructed dependent on the information base increasing speed. From a portion of the Fintech applications that have been manufactured, we include a strategy we call "Individual Finance Management (PFM)" which implies clients can deal with their own funds and can be spared by sharing the distinction from the store. This exploration, centers around client information on client exercises for electronic shopping (e-measurements). The information designs that we find are exceptionally multivariate in e-measurements. The dealer exercises that we acquired were then isolated into a few arrangements, to be specific: Merchant and Biller information.

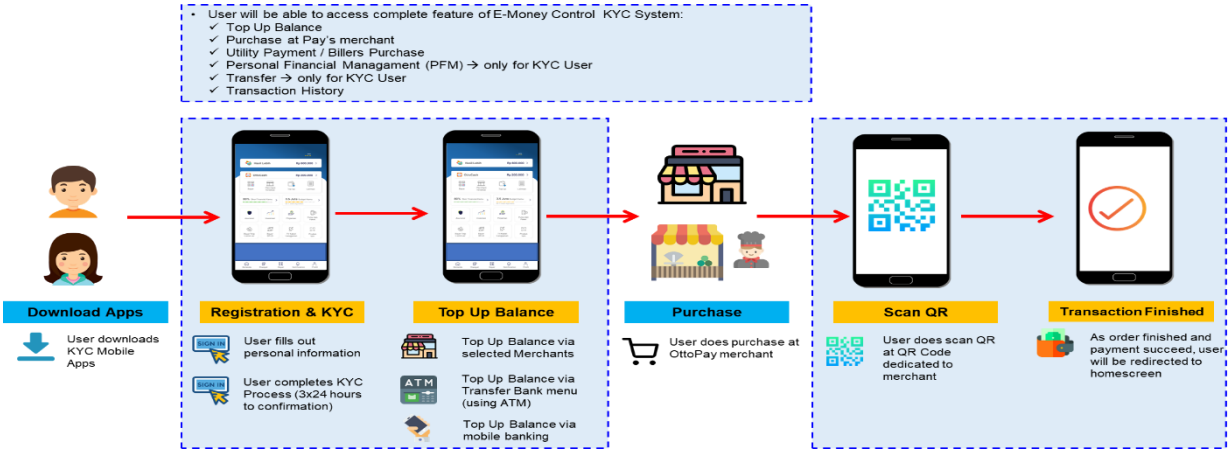


**Figure 2**. KYC Mobile Apps – Transaction Flow via Apps

In this Figure 2. Know Your Customer (KYC) forms unequivocally depend on personality the executives, and give the foundation of authoritative and budgetary establishments' enemy of tax evasion endeavours.

**Table 3.1** Customer Demographics Using KYC

| Name Merchant | Customers | Transaction |
|---|---|---|
| SATE BANG JON LK | 30 | 720.000 |
| TOKO DEDI LK | 25 | 307.000 |
| IBRAHIM YUSUF | 24 | 702.500 |


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| | | |
|---|---|---|
| WARUNG SIMPANG TIGA | 23 | 373.000 |
| MILALA BENGKEL | 16 | 447.500 |
| IR.ONE S | 14 | 180.000 |
| WARUNG TIARA LK | 14 | 276.500 |
| RUJAK JELANI | 13 | 314.001 |
| MARIANA BR SINAGA | 12 | 155.000 |
| ABU BAKAR NL | 9 | 115.000 |
| FRANS PEBRIAN LUBIS | 7 | 87.000 |

