

Business Models and The Art of Modelling

By Ronald P Willis | 1 May 2018

Facebook's business model is much discussed and perhaps much misunderstood. Do you understand your business model? Time and effort can be wasted working in an organization where the model is weak and the leaders are unsure what to do about it. You may even have great technology, super-smart people and a sound strategy but it's not enough. Henry Chesbrough wrote, "*a mediocre technology pursued within a great business model may be more valuable than a great technology exploited via a mediocre business model... so it makes sense for companies to develop capability to innovate their business models*" (1). Recently I met Matthew Kelly at MATTER, the health-tech incubator in Chicago, and talked about the Business Model Canvas. This, and thinking about the startup models, led me to contact Whynde Kuehn about Business Architecture. In this article, I describe the leading business models, the frameworks used to create individual models for organizations. They seem to fall into four related families I'm calling engineers, doctors, geeks and architects. My aim is to help you to think about and improve your organization's model and how to use to improve your organization or startup.

I remember playing with spreadsheets for the first time. After the chore of pen, paper and calculator I was in love with SuperCalc and modelled an Extended Trial Balance. With a little more information, I could forecast next year, flex the results and draw graphs. This model of a business made me feel I understood what made it tick and could predict its future. When combined with a Business Plan you had all that's needed to grow a business; ah the naivety of youth.

Entrepreneurs running organizations have always had an implicit idea of how they are trying to make money; their business model. Over two hundred years ago the potter Josiah Wedgwood built a highly successful example with novel components in technology, division of labor, management accounting and marketing. Over a hundred years, people such as Frederick Taylor and Henri Fayol, tried to understand how organizations function. But it was not until the mid 1990's that the term 'business model' started to be used and that was by venture capitalists, entrepreneurs and journalists during the internet gold rush when it seemed like any half-baked idea connected to the internet and hyped could attract funding. The geeks led the way and it took a few years for the academics to catch up. In 2002, Joan Magretta wrote "*They are, at heart, stories that explain how enterprises work... the underlying economic logic that explains how we can deliver value to customers at an appropriate cost.*" (2)

A model of an organization is an abstraction, a simplification of reality used to aid understanding and to help start or improve an organization. The generic approach to modelling, creating a model, is to identify and define variables (components, bricks, blocks) and how they interact or link. Too few and the model is unlikely to capture enough reality to be useful, too many and it becomes difficult to use. Both quantitative and qualitative approaches can be applied and combined. An ideal business model should be like a blueprint of a house or an engineer's drawing of a bicycle such that with skill it should be possible to build it and live there or pedal away. But organizations are messier, more complex than buildings and machines so we must retreat a little from ideal to useful.

BUSINESS MODELS

A useful business model should include;



- Variables about the product and/or service
- Variables for the machinery to create and sell the product
- Descriptions of how the variables interact
- Financial variables for making a profit

It should be clear how to build the model (modelling) and there should be evidence on how well it works. Having reviewed the literature, summaries of thirteen leading framework models are given below. They are all to some degree related but four metaphors emerge; the engineer looking at improving systems, the company doctor diagnosing problems and proscribing solutions, the smart geek with innovative technology businesses and the architect re-modelling the bricks and mortar of the organization.

1. Quality Improvement (QI) Model

Back in 1924 Walter Shewhart, an engineer and physicist, wrote a memo to his boss at Western Electric on improving product quality by reducing variation, starting what is now called statistical process control. This influenced W. Edwards Deming and they designed the Shewhart Plan-Do-Study-Act learning cycle. In 1950 Deming and others were invited by the US Army to help with the economic recovery in Japan (3). At the same time Eiji Toyoda and Taiichi Ohno were developing the Toyota Production System with a focus on waste elimination and continuous improvement (4). But after the war, the US economy boomed and QI was largely forgotten in favor of strategy and marketing. The 1970's oil crisis brought a painful end to that and in 1980 NBC aired "If Japan Can, Why Can't We?"; Deming is rediscovered and QI methods were slowly adopted across the USA & UK. He published a full organizational system with four components: appreciation for a system, knowledge of variation, theory of knowledge and psychology. In 1986, Deming's methods, especially statistics and experimentation, were refined by Motorola in the USA and called Six Sigma. This focus on quality and low cost has been the model for success in South Korea (Samsung, LG) and the breathtaking development of industry in China.

2. Enterprise Architecture (EA)

While the engineers and doctors were developing their models, there was a parallel approach in the "old school" IT sector with architecture, bricks and mortar, as the metaphor of the relationship between business and IT. Whilst the other approaches predominately use narrative, here the aim is for system analysts to codify the organization so it can be represented as data. In the 1960s IBM had a team led by Duane "Dewey" Walker developing Business Systems Planning as an attempt to capture the essence of organizations on mainframe computers. America could put men on the moon so this may have seemed achievable. It morphed and over the years became known as Enterprise Architecture with John Zachman having a prominent role. In 1986 the PRISM Enterprise Architecture Framework was published with 4 domains (variables); 1 Organization, 2 Data, 3 Applications and 4 Infrastructure (technology). There were also four architecture types describing how to do it; Principles, Standards (for implementation), Inventory (the current baseline state) and Models (of the desired or target state). The US government was interested and in 1989 the National Institute of Standards & Technology (NIST) refined the model into five architectural layers by splitting data into information architecture and systems. At the pinnacle of the pyramid

is the organization layer aka Business Architecture driving the other layers (5). Definitions of EA are constantly being changed and a recent one is: “*Fundamentally, EA is a structure (both words and pictures) of the people, processes, and systems required to efficiently achieve important business outcomes of the enterprise. These structures are not the “as is” architecture; rather, they are the “to be” architecture.*” (6) EA continues to be developed, promoted and applied by consultants and technology vendors worldwide to help deliver IT solutions and has been popular with government and large organizations but critics (7) see it as slow, ineffective and wasteful.

