

# **The Development of Several Methods in Performance Measurement in Industrial and Business Management Systems**

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## **Abstract**

Several strategic plans, management performance, tools, and measurements provide an overview of the business intelligence as a standard and how many standards have been achieved in organizational goals. This consideration cannot be separated from the desire to improve the quality of existing management performance and improve business skills to win in local and global business competition. Several elements of vital achievement have been indicated since the start of the business. As time goes by, the number of vital achievement factors has also increased, but it remains an important concern for business players now and in the future. This research seeks to explore and study the development of several methods of measuring performance management, strategic planning, business relationship activities, value-flow improvements, business process maturity, manufacturing control and improvement, critical success factors, enterprise architecture and components, business skills and procedures, business information and technology, value chain, etc.

## **Keywords**

Business Model; Business Performance Measurement; Enterprise Architecture; Manufacturing Production System; Supply Chain Management.

## 1. Introduction

It is important to understand the development of several existing business models in the industrial world, especially the measure of the success of the company's performance. To develop a new model that is useful for the industrial world in the future, it is necessary to know the development from the beginning of the business model. This is important so that existing business models can be developed optimally and productively. This review is intended for the development of existing business models so that they can be very useful and very effectively developed in the future.

## 2. Methods

### 2.1 Business and Management System Performance

#### 2.1.1 Balanced Scorecard (BSC)

The BSC concept was first implemented as a business performance evaluation system by 12 companies in the United States in 1992 (Kaplan and Norton, 1996). Strategy patterns and parameters of work performance, such as the balanced scorecard, play a role in developing performance appraisals by issuing financial sets that are made as ideal as possible and scales that adhere to future results (Williamson and Sprinkle, 2006). The Balanced Scorecard has main components such as:

- Determination of work results standards in quantitative or quantifiable measures.
- Evaluating continuous work results as an effort to make improvements from performance evaluations in the future.
- Comparing work results with standard performance measures will be a strategic step for the company (Asgari & Darestani, 2017).

STRATEGY MAP		BALANCED SCORECARD			
		MEASURE	TARGET	ACTUAL	PERCENT BETTER THAN TARGET
<p><i>Financial</i></p> <p>Grow new-store sales      Improve price mark-ups</p>		<p><i>Financial</i></p> <p>1. Sales margin      12.0%      13.0%      8.33</p> <p>2. Percentage of sales from new stores      30.00%      31.04%      3.47</p> <p>3. Average price mark-up growth      7.00%      7.60%      8.57</p> <p>4. Sales growth per new store      16.00%      17.11%      6.94</p>			
<p><i>Customer</i></p> <p>Attract more new customers to the chain      Increase customer satisfaction</p>		<p><i>Customer</i></p> <p>1. New relationships with target customers      120      123      2.50</p> <p>2. 'Mystery shopper' store experience rating (/10)      7.50      8.51      13.47</p> <p>3. Sales to new customers      34.0%      36.7%      7.94</p> <p>4. Customer satisfaction rating      92.00%      94.88%      3.13</p>			
<p><i>Internal Business Process</i></p> <p>Institute an original &amp; effective advertising campaign      Enhance customers' in-store experience</p>		<p><i>Internal Business Process</i></p> <p>1. Retail Industry Association sales staff knowledge &amp; attitude rating      80.00%      93.04%      16.30</p> <p>2. Advertising campaign awareness rating (/10)      8.0      8.90      11.25</p> <p>3. Sales staff non-compliance with company service code      30.0%      25.2%      16.00</p> <p>4. New advertising campaign awards      25      27      8.00</p>			
<p><i>Learning &amp; Growth</i></p> <p>Develop an innovative &amp; experienced marketing team      Increase sales staff satisfaction and morale</p>		<p><i>Learning &amp; Growth</i></p> <p>1. Awards won by marketing team recruits      49      53      8.16</p> <p>2. Sales staff training investment (\$m)      6.60      6.90      4.55</p> <p>3. Retail experience of new marketing managers (years)      17.00      17.50      2.94</p> <p>4. Employee satisfaction      72.00%      82.68%      14.83</p>			

Figure 1 The Balanced Scorecard Map and Fully Connected Steps for Common Jeans Applied (Humphreys & Trotman, 2011).

#### 2.1.2 Value Chain Reference Model (VCRM)

The process focuses on the Value Reference Model (VRM) in six business supply chain functions:

- Study/ investigation and expansion;
- Make output's pattern, treatments, or cultivates;
- Manufacture output;
- Marketing and commerce;
- Distribution or allocation; and
- Client service.

VCRM is a forward-looking assessment and observation of an industrial framework and a conceptual industrial organization (Frederick, 2014). To achieve a target where the company's architectural planning exceeds the representation of patterns in other supply chains, for example, the Supply Chain Operations Reference (SCOR), the company takes steps to have VRM tested for credibility first (Fayoumi & Loucopoulos, 2016). It is a crucial design in the production output in every company. VCRM is a method that always puts its clients first and places the customer as the main line in its reach. In addition to customers, VCRM itself is also part of the support group. This condition means that VCRM provides infrastructure and general regulations to support the company's needs and also avoid unnecessary competition.

### **2.1.3 In Rummler's Performance Management and Measurement Framework**

In measuring management performance by Rummler (Rummler, 2007), becomes an important part is the problem of information technology (I.T.) that comes as a result of the lack of knowledge about the enterprise circle. The concept of a "value creation hierarchy", consists of five levels:

- a. Super-system;
- b. Value creation system;
- c. Primary treatment system;
- d. Series of procedures; and
- e. Sub-procedure/duty/subtask.