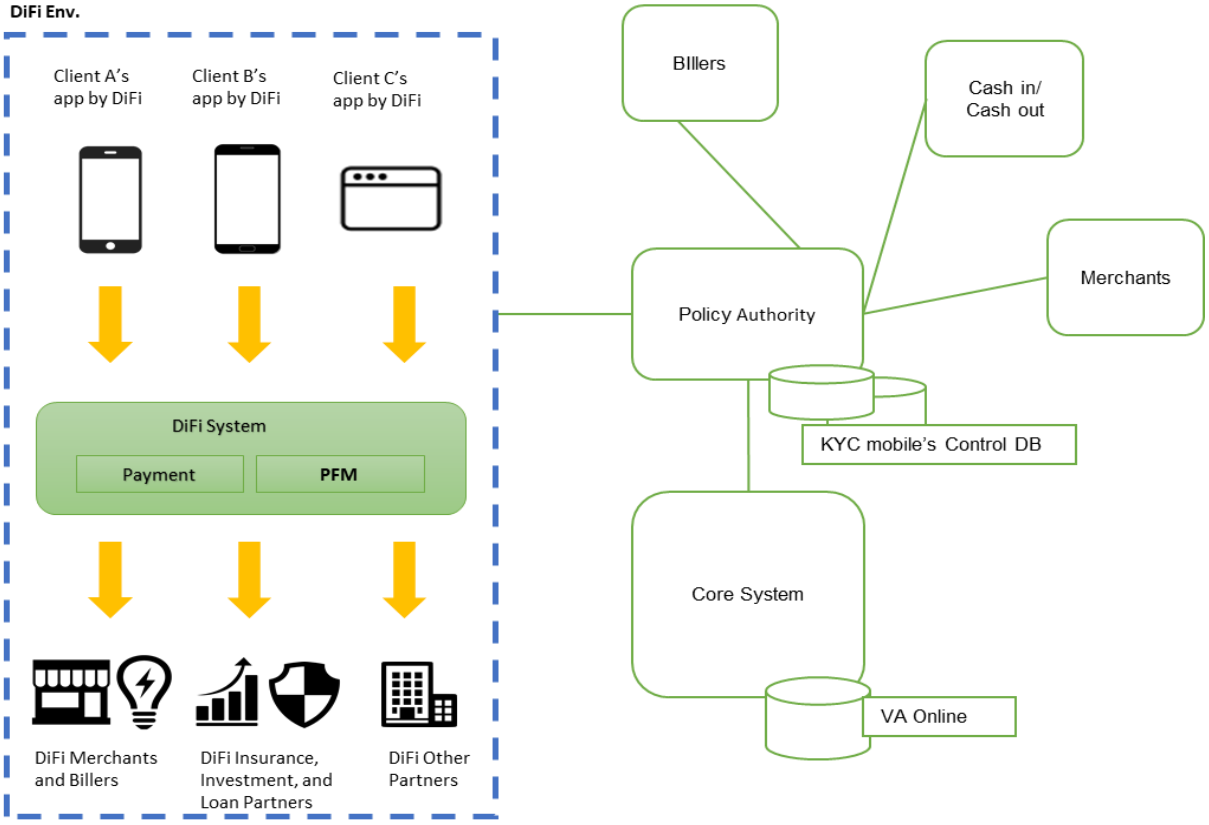


**Figure 3.** Architecture Control OJK Authority

*3.2 Multivariate Adaptive Regression Linear Spline (MARS)*

**Table 3.2** Method using MARS With 10 Inputs from Different Data Sets

| Target | Input | Predictor name |
|---|---|---|
| $Y$ | | Uncertainty Competitive Merchant |
| $y$ | $x_1$ | Value Transaction |
| $= \theta_0$ | $x_2$ | Variant Transaction |
| | $x_3$ | Date (week, month) |
| $+ \sum_{m=1}^{M} \theta_m \psi_m(x)$ | $x_4$ | Revenue |
| | $x_5$ | District |
| $+ \epsilon,$ | $x_6$ | City/Regency |
| | $x_7$ | Name User |
| | $x_8$ | Virtual Account(nohp) |
| | $x_9$ | Distance Merchant |
| | $x_{10}$ | Name Merchant |


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The uncommon bit of leeway of MARS lies in its capacity to assess the commitment of BF with the goal that extra and intelligent impacts of indicators are permitted to anticipate reaction factors. MARS is a nonparametric relapse system that doesn't make explicit presumptions about the basic practical connections among reliant and free factors to gauge the general capacity of high-dimensional contentions, given the scanty information.

