



Fundamental Behavioral Precision Marketing (FBPM) Theory of Optimal Bigdata-AI Marketing Model (OBAIM)

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Abstract. *Bigdata* (suggested as a brief form for big data in the paper) and artificial intelligence (AI) integrated together is unprecedentedly fast making business intelligence (BI) ever powerful. The paper uses *Bigdata-AI* or *Bigdata AI* or *BAI* to mean a system of bigdata integrated AI; and *BAIM* to mean a Bigdata-AI or Bigdata AI or BAI marketing system or model. To date, academicians and professional practitioners have proposed or architected daunting number of BAIM, however, there seems no concise, effective, easy-adopting BAIM. Purpose of the paper is to explore the structure and essences of an Optimal Bigdata-AI Marketing System or Model (*OBAIM*). The paper defines an OBAIM as a BAIM which shall attain the best marketing results to achieve sustainable highest possible profitability for an enterprise. For cost, effectiveness, and optimality, the paper stipulates *Four Critical Features* (or *CEES features*) of an OBAIM as concise, effective, easy-adopting, and scalable-modularized. The paper also identifies the fundamental customer data module, the customer purchasing behavioral data module, and AI precision marketing module as the *Three Core Modules of OBAIM*. The fundamental customer data module administrates (collects, compiles, maintains, updates, and optimizes) bigdata of existing and potential customers about essential basic information; the customer buying behavioral data module manages bigdata of actual and likely buying behavioral information; the AI precision marketing module conducts most effective AI marketing undertakings. They together are called *Fundamental Behavioral Precision Marketing (FBPM) Theory of OBAIM* by the paper. The paper has six chapters. Chapter 1 is introduction. Chapter 2 conducts a literature review. Chapter 3 explores the Optimal Bigdata-AI Marketing Model (OBAIM). Chapter 4 elaborates Fundamental Behavioral Precision Marketing (FBPM) Theory. Chapter 5 gives an illustrative chart. Chapter 6 makes conclusions.

Keywords: Fundamental Behavioral Precision Marketing (FBPM) Theory · AI · Optimal Bigdata-AI Marketing (OBAIM) Model · AI marketing · big data · BI

1 Introduction

Bigdata (suggested as a brief form for big data in the paper) and artificial intelligence (AI) integrated together is unprecedentedly fast making business intelligence (BI) ever powerful. The paper uses *Bigdata-AI* or *Bigdata AI* or *BAI* to mean a system of bigdata integrated AI; and *BAIM* to mean a Bigdata-AI or Bigdata AI or BAI marketing system or model. To date, academicians and professional practitioners have proposed or architected daunting number of BAIM, however, there seems no concise, effective, easy-adopting BAIM.

Purpose of the paper is to explore the structure and essences of an Optimal Bigdata-AI Marketing System or Model (*OBAIM*). This paper defines an OBAIM as a BAIM which shall attain the best marketing results to achieve sustainable highest possible profitability for an enterprise. For the consideration of costs, effectiveness, easiness in adoption/maintenance/administration, business growth/expansion, environmental change, and system optimality, this paper stipulates Four Critical Features (*or CEES features*) of an OBAIM as concise, effective, easy-adopting, and scalable-modularized. In other words, an OBAIM is ideally a concise, effective, easy-adopting, and scalable-modularized BAIM (*CEES BAIM*).

In pursuant to the critical features of concise, effective, and scalable-modularized as mentioned in the last paragraph, this paper identifies the fundamental customer data module, the customer purchasing behavioral data module, and AI precision marketing module as the *Three Core Modules of OBAIM*. The fundamental customer data module administrates (collects, compiles, maintains, updates, and optimizes) bigdata of current and potential customers regarding to essential basic information; the customer purchasing behavioral data module administrates bigdata of actual and likely customer purchasing behavioral information; the AI precision marketing module conducts most effective AI marketing undertakings. They together are called Fundamental Behavioral Precision Marketing (*FBPM*) *Theory of OBAIM* by the paper.

The paper has six chapters. Chapter 1 is introduction. Chapter 2 conducts a literature review. Chapter 3 explores the Optimal Bigdata-AI Marketing Model (OBAIM). Chapter 4 elaborates and establishes Fundamental Behavioral Precision Marketing (FBPM) Theory. Chapter 5 gives an illustrative diagram. Chapter 6 makes conclusions.