Rummler's performance measurement, along with nine variables from the performance measurement representation, is registered as a potential industry and certainly has a track record that has greatly improved the development of the company's employee performance. This condition makes the development of a broader performance appraisal framework consider the organization an open system.

### **2.1.4 American Productivity Quality Centre (APQC): Process Classification Framework (PCF)**

Based on related sources, precisely according to the method of The American Productivity and Quality Centre (APQC) (APQC, 2009), there is a concept called the process classification framework (PCF), which is engaged in sorting and selecting and developing every step of the enterprise as well as the course of performance. This statement means it can be in the form of output models, raw material management, travel, client care, and more alternative supporting things. PCF was created in 1992. From the year since its establishment, PCF has continued to develop itself so that the desires and demands, and claims of the organization are maximized and it is still a habit that continues to be carried out to show the world the latest enterprise elements, leading indexes, and work procedures. In each category group, there is a business process category that contains a hierarchy of business processes ranging from level 0 to level 4, which can be utilized for benchmarking a company's process (APQC, 2015).

### **2.1.5 Total Quality Management (Integrated Quality Management)**

Several researchers have attempted to identify the vital achievement elements in developing and implementing TQM programs. In their 1996 earliest study, Black and Porter had to execute numerous TQM activities at the lower levels of the firm. Several studies have performed studies through aspect, and factor analysis and succeeded in determining that the vital factors of TQM indicated in the points below:

- a. Charisma and dominance of key management governance.
- b. Obligations of the quality level division.
- c. Upgrading.
- d. Output model generation (Dayton, 2001).

### **2.1.6 Six Sigma**

Performance appraisal using the six sigma method will offer several advantages such as developing company efficiency and productivity and being responsible for improving company and organizational performance. The Six Sigma method also advises companies to win the business competition amid a challenging economy. The Six Sigma method can use by organizations, MSMEs, Construction, Education, Companies, Regional and Central Governments (Furterer and Elshennawy, 2005). It is drafted that Six Sigma seeks to reduce variation and abnormality, using DMAIC (defining, measuring, analysing, improving, and monitoring), which target the problems (Nave, 2002).

Six Sigma was created to deuce major expectations. The first point that is certain is that the population in an industry recognizes and respects that digits can map the components and nature of a procedure. They recognized that a greater depth of information and document examination could provide concurrent development with graphic information painting to support fresher and more advanced objectivity. Analytical type people, for example, engineers and scientists, usually pay attention to this approach. There is another hypothesis that a decrease in the diversity of each change can impact an increase in the total performance of the organization. However, because repairs are not easy

to do directly and are carried out gradually and slowly, the financial reality wants the highest upgrade to be carried out for the minimal investment aspect. Overall procedures within the company can adversely affect the capability of the enterprise to adapt to client demands and meet output and response within the appropriate period at minimum cost. The scrutiny applied to the pattern may not cover the cost of all upgrades.

### **2.1.7 Lean Thinking or Toyota Production System (TPS)**

Lean thinking is sometimes called lean manufacturing, often referred to as the Toyota Production System. Lean concentrates on eliminating loss, not necessarily generating a product or response. One of the general measures is touch time—the number of times workers work on or touch the product. Often, the lean rests on the embodiment of pressure on the current. Among them, there are five important processes in lean:

- a. Find the type of component that can generate worth.
- b. Get a series of actions that are often considered the value of a river.
- c. Create flowing action.
- d. Pull system.
- e. Improve the process (Devane, 2004; George, 2003).

While lean is based on eliminating losses and increasing flow, it also has several secondary impacts, for example, higher levels of quality, efficient production runtime, and reduced chances of spoilage or stodgy output. The shortening of the production process results in reduced diversity. Lean's steps and methods also create several hypotheses, including that the population values the effects of outward flow, and losses are the biggest obstacle to achieving profits. Small improvements are abundant in rapid succession and more profitable than patterned studies. The impression of the effect of procedural relationships will be enhanced through value-flow improvements. Many individuals who were entangled in the action of the operation were considered respected by this study. Lean traps more sets into the value stream. The shift to a flowing mindset has profoundly transformed how people see their position in the environment and their interactions with product outcomes (Jones & Womack, 2016).

### **2.1.8 Theory of Constraint (TOC)**

TOC plays a role in the procedures and techniques that hinder the output steps running in a manufacturing system. TOC relies on system upgrades, where the system can be interpreted as a collection of interrelated techniques (Goldratt, 1994). A good correlation to describe the system is a chain: a set of mutualistic connections related to achieving organizational goals. Acceptable barriers are the fragile ends of the chain. The durability of the fragile relationship insulates and impedes the continuity of the entire chain. The TOC consists of five movements:

- a. Find out the problem.
- b. The exploitation of constraints.
- c. Subordinate other processes to the constraint.
- d. Raise the boundaries.
- e. Renew the movement (Dettmer, 1997).

This methodology positively affects the flow of products or services past the structure by focusing on constraints. Cutting losses in bottlenecks can increase throughput rates and output periods. When barriers are overcome, diversity will decrease, and quality will improve. The focus of the constraints does not require a very high ability in evaluating data or those who are very familiar with system components. Identification by each person with the ability to correct each obstacle is required. Such efforts can be localized with minimal workforce involvement (Nave, 2002).