$$[+(x - T)]_+, [-(x - T)]_+, \tag{1}$$

where [q] +: = max {0, g} and $\tau$ are univariate vertices. Each function is linear, with a node at the value of *r*, and the corresponding pair of functions is called the reflected pair. Let us consider a general model of the relationship between predictor variables and responses. The goal is to build the pair that is reflected for each predictor $x_j$ ($j$ = 1, 2,..., $p$) with the $p$-dimension knot $\tau_i = (\tau_{i,1}, \tau_{i,2}, \ldots \tau_{i,p})^T$ at $x_i = (x_{i,1}, x_{i,2,\ldots} x_{i,p})^T$ or just adjacent to each data vector $\dot{x}_i = (\dot{x}_{i,1}, \dot{x}_{i,2}, \ldots \dot{x}_{i,p})^T$ ($i$ = 1, 2,..., $N$) of the predictor. We do not lose the generality, the assumption that $\tau_{i,j} \neq \dot{x}_{i,j}$ for all i and $j$, to prevent the difference in the matter of optimizing this research later[1]. Actually,

we can choose node $\tau_{i,j}$ further than the predictor value $\dot{x}_{i\,j}$,, if there is a position that promises better data mounting[1]. After this preparation, the BF collection of research is:

$$\wp : \left\{(x_j - T)+, (T - x_j) + \mid T \in \{x_{1,j}, x_{2,j}, \ldots, x_{N,j}\},\ J \in \{1,2, \ldots, p\}\right\}, \tag{2}$$

So, we can represent *f (x)* with linear combinations which are respectively built by the set p and with the intercept θ*o*, so that (2) takes the form.

$$y = \theta_0 + \sum_{m=1}^{M} \theta_m \psi_m(x) + \epsilon, \tag{3}$$

Here, $\psi_m$ ($m$ = 1, 2,..., $M$) is the BF of p or the product of two or more of these functions, $\psi$ is taken from a set of linear independent basis elements M, and $\theta_m$ is an unknown coefficient for m-basis functions *(m = 1,2, ..., M)* or for constants *1 (m = 0)*. One set of vertices that satisfies i, j is assigned separately for each dimension of the predictor variable and is chosen so that it coincides with the level of predictor represented in the data. BF interactions are made by multiplying existing BF with truncated linear functions involving new variables. In this case, the existing BF and the newly created BF interaction are used in the MARS approach. Provided that observations are represented by data $\boldsymbol{x}_i$, $\boldsymbol{y}_i$ ($i$ = 1, 2,..., $N$), the BF to $m$ form can be written as follows:

$$\psi_m(x) := \prod_{j=1}^{K_m} \left[S_{k_j^m} . \left(x_{k_j^m} - T_{k_j^m}\right)\right]+, \tag{4}$$

where $K_m$ is the number of truncated linear functions multiplied in the BF to -*m*, $x_{K_j^m}$ is the predictor variable corresponding to the - $j$ intersecting the linear function in the BF to- $m$, $T_{K_j^m}$ is the node value corresponding to the variable, $x_{K_j^m}$ and $S_{K_j^m}$ is the chosen sign +1 or -1 .

$$GCV := \frac{1}{N} \frac{\sum_{i=1}^{N} \left(y_i - \hat{f}_\alpha(x_i)\right)^2}{(1 - \tilde{C}(\alpha)/N)^2} \tag{5}$$

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The MARS calculation for evaluating the capacity model f (x) comprises of two sub-calculations: The stepwise forward calculation searches for BF and at each progression, a split that limits the 'less reasonable' criteria of every conceivable partition for each BF is chosen. The procedure stops when the client indicated Mmax esteem is come to. At that point, the stepwise in reverse calculation starts to forestall abundance similarity by decreasing the unpredictability of the model without diminishing adjustment to the information, and to take out from the BF model that adds to the littlest increment in remaining mistake squares at each stage, creating ideally evaluated models as for each the quantity of terms, called f alpha. This investigation takes note of that uncovers some estimation complexity. To