2 Literature Review

Bigdata-AI gives rise to the ever effective BI and just starts its booming stage. There are burgeoning huge literatures regarding to Bigdata-AI. However, to the author's best knowledge through literature survey with most efforts, there is no specific paper straitly devoted to the subject of overall Bigdata-AI marketing system or model. Pradeep, Appel, and Sthanunathan (2019) [6] had a book on AI marketing emphasizing product innovation, link with customers, and lifting sales. Moreno, Carrasco, and Herrera-Viedma (2019) [5] explored architecture of the Bigdata-AI cloud for doing marketing by enterprises. There are inclusive reviews on papers about applying Bigdata-AI to various subjects of marketing. (Campbell 2020; D'Arco 2019) [2, 3]. Abi, Zakraoui,

and Benahmed (2021) [1] had a paper on using AI in many marketing subjects. Vidhya (2023) [9] explored predictive AI consumer behavior models. Yau, Saad, and Chong (2021) [10] applied AI on enhancing customer relationship. There are a lot of paper on Bigdata-AI product design as shown by a comprehensive survey (Quan 2023) [7].

3 Optimal Bigdata-AI Marketing Model (OBAIM) and Four Features

There have been a lot of Bigdata-AI Marketing Models or Systems (BAIM) proposed or architected by scholars and professional practitioners, however, there seems no concise, effective, easy-adopting BAIM.

Purpose of the paper is to explore the structure and essences of an Optimal Bigdata-AI Marketing System or Model (OBAIM). This paper defines an OBAIM as a BAIM which shall attain the best marketing results to achieve sustainable highest possible profitability for an enterprise. The best profitability indicator is Return on Equity (ROE) in this paper as it is the return to the shareholders or the investors of an enterprise.

For the consideration of costs, effectiveness, easiness in adoption/maintenance/administration, business growth/expansion, environmental change, and system optimality, this paper stipulates *Four Critical Features (or CEES features)* of an OBAIM as concise, effective, easy-adopting, and scalable-modularized. In other words, an OBAIM is ideally a concise, effective, easy-adopting, and scalable-modularized BAIM (*CEES BAIM*).

► Four Critical Features of Optimal Bigdata-AI Marketing Model (OBAIM).

For an Optimal Bigdata-AI Marketing System or Model (OBAIM) applicable to enterprises of various sizes and changing external environment as mentioned in the previous paragraph, there are Four Critical Features as stipulated by the paper: concise, effective, easy-adopting, and scalable-modularized (*CEES*).

3.1 Concise – Lower Cost and Easy-handling

A concise essential system or model is critical in respect to the cost and easy-handling of the OBAIM. It is particularly critical for small enterprises in view of profitability; it is equally critical for medium-sized and large enterprises considering sustainable highest possible profitability. Given the ultimate objective of the OBAIM being best ROE and the OBAIM itself incurring adoption/maintenance/administration costs, the OBAIM should be concise that it would boost sales and thus profits at proportionately lower aggregate cost caused by sales increase and the OBAIM.

3.2 Effective – Cost Effective and Functional Effective

There are two aspects of the BAIM effectiveness: cost effectiveness and functional effectiveness. The cost effectiveness is self-explanatory in terms of the overall BAIM

setting-up and administrative costs compared to the overall revenue and net profit as well as the overall revenue and net profit potentials. The functional effectiveness is regarding the efficiency of the overall BAIM in terms of speed, robustness, and administrative easiness of the BAIM system or model. In other words, the functional effectiveness is about how easy in using the system, to what extent in bringing more sales/profit, how much time spent in the system.

3.3 Easy-adopting – Simple Setting-up, Less Labor, and Easy Administration

Easy-adopting of the OBAIM refers to the time, efforts, resources required to adopt the OBAIM and to have the necessary personnel ready to use OBAIM, as well as how easiness to administrate the OBAIM. Degree of easy-adopting also relates to the overall setting-up and administrative costs of the system. A BAIM would surely be much viable, if it is much easier, less costly, less time-consuming, less labor-intensive, and less resources-requiring in establishment and administration of the system.

3.4 Scalable-modularized – Flexible for Expansion & Strategic/External Change

A well-managed enterprise will usually grow and expand, an OBAIM needs to have the flexibility to accommodate the growth and expansion. The feature of scalable-modularized structure is critical for such accommodation. Marketing strategies of the enterprise might change, the scalable-modularized feature will be able to support such strategical change. In addition, market environment and the market itself might change or expand, the scalable-modularized feature shall let the OBAIM capable to tackle such external change and/or market expansion. It is obvious that the technology is fast advancing, economy is generally growing, demographic structure is changing, and consumer behavior is also changing, not mention the change in market and the strategy; if the OBAIM is not scalable and modularized, it would not keep up with the ever-changing situation and would not be the more suitable system for the enterprise.

Gauging how the four critical features of the OBAIM bring results on cost, effectiveness, manpower required, resources used, assets needed, flexibility, sales, and profits, it shows the four critical features would better help the OBAIM to achieve sustainable best possible profitability (ROE), as exhibited by Table 1 in the following.