Table 1 Comparison of Restoration Agenda (Nave, 2002)

Agenda	Six Sigma	Lean Thinking	Theory of Constraints
Theory	Minimize diversity	Erase loss	Organize constraints
Application Directives	1. Define. 2. Measure. 3. Analyze. 4. Improve. 5. Control.	1. Identify value. 2. Identify the value stream. 3. Flow. 4. Pull. 5. Perfection.	1. Identify constraints. 2. Exploit constraint. 3. Subordinate processes. 4. Elevate the constraint. 5. Repeat cycle.
Centralize	Problem-focused	Flow focused	System constraints
Assumptions	A problem exists. Figures and numbers are valued. System output improves if variation in all processes is reduced	Waste removal will improve business performance. Many small improvements are better than systems analysis.	Emphasis on speed and volume. Uses existing systems. Process interdependence.
Primary Effect	Uniform process output	Reduced flow time	Fast throughput
Secondary Effect	Less waste. Fast throughput. Less inventory. Fluctuation – performance measures for managers. Improved quality.	Less variation. Uniform output. Less inventory. New accounting system. Flow – performance measure for managers. Improved quality.	Less inventory/ waste. Throughput cost accounting. Throughput – performance measurement system. Improved quality.
Criticisms	System interaction is not considered. Processes improved independently.	Statistical or system analysis is not valued.	Minimal worker input. Data analysis is not valued.

### 2.1.9 Capability Maturity Model Integration (CMMI)

CMM capability maturity model consists of five levels of maturity and a five-level step upgrade and restoration design. Consider diverse sides of the organization (technology, community, technique, system, tactics, and supervision). In addition to Level 1, each maturity level is divided into several primary process areas. Each territory of the primary process is further divided into five sections called public components. Each specific goal implements "specific practices" that help achieve these specific goals. Common goals are common among all process areas (Godfrey, 2008).

This CMMI model describes the capability and maturity level in providing a framework for integrating improvements in several procedures territories. The key operation zone for CMMI is methods engineering, software supply sourcing, engineering and development, and integrated product and process development. Different versions of the CMMI model are publicly available, depending on how many process areas apply to the organization. Each version of the CMMI model provides two different upgrade models. These are continuous and gradual models (Mahmood & Kundian, 2015).

The levels in CMMI are capability level 0: Not comprehensive, capability level 1: ongoing, capability level 2: processed, capability level 3: determined, capability level 4: quantitatively processed, and capability level 5: improvement. These levels are included in the continuous representation of the Capabilities Maturity Model Integration (CMMI) that can be applied to organizational process improvements in individual key operation zone. These levels are a method of gradually improving the process according to the given operation territory. There are six levels of ability. Numbers zero to five. For achieving the mature software, maturity levels provide us with an evolutionary basis for development. Each maturity level provides the right layer for major process improvements (Mahmood & Kundian, 2015).

### 2.1.10 Business Process Maturity Model (BPMM)

BPMM is an ideal transcendental form that matches organizational maturity from nowadays practice with industry criteria. This statement has a big impact on the organization's continuity in making the scale of interest to develop

production procedures for output and response to the application of guaranteed tactics and fostering certain capabilities to carry out the company's enterprise tactics. With the BPMM method, organizations can smoothly organize their enterprise's procedures in a structured manner. At the same time, the company still struggles to achieve and shape the enterprise's goals and values. BPMM can also be intended to evaluate whether implementation procedures have met stakeholder requirements and expectations concerning recording procedures "as usual following reality" and conducting gap analysis (Lee, 2007).

The BPMM has a five-tier morphology like the existing CMMI and PMM. The five-tier framework is often used in every example and supports the advantages. BPPM develops and extends maturity level characteristics to entrust ideas such as the P.A. measurement & evaluation, observation & maintenance, and restoration action of organizational procedures. The effect of determining the maturity level of BPMM is with the following elements: "Focus Key Process Area (KPA)", "Measurement & Analysis", "Monitoring & Control", and "Improvement of Organizational Processes". These components are increasing, thus making it helpful in tuning the maturity level of business processes. In procedural proficiency levels for the maturity stage, organizational processes are defined processes executed within an organization to produce products and services (Lee, 2007).

Table 2 Characteristic of Business Process Maturity Level (Lee, 2007).

Illustration	Stage 2	Stage 3	Stage 4	Stage 5
Focus of KPIs	Work unit (product focus)	Organization-wide (product focus)	Organization-wide (product & process focus)	Organization-wide (competitive advantage focus)
Measurement & Analysis	Black-box with control points	Gray-box (all process areas)	White-box (statistically analyzed)	White-box (statistical predictability)
Control	Reactive	Reactive/ Adaptive	Adaptive/ Proactive	Proactive
Influence on Process Improvement	Partially controlled	Controlled	Partially systematic	Systematic

### 2.1.11 Control Objectives for Information Technology (COBIT)

By definition, COBIT is an I.T. governance system structure and proponent tools that enable managers to relate the differences between control regulations, technical problems, and enterprise risk. COBIT allows the development of clear policies and great practices for I.T. to reign in every organization. COBIT emphasizes oversight of discipline, supports organizations in intensifying the value derived from I.T., and enables business/I.T. harmony (Ridley, 2004; Larsen et al., 2006; Debraceny, 2006). However, this view does not seem to offer an expanse of ways COBIT can accompany enterprise I.T. peace balancing tactics, or I.T. security maintenance can be carried out.