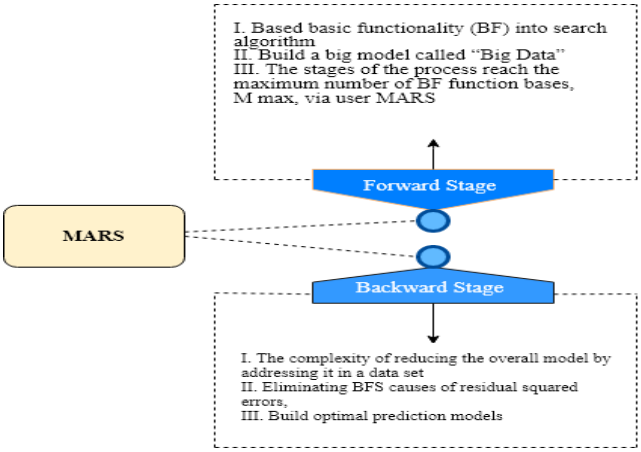


**Figure 4.** The two-stage process in MARS

assess the ideal alpha esteem summed up cross-approval (GCV) can be utilized, demonstrating an absence of congruity for the MARS model.

When applying the MAR algorithm, first, the MARS model is built using Salford MARS v.9. In the construction of the model, the maximum number of BFS ($M_{max}$) and the highest level of interaction is determined by trial and error. In this example, $M_{max}$ and the highest level of interaction are determined to be five and two. Given the largest model built in the advanced MARS algorithm by the software provided by BFsollow :

Optimization Model KYC for Basis Function MARS Method:

BF1= max {0, $x_2$ -0,10332E}
BF3= max {0,007, $x_4$- 0,866018} $BF_1$
BF5= max {0, $x_6$ -0,1272981}.$BF_2$
BF7= max {0, $x_4$-0,921}.$BF_4$
BF9= max {0, $x_4$+ 0,165339} $BF_6$
BF11= max {0,008 $x_4$-0,637062-008} $BF_8$
BF13= max {0, $x_{4+}$0,973} $BF_{10}$
BF15= max {0, $x_{4+}$0,934} $BF_{12}$
BF17= max {0, $x_{2+}$0,673} $BF_{14}$
BF19= max {0, $x_{2\text{-}1500}$} $BF_{16}$

The optimization *MARS* model with the BFs above is presented in the subsequent form:

$$Y = \theta_0 + \sum_{m=1}^{M} \theta_m \psi_m(x) + \epsilon, = \text{-0,10332E -007 + 1 + BF1 – 0,1272981 -007 + BF3 - 0,866018- 007}$$
$$+ \text{BF5 + 0,1272981-007 + BF7 - 0,921-008 + BF9+ 0,165339 -008}$$
$$+ \text{BF11 - 0,637062-008 + BF13 + 0,973-013 + BF15+ 0,934-008 +}$$
$$\text{BF17 + 0,673;}$$


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*3.3 Data Testing*

Client conduct dependent on exchanges can be found in table 3.3 where there are four charts with various qualities. The principal diagram is about ordinary likelihood, where this is the typical state of the client. In the second chart about client conduct that searches for similitudes between items utilized by certain traders. In the third diagram about client exchanges, which are indicated mastermind exchanges did by the client. In the fourth diagram about, client orders and what is done is perception of requests that are made.

**Table 3.3.** Results of Data Model Control KYC on Customer Behaviour

| Name Merchant | Coef | SE Coef | DF | T-Value | P-Value |
|---|---|---|---|---|---|
| ABUBAKAR | -0,85707E+03 | 0,168454 | 213,00 | -0,637062 | 0,525 |
| ANEKAGORENGAN | -0,75984E+03 | 0,04993E+04 | 213,00 | -0,548592 | 0,584 |
| APOTEKMAJU | 0,037942 | 0,94809E+04 | 213,00 | 0,099381 | 0,921 |
| BENNYNATANAELSINAGA | 0,00877E+04 | 0,40428E+04 | 213,00 | 0,718354 | 0,473 |
| BURGERNENG | -0,30151E+03 | 0,18954E+04 | 213,00 | -0,361611 | 0,718 |
| FRANSPEBRIAN | -0,21412E+03 | 0,073208 | 213,00 | -0,410904 | 0,682 |
| FRISTICELL | -0,311724 | 0,96160E+04 | 213,00 | -0,033764 | 0,973 |
| GALO RENDI | 0,866018 | 0,99385E+04 | 213,00 | 0,083350 | 0,934 |
| IBRAHIMYUSUF | 0,19362E+04 | 0,390528 | 213,00 | 0,165339 | 0,031 |
| INDOMARET | -0,10332E+04 | 0,95353E+04 | 213,00 | -0,564781 | 0,573 |
| ONES | -0,44246E+03 | 0,919940 | 213,00 | -0,422503 | 0,673 |