Table 1. Gauging the Four Critical Features of the OBAIM

Features Gauge	Concise	Effective	Easy-adopting	Scalable- modularized
Cost	Low	Low	Low	Low
Effectiveness	High	High	High	High
Manpower used	Less	Less	Less	Less
Resources used	Less	Less	Less	Less
Assets needed	Less	Less	Less	Less
Flexibility	Fair	-	Good	High

Sales	-	Higher	-	Higher
Profits	Higher	Higher	Higher	Higher
Profitability (ROE)	Higher	Higher	Higher	Higher

4 Fundamental Behavioral Precision Marketing (FBPM) Theory

Considering critical features of concise, effective, and scalable-modularized as mentioned above, the paper identifies the fundamental customer data module, the customer purchasing behavioral data module, and AI precision marketing module as the *Three Core Modules of OBAIM*. The fundamental customer data module administrates (collects, compiles maintains, updates, categorizes, and optimizes) bigdata of present and potential customers regarding to essential basic information; the customer purchasing behavioral data module administrates bigdata of actual and likely customer buying behavioral information; the AI precision marketing module conducts most effective AI marketing undertakings. They together are called *Fundamental Behavioral Precision Marketing (FBPM) Theory* of OBAIM by the paper. There would be a customer membership system in OBAIM to help efficient working of OBAIM and to conduct AI precision marketing directly to separate customers.

4.1 The Fundamental Customer Data Module

The importance of customer would never be over emphasized in business. The essential basic data of the existing and potential customers is the foundation of any Bigdata-AI Marketing System or Model (BAIM). Without such data, there is no appropriate marketing system or even marketing itself. The fundamental customer data module administrates (collects, compiles, maintains, updates, categorizes, and optimizes) bigdata of the current and potential customers regarding to essential basic information. There are four kinds of essential basic information: personal data, basic categorization, current or potential, and membership. Depending on business of an enterprise, details of the basic information is different. For a comprehensive business, personal data would include name, mobile number, e-mail, living address, gender, birthday, education, profession, income, wealth, car, travel, entertainment, family situation, etc. Basic categorization could be low/middle/high categories of income, wealth, job, car, etc.

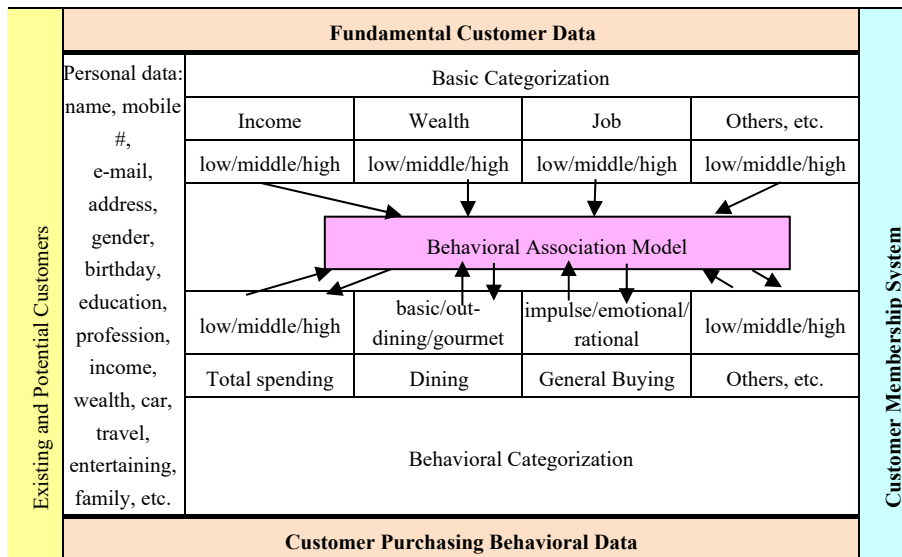
4.2 The Customer Purchasing Behavioral Data Module

With just basic data of customers, an enterprise does not have enough understanding about the customers to make effective marketing. Basic customer data plus customer purchasing behavioral data makes a much more meaningful information for effective marketing. The customer purchasing behavioral data module administrates (collects, compiles, maintains, updates, categorizes, and optimizes) bigdata of actual and likely customer buying behavioral information. Depending on business of an enterprise,

behavioral categorization could be low/middle/high, basic/out-dining/gourmet, impulse/emotional/rational, etc. The behavioral categorization data would be used to build a *Behavioral Association Model* with customer basic data. The Behavioral Association Model will facilitate AI precision marketing to separate customers directly. Behavioral categorization works somewhat similarly to the ordinary, golden, and platinum categorization of credit cards. The customer membership system will help update the basic and behavioral data.