Meaning of I.T. The management system issued by the Massachusetts Institute of Technology (MIT) through the Sloan School of Management Information Systems Research Center (CISR) shows that I.T. Governance defines the right to an opinion. A responsibility structure for promoting the behaviours emphasized in I.T. is used (Weil & Ross, 2004). With its fame widely known by the public as a management system tool, COBIT is often defined as a tool to achieve management goals. This COBIT classification only relies on management aspects (such as opinion determination) and leaves the supremacy of the procedural level, which is the main work structure of COBIT. As Curtis and Wu (2000) say, COBIT was created to "bridge the gap" between enterprise control forms and I.T. control forms. This goal has been followed by the much-loved review that COBIT is the original management tool used to map neat finances and I.T. management system by first management (Goldman & Ahuja, 2011).

## 2.2. Business Building Modeling

### 2.2.1. The Open Group Architecture of Framework (TOGAF)

TOGAF is a standard industrial architecture business structure that any company related to corporate architecture can be applied independently to be served in the (Open Group). Within a certain period, the United States Department of Defence (DOD) initiated the development of Enterprise Architecture as a subject. As desired, DOD increased its main components mostly in the start-up Enterprise Architecture for work structure. The Technical Architecture Structure for Information Management (TAFIM) is one of the earliest start-up enterprise architecture for work structures. TAFIM imposes regulations and teachings on the creation, expansion, and diffusion of information technology in each DOD. However, for some reason, there are major defects in TAFIM (Perks and Beveridge, 2003). Command & Control, Communication and Computers Intelligence, Surveillance and Reconnaissance (C4ISR) has

won TAFIM as the most widely applied and implemented enterprise architecture structure in DOD. The current TOGAF model has improved and realized some of TAFIM's ideas.

Business Continuity takes on a temporary aspect of architectural continuity that advances guide changes in architectural artefacts over time as Business Architecture Initiatives move through the Architecture Development Method (ADM) phase. According to the TOGAF breakdown, each repetition of the ADM must provide a definite opinion, namely (Saha, 2004):

- a. The scope of the enterprise to be defined,
- b. The level of detail to be set,
- c. The amount of time and architectural capital will be provided for the organization's enterprise performance.

### **2.2.2. Zachman Framework for Enterprise Architecture (ZFEA)**

ZFEA in the theory of the existence of enterprise components. ZFEA is a matrix with an interpretation of 66, which means that the column can tell the elementary basis of a simple relationship or problem, namely: why, who, when, where, how, and what. Zachman also maps the ZFEA as a system or structure because it reflects the deviation between two historical categories that have been linked to each other for thousands of years. Meanwhile, the line section tells about the reification of abstract ideas into the essence through a foreign design perspective (Pereira, 2004).

A common misconception about rows is that the bottom row is more accurate than the top row or that the bottom row tells a deeper general picture of the top row. This misunderstanding does not match the reality because each line must tell each company's system design from a certain angle. Different layers of components can occur in a certain line. The branch between interrogation and change in ZFEA is the simple grouping and component structure. Each location in the ZFEA is a normalized (or simple) reality so that no separate particular fact can come from the plural cell. According to Zachman (1987), a full matrix is certainly a total collection of descriptive representations relevant to describing a company. In particular, in developing a suitable model of an enterprise, it is necessary to combine primitive elements. In general, business architectural design can also be interpreted as a consolidation or combination of basic primitives and knowledge in ZFEA. From cell primitives, all-composite models that describe an enterprise can be constructed by combining primitive models in rows. The business enterprise architecture means a collection of branches between abstractions, views, and the corporation itself.

### **2.2.3. ArchiMate**

ArchiMate is an Open Group exemplar for design enterprise architecture, emphasizing the enterprise view. This indirect means that architects could form ArchiMate to model, among other things, an organization's products and services, by these products services, are determined and dispatched through business processes, and how, conversely, practices are supported by the information systems and underlying I.T. infrastructure. A comprehensive angle on the company advises the adjustment process, provides insight into the cost structure, and more. Due to its inherent holistic nature, ArchiMate does not have particular guidelines for modelling companies from an amount exchange perspective. The value viewpoint describes the conversation of values among actors participating in the value network, informing what each actor attempt to others and what could receive in return. For instance, an online music store sends 'L.P.' to customers and receives 'Money' as compensation. Such a perspective would complement ArchiMate well in the sense of providing an economic rationale, in terms of value exchange, for most information operations, such as business processes and I.T. infrastructure, expressed in the ArchiMate model. To address the lack of a value perspective in ArchiMate, we explored in a previous work a formal transformation from the established value modelling technique e-value to ArchiMate. On the one hand, we find a conceptual overlap that allows us to make formal transformations between these techniques. However, e3 value and ArchiMate alter substantially the equalization of knowledge expressed in these images (Jonkers, Proper & Turner, 2009).

The ArchiMate figure dialect was matured to supply a uniform depiction for engineering descriptions (Jonkers, Proper & Turner, 2009; Open Group, 2012). The ArchiMate amplify focuses on supplying space integration through building basic lingos and visualization strategies. They depict these spaces and their associations, giving models with rebellious that reinforce and progress engineering forms (Jonkers, Proper & Turner, 2009; Open Group, 2012, Lankhorst & Archimate team, 2004). In brief, ArchiMate has finished up the open standard for building modelling inside the Netherlands; it is presently too well known inside the international E.A. community, getting to be the current TOG standard (Jonkers, Proper & Turner, 2009).