*Table 3.3*. We generate data models in Star-Up users, namely by controlling active users in a very dynamic KYC. Our coefficients and deductions use multivariate regression to eliminate the reduction of large data into simple data to be optimized in calculations.

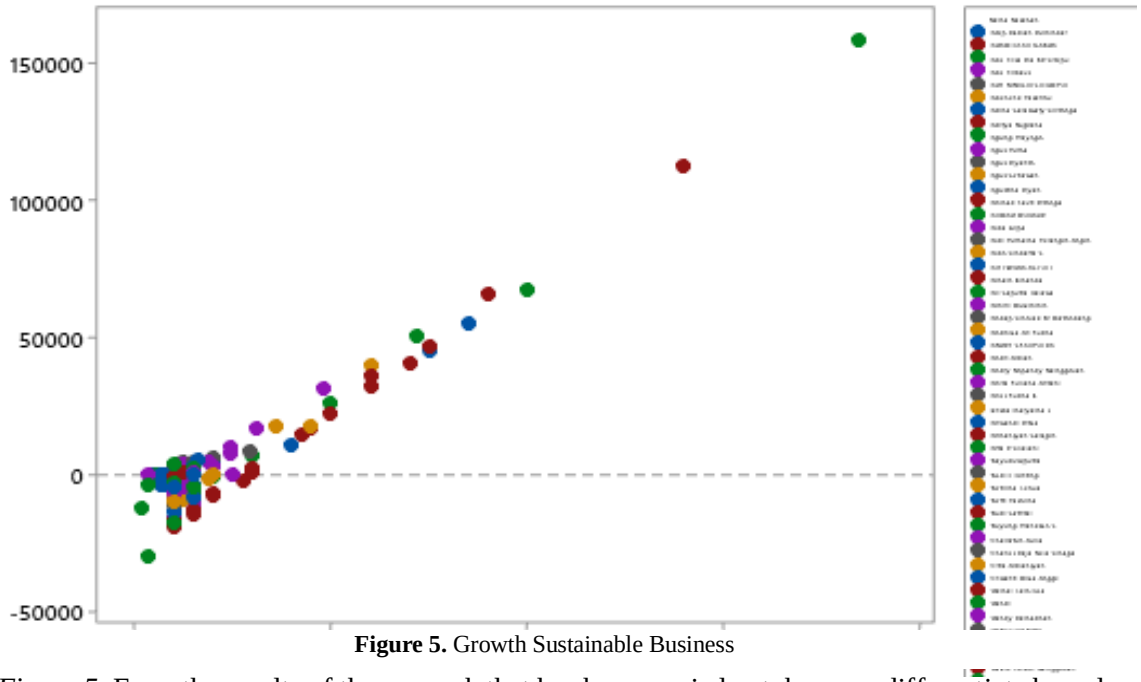


**Figure 5.** Growth Sustainable Business

*Figure 5*. From the results of the research that has been carried out, here we differentiate by colour to see the difference in growth from the results obtained so that it is easy to see the many variations of competition and growth in business behaviour using the KYC system.


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## 4. Conclusion

In this Study, the quantity of Fintech exercises and their development, the outcomes got effectively in the supervision of the FSA (OJK) is exceptionally compelling by controlling the KYC which is extremely shifted and multivariate as per the Star up business explicitly in the Indonesian area. This exploration utilizes Big Data which is differing from optional information for disentangling data in the investigation of the information base and speeding up of practical business, serious business measurements we can see each conduct that emerges dependent on exchange esteem. One of these tests is utilizing Big Data by E-measurements or we consider it the FinTech application.

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