The customer membership system, internet crawlers, POS (Point of Sale system) will collect/update fundamental and behavioral data of current and potential customers. The fundamental and behavioral modules conduct basic and behavioral categorization. These two categorizations combine to establish a Behavioral Association Model facilitate AI precision marketing to separate customers directly. Administration and linkage of Fundamental and Behavioral modules is illustrated in the following Table 2.

Table 2. Administration and Linkage of Fundamental and Behavioral Modules



4.3 The AI Precision Marketing Module

Basing on the Associated Models of customers’ basic and buying behavioral data, the AI precision marketing module conducts (through trial-error mechanism) most effective intelligent marketing undertakings. Such undertakings include formulating the best marketing plans or programs and carries out the marketing plans. Meanwhile, the module also constantly refines the marketing plans to persistently render best marketing results. While formulating and implementing marketing plans or programs, the module could also make proposals regarding products, prices, channels or marketing networks,

and promotion to optimize the STP (segmentation, targeting, positioning) strategies (Smith 1956; Kotler 1997) [8, 4] and the marketing mix, etc.

5 Four Critical CEES Features and Three Core Modules of OBAIM

The Four Critical CEES Features and the Three Core Modules postulated by the paper provide the structure and essence features of an Optimal Bigdata-AI Marketing System or Model (OBAIM), which shall attain the best marketing results to achieve sustainable highest possible profitability (ROE as the best indicator) for an enterprise. The structure and features of OBAIM could be illustrated by Fig. 1 as follows.

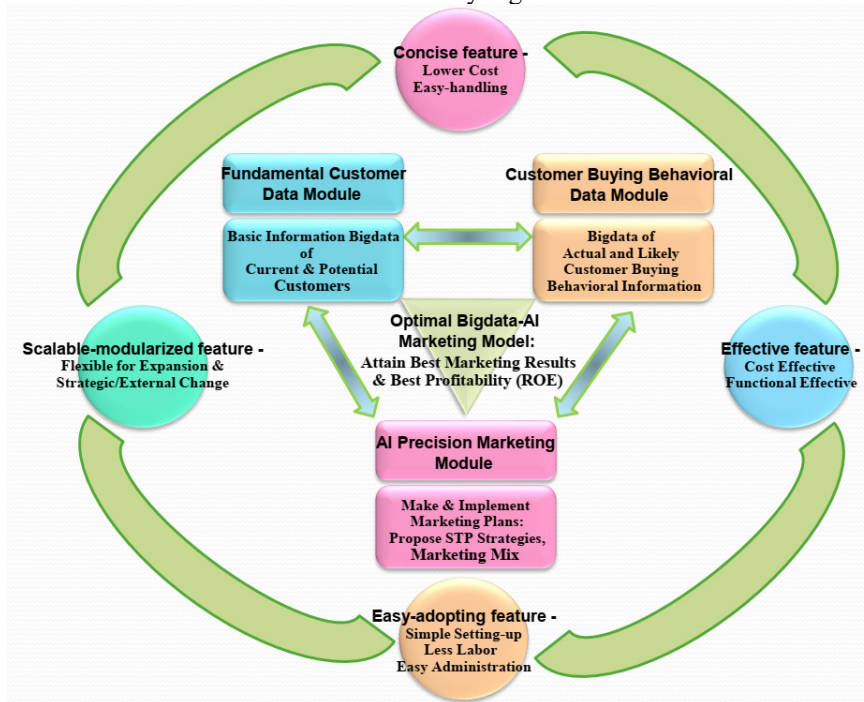


Fig. 1. Four Critical Features & Three Core Modules of Optimal Bigdata-AI Marketing Model (OBAIM)

6 Conclusions

With huge number of academic works on Bigdata-AI marketing, there seems lack of exploration on Bigdata-AI Marketing Model or System (BAIM) more viable for adoption by enterprises of different sizes. The paper makes following contributions:

- 1) Postulating Four Critical Features and Three Core Modules of Optimal Bigdata-AI Marketing Model (OBAIM), providing rigorous guidelines and framework.

- 2) Clearly stipulating sustainable highest possible profitability (ROE as the best indicator) as the objective of OBAIM. It gives a distinct goal for OBAIM.
- 3) Setting the Four Critical Features of OBAIM as concise, effective, easy-adopting, and scalable-modularized. It makes OBAIM easier to use, maintain, and optimize.
- 4) Identifying the Three Core Modules of OBAIM as the fundamental customer data, the customer purchasing behavioral data, and AI precision marketing modules.
- 5) Establishing the Fundamental Behavioral Precision Marketing (FBPM) Theory of OBAIM based on stipulation of the Three Core Modules.

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