### **2.2.4. Business Motivation Model (BMM)**

In TOGAF's see, E.A. (Endeavors Design) is partitioned into four: building spaces: commerce, Information, application, and innovation. These spaces depict the framework design that bolsters the venture and adjust to the

"How, What, Who, Where, and When" column of the Zachman system (Zachman, 1987). In turn, they don't cover the components that spur suitable plan and operation with Zachman's "Why" Column. These components have a place in the so-called Trade Inspiration Demonstrate characterized by the Protege Administration Bunch (OMG) as "the conspire and structure for creating, communicating, and overseeing a trade arrange in an organized way" (Kinderen, Gaaloul, & Proper, 2014).

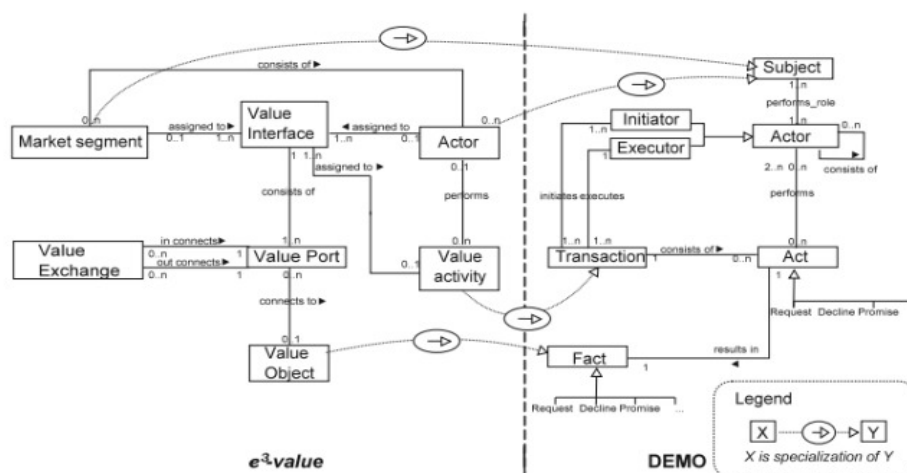


Figure 2 Mapping of e3 value and DEMO meta-models Kinderen, Gaaloul, & Proper (2014)

The Business Rules Group (BRG) created a Trade Inspiration Show, afterwards acknowledged as an OMG determination. BMM recognizes the components that persuade the arrangement of trade arrange, recognizes and characterizes its components, and appears how interrelated all these variables and components are. There are two fundamental ranges of BMM. To begin with, we have Closes and Implies, where Closes are the things that the company needs to attain (as objectives and goals), and Implies the things that will be utilized to realize these Objectives (as techniques, strategies, commerce approaches, and commerce rules). The moment is the Influencers who frame the commerce arrange components. An evaluation is made approximately the effect of those Influencers on the Goals and Means (e.g. strengths, weaknesses, opportunities, and threats) (Jayaweera & Petit, 2014).

### 2.2.5. BMM with BOCR

Currently, BMM uses SWOT but does not execute BOCR. However, it is relatively easy to encapsulate BOCR into a BMM as an add-on module or a SWOT replacement. The theoretical foundations of BOCR are already well established (Saaty, 2001; Saaty, 2004; Saaty, 2006). BMM epitome requires building up useful connections between modules, counting BOCR, BMM, and other sub-modules (Feglar et al., 2006).



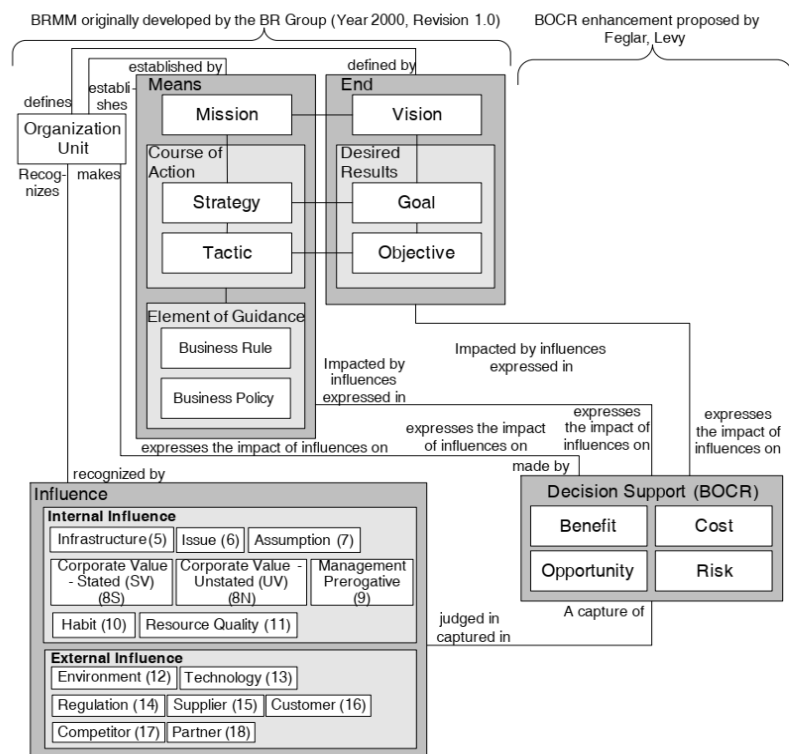


Figure 3 BMM with BOCR functionality (Feglar et al., 2006).

### 2.2.6. Business Process Modelling Notation (BPMN)

The Business Process Management Initiative (BPMI) has created a standard Trade Prepare Modeling Documentation (BPMN). This detail speaks to more than two long times of endeavours by the BPMI Documentation Working Bunch. The most objective of BPMN's endeavours is to supply documentation that's simple for all trade clients to understand, from the commerce investigator who makes the beginning draft of the method to the specialized engineer capable of actualizing the innovation that will perform the method and, at long last, to the individuals included. Commerce individuals who will oversee and screen the method. BPMN will moreover be upheld with an inside show that permits the creation of BPEL4WS executables. Hence, BPMN makes a standard bridge for the aperture between commerce handle plan and prepare usage. BPMN characterized a Business Process Diagram (BPD) based on a flowchart technique adapted to create a graphical model of business process operations. A Business Process Model, then, is a network of graphical objects, which are activities (that is, jobs) and control flows that define the order in which they are performed (White, 2007).

One of the drivers of the advancement of BPMN is to form a straightforward instrument for modelling commerce forms while handling the complexities characteristic of trade forms. A BPD comprises a set of realistic components. These components permit the simple improvement of straightforward charts that will be recognizable to most commerce investigators (for case, flowchart charts). Components were chosen to recognize one another and take advantage of shapes commonplace to most modellers. For case, exercises are rectangles, and choices are jewels. The approach to bargain with these two clashing necessities is to organize the visual angles of the documentation into particular categories. It gives a little set of documentation categories so that BPD readers can effectively recognize the fundamental sorts of components and get the chart. The four basic elements are (Scheuerlein et al., 2006):

- a. Flow Objects
- b. Connecting Objects
- c. Connecting line
- d. Artefacts

### 2.2.7. Business Model Canvas (BMC)

BMC may be a strategic administration apparatus that permits you to imagine and evaluate your commerce thought or concept. The BMC is delineated as a one-page sheet containing nine boxes speaking to the different essential components of commerce. The Commerce Demonstrate Canvas beats the awkward, and as a rule, wordy conventional commerce arranges by advertising a less demanding way to get the centre components of the trade. BMC makes a difference give a short diagram of the commerce show and needs superfluous subtle elements

compared to conventional commerce plans. The visual nature of the Trade Demonstrate Canvas makes it simpler for anybody to reference and get it. BMC makes it less demanding to alter and effectively share with representatives and partners. In expansion, the Commerce Demonstrate Canvas can be used by expansive companies and start-ups with, as it were, several representatives. It clarifies how different viewpoints of commerce are related to each other. The BMC template could be utilized to direct conclusion sharing and dialogue sessions on viably characterizing the business model (Rytkönen & Nenonen, 2014).

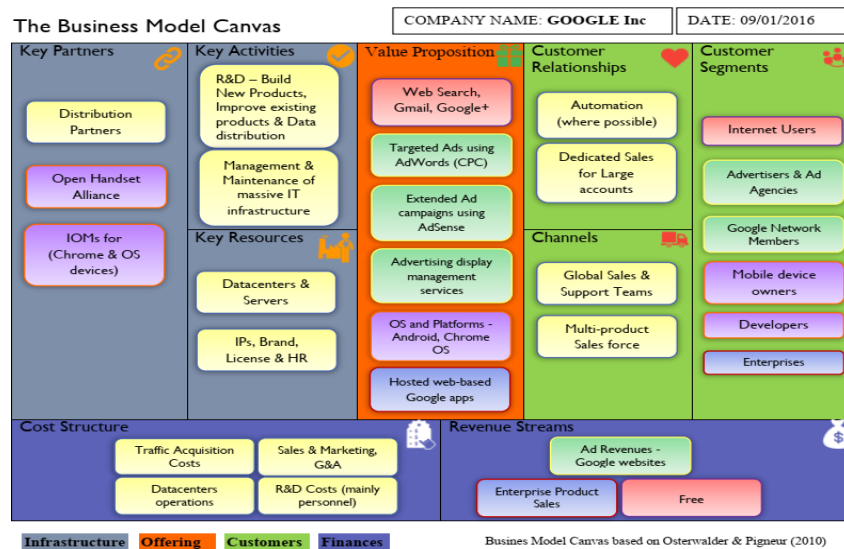


Figure 4 Business Model Canvas with Google Case Study (Belmejdoub, 2016).

There are nine building squares within the commerce show canvas: client esteem suggestion, client portions, channels, client connections, income streams, key assets, key accomplices, key exercises, and taken a toll structure. Whereas filling out the BMC, you'll brainstorm and inquire about each component. The Information collected can be put on any significant part of the canvas, so plan the BMC after you begin making it. After making the Commerce Show Canvas takes put, the company can separate it from other companies and partners and get criticism. The Trade Show Canvas may be a living archive. In this manner, it is essential to audit it and guarantee that it is significant, upgraded, and precise after completing it (Ladd, 2018).

### 2.2.8. Multi-Perspective Enterprise Modeling (MEMO)

MEMO (Multi-Perspective Enterprise Modelling) is an approach for endeavour modelling (Frank, 1999) that endeavours a set of specific perceptible modelling dialects at the side of a handle figure and strategies and heuristics to bolster problem-specialize investigation and plan. The expression permits the modelling of various interrelated conditions of a venture. They are coordinated on a tall etymological level. Notice models are to convey two standards. Firstly, machine-to-progress data frameworks are well coordinated with a company's approach and organization, furthermore, as an "endeavour pattern" back. Its instantiation would permit for a steady representation of all related perspectives of an undertaking (methodology, commerce forms, organizational structure, trade substances, trade rules, etc.), thus serving as an "organizational memory" (Ackerman, 1994) or a corporate information base.

Contrastingly, a specific approach for multi-perspective endeavour modelling (Reminder) is conferred in detail. It substantiates the wide contemplations by suggesting a comprehensive structure for an endeavour modelling approach and a comparing apparatus design. Too, Reminder speaks to the extent of real and planned scenarios. At last, the strategy appears to manage a building approach to progress a venture modelling with the concepts that conclude the decision-making handle (Frank, 2002; Frank, 2014).

### 2.2.9. Capability Oriented Enterprise Modeling (COEM)

Enterprise abilities are not noted with the organization's special jobs or how or where they are done, but with the underlying capabilities, these jobs need and their linked resources. Enterprise abilities are applied to promote the strategic factors of the business blueprint, creating the bridge between planning and implementation and promoting the establishment of a 'strategic architecture'. A business's enterprise abilities are applied to provide its value propositions and associated goods and services and finish all associated jobs in the business process. Enterprise abilities are made by joining the resources required by the capability-skills, knowledge and experience, behaviours, technology, infrastructure, Information, processes, materials, and location. The most important one, the total is bigger

than the divisions. Enterprise abilities might live physically but sometimes are only manifested through the goods, services, and tasks or jobs they are implemented (Beimborn & Homann, 2005).

When developing the committees as a set of business abilities and providing the power bases they plan on. There has been a need to implement them to launch a more accurate side of the business system outline design. One of the most important things is that business abilities can be implemented across multiple Value Streams and share potential resources with other business power and procedures. They are generally applied in the form of one. Therefore, enterprise capabilities are not fit for doing detailed planning. From this declaration, it can be resumed that the opposite is correct, where the 'anchor design' should be changed from enterprise capabilities to visual Value Flow. The design of the processing activity must follow each Value Stream and the responses and enterprise steps included therein. The desire to design from the Value Stream on the respective enterprise capabilities that have been reserved as an important part (WHAT) and define (HOW) things can be coordinated. The case will serve as the capital for the renewal of the Case Administration. The general capital is specifically designed to manage the "Case Administration" set of business capabilities. The Case Administration update will be reflected in the future for the special terms of the Award Stream (Beimborn & Homann, 2005).

#### 2.2.10. Model-Based Enterprise Engineering (MBEE)

A Model-Based Enterprise Engineering structure assigns frameworks and simulation technologies to incorporate and administer all of its technical and enterprise processes related to production, assistance, and product withdrawal. By employing the product and process models to describe, eliminate, control, and manage all activity processes and applying science-based simulation and analysis devices to optimize techniques at every step of the product lifecycle. It will be achievable to substantially curtail the time and cost of product innovation, development, production, and support (Frechette, 2011). The core MBE tenet is that data is constructed once and directly reused by all data consumers. Clearly define a model-based enterprise. It is necessary to apprehend that many different models are utilized in enterprise processes. Frameworks are utilized to achieve some discrete tasks in business circumstances. The relationships between enterprise functions and how the models are applied in the business processes must be chosen as a model-based enterprise.

#### 2.2.11. System Dynamics (S.D.)

System Dynamics modelling develops a precious methodological contribution to enterprise framework (Bianchi et al., 2015; Schaffernicht & Groesser, 2016; Hajheydari and Zarei, 2013). System Dynamics structure was established in year 1950s and early 1960s at the Massachusetts Institute of Technology by Jay Forrester. It is a knowledge for modelling and provoking complicated physical and social systems and encountering the frameworks to develop strategies for management and change (Forrester, 1997). The fundamental of System Dynamics, the framework gives a feedback point of enterprise systems, known as a closed borderline, i.e. realizing all the main elements affected to the phenomenon being explored. Specifically, SD modelling is the adoption of a map system structure to catch on and deliver a meaning of behaviour driving processes and the calculation of the link to provide a variety of equations that establish the foundation for provoking possible system behaviours over time. S.D. frameworks are robust tools to assist the understanding and leveraging of the feedback interrelationships of complicated management systems. The framework also provides an operational methodology to assist enterprise blueprint and decision-making (Bianchi, 2012). Practically, business people can elaborate these frameworks to examine alternative scenarios and investigate what may have occurred under a set of variant past and future beliefs and across some decisions (Sterman, 2001).

### 3. Results and Discussion

Some models had been developed since 1926 for Management models. The detailed Management model development can be seen in table 3.

Table 3 Summary Table of Performance Management Models

No.	Year Establishment	Author	Description	Method
1	1926	Dayton, (2001)	Integrated Management with critical success factors in management quality improvement,	Total Quality Management (TQM)

No.	Year Establishment	Author	Description	Method
			knowledge, product design (Dayton, 2001).	
2	1930	Daniel James Gudenau (2018)	The Value Stream Analysis of Production System and Implementation Plan of The Company's Recommendations for Improvement	Toyota Production System (TPS)
3	1958	Ulrich Frank (2002)	Contrastingly, a specific approach for multi-perspective endeavour modelling suggests a comprehensive structure for an endeavour modelling approach and a comparing apparatus design.	Multi-Perspective Enterprise Modeling (MEMO)
4	1959	Radzicki & Taylor (2008)	S.D. is a piece of knowledge for modelling and provoking complicated physical and social systems and encountering the frameworks to develop strategies for management and change	System Dynamics (SD)
5	1979	Lin Jones, Meryem Demirkaya, and Erika Bethmann (2019)	The Development of Global Value Chains (GVCs) Model	Value Chain Reference Model
6	1980	Pereira & Sousa (2004)	Logistics Classification and Descriptive Representation of a Company, In Different Dimensions and Perspectives	Zachman Framework for Enterprise Architecture (ZFEA)
7	1984	Goldratt, 1994	System improvement to overcome constraints in the flow of products or services through the system by increasing throughput	Theory of Constraint (TOC)
8	1986	Nave, 2002	Performance appraisal and organization performance for increasing company efficiency and productivity in quality	Six Sigma
9	1987	Godfrey, 2008	Methods of Dealing with The Increasing and Competitive Demand for Software Development.	Capability Maturity Model Integration (CMMI)
10	1992	Mantje, T., Smit, T., Sterk, D., & Mens, J. (2016).	Sorting, selecting, and developing every step of the enterprise and the course of performance. Then PCF shows the latest enterprise elements, leading indexes, and work procedures.	American Productivity Quality Center: process classification framework (PCF)
11	1992	Kaplan and Norton, 1996	A business performance evaluation system and developing performance	Balance Score Card (BSC)

No.	Year Establishment	Author	Description	Method
			appraisals by issuing financial sets that are made as ideal as possible and scales that adhere to future results	
12	1995	<u>Geary A. Rummler (2007)</u>	Rummler's performance measurement and nine variables from the performance measurement representation are registered as potential industries.	Rummler's Performance Management
13	1995	Saha (2004)	TOGAF is a standard industrial architecture business structure that any company related to corporate architecture.	The Open Group Architecture of Framework (TOGAF)
14	1996	Ridley, 2004; Larsen et al., 2006; Debraceny, 2006	I.T. governance system structure and proponent tools enable managers to relate the differences between control regulations, technical problems, and enterprise risk.	Control Objectives for Information Technology (COBIT)
15	2004	Lee, 2007	BPMM is an ideal transcendental form that matches organizational maturity from nowadays practice with industry criteria. To develop production procedures for output and response to the application of guaranteed tactics and foster certain capabilities to carry out the company's enterprise tactics.	Business Process Maturity Model (BPMM)
16	2004	Feglar et.al, 2006	Decision Analysis Methods and Systems Techniques for Managing Large-Scale Companies in A Volatile World. BMM uses SWOT and executes BOCR	Business Motivation Model and Benefits, Opportunities, Costs, and Risks Modeling (BMM with BOCR)
17	2005	White, 2007	BPMN characterized a Business Process Diagram (BPD) based on a flowchart technique adapted to create a graphical model of business process operations.	Business Process Modelling Notation (BPMN)
18	2005	Rytkönen & Nenonen, 2014	BMC may be a strategic administration apparatus that permits you to imagine and evaluate your commerce thought or concept. The BMC is	Business Model Canvas (BMC)

No.	Year Establishment	Author	Description	Method
			delineated as a one-page sheet containing nine boxes speaking to the different essential components of commerce.	
19	2005	Frechette, 2011	Management of Technical and Business Processes Related to Production and Product Life Cycle Support	Model-Based Enterprise Engineering (MBEE)
20	2007	Zachman, 1987	BMM recognizes the components that persuade the arrangement of trade arrange, recognizes and characterizes its components, and appears how interrelated all these variables and components are.	Business Motivation Model (BMM)
21	2009	Jonkers, Proper & Turner, 2009	The ArchiMate figure dialect was matured to supply a uniform depiction for engineering descriptions. The ArchiMate amplify focuses on supplying space integration through building basic lingos and visualization strategies that depict these spaces and their associations, giving models with rebellious that reinforce and progress engineering forms	ArchiMate
22	2015	Beimborn & Homann, 2005	Having modelled the organization as a set of Business Capabilities and identified the resources they require, there is a tendency to want to use them to drive more detailed aspects of enterprise/operating model design. But it's important to remember that Business Capabilities can be used across multiple Value Streams and share resources with other Business Capabilities, including processes. They are typically applied in combination. Given this, Business Capabilities are not well suited to driving detailed design.	Capability Oriented Enterprise Modeling (COEM)

#### 4. Conclusions

At the beginning of the 20th century, the model created for the company was a model of measuring company performance and how to make companies more efficient and improve work performance. This can be seen in the TQM, TPS (lean thinking), TOC, Six Sigma models, and Value Chain. Then the presence of BSC saw the company's performance also in the portrait of the financial sector, and Rumler Performance Management too. Then a model is formed by building a framework or relationship between each factor and department that builds a company's success, both open and closed-loop such as System Dynamics, Zachman Framework, APCQ: PCF, Togaf, Archimate. With the rise of sophistication of Information technology, models are built in the IT field such as Cobit. The next development of the company models is the development of motivation, capability, and the company's maturity model.

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