3. Leavitt: Diamond Model

1965 and The Beatles are number 1, Muhammed Ali is world boxing champion and Harold Leavitt publishes his organizational change model (8). There are four interdependent variables; tasks (to make the product), people, structure (authority systems, communications and work flow) and technology. He argued a change in one variable affects the others with the typical intervention (e.g. the introduction of new equipment) aiming to affect the task variable and therefore the product. The variables are all internal to the organization with nothing, for example, on customers. There is no mention of startups as the focus is to make changes, hopefully improvements, to existing organizations. The work makes no mention of the progress made by the quality gurus but Leavitt provides the template for future models with the physician approach of diagnosing the problems Dx and proscribing a solution Rx.

4. McKinsey: 7S Framework

Jump to 1980, the Rubik’s cube is introduced, the Miracle on Ice takes place at the Winter Olympics and the McKinsey 7S Framework is published (9). It’s an easy to remember model with seven variables, or levers in a hexagon shape; structure, skills, style, staff, systems, strategy and shared values in the middle. They argued US managers were too focused on apparently modifiable ‘hard’ variables, especially structure so they emphasize the, apparently new at the time, Japanese preference for ‘soft’ variables. The idea is that all variables must change to form a congruent business system although little guidance is given on how to do that. External variables were not considered as important as the internal variables and there is no mention of the product. This model was hugely influential as people went *In Search of Excellence...*

5. Lean

In 1991, firms in the USA learnt more about quality management when it was renamed “Lean” (10), based on work by Krafcik. It is the combination of Deming’s focus on experimentation and Toyota’s obsession with waste elimination. Womak and others now describes a Lean Transformation Framework with five dimensions (variables): 1 Value-driven purpose, 2 Process Improvement, 3 Management system, 4 Capability development and 5 Basic thinking. He states, “*Fundamentally, the process of successful lean transformation rests on applying PDCA cycles of experimentation (the art and craft of science) at every level, everywhere, all the time.*” (11) The lean model has been widened into the tech and service sectors including healthcare.

6. Burke-Litwin(B-L): Causal Model of Organizational Performance and Change

1992 Bill Clinton becomes President, Neil Papworth sends the first text “Merry Christmas” and a detailed model is published (12). Earlier versions were developed in the 1970’s and 80’s by Litwin and others culminating in this version. Presented as a diagram with 12 variables, they propose there is a causal chain with variables at the top (e.g. leadership) having a stronger influence than those near at the bottom (e.g. skills). It includes, for the first time, the external environment as the input at the top of the model. Then come three transformational variables (meaning there is a focus on leadership), mission & strategy, leadership, culture. Below that are seven transactional variables (meaning there is a focus on management); structure, management practices, systems,

work group climate, skills / job match, motivation, individual needs & values. Together they impact the twelfth variable, performance, the outputs of the organization.

7. Drucker: Theory of the Business

1994, Justin Bieber was born, Nelson Mandela becomes President and the wise old man of management, Peter Drucker published his Theory of the Business (13) and, whilst not using the words business model, he largely captured the essence of what it is now thought to mean. He does this in writing that leaders are required to have assumptions on three variables; the environment (society, markets, customers, technology), mission and core competences. Taken together, this describes what a company gets paid for. He proposes four specifications for a valid theory of the business. 1. The assumptions on the three variables must fit reality. 2. They must fit each other. 3. The theory must be known and understood by staff. 4. It must be tested continuously.

8. Timmers: Business Models for Electronic Markets

1998, only 20 years ago and the first modern definition of a business model comes from a European Union official (14). The internet boom is raging and existing organizations are in a state of panic trying to develop a viable online presence while the geeks with their startups are living the dream. He defines a business model with three variables: 1. An architecture for the product, service and information flows, including a description of the various business actors and their roles. 2. A description of the potential benefits for the various business actors; and 3. A description of the sources of revenues. In addition, he says it is necessary to know the marketing strategy of the firm. Subsequent authors include marketing strategy within a business model with terms like customer relationships, segments and channels. He then looks at value chains to identify types of business model which he categorizes in two ways, degree of innovation and functional integration. Timmers deserves credit for proposing the first modern framework and inspiring what followed.

9. Business Architecture

The top layer of the EA model is Business Architecture and in the 1980's business architecture evolved within the IT consultancy world, borrowing ideas around strategy, change management and other influences. One significant milestone was in 2001 when DePaul University ran a Business Architecting course taught by Paul A. Bodine within its MBA program in Chicago. (15) The Business Architecture Guild® (16) was founded in 2010 with the mission to formalize and professionalize the business architecture discipline. The Guild established ten domains making up an organization's business architecture: An inner core of 1: capabilities, 2 organization, 3 information and 4 value streams. Surrounded by extended domains of: 5 stakeholders, 6 policies, rules & regulations, 7 vision, strategies & tactics, 8 products & services, 9 initiatives & projects and 10 metrics & measures.

They state, "*Business Architecture represents holistic, multidimensional business views of capabilities, end-to-end value delivery, information, and organizational structure: and the relationships among these business views and strategies, products, policies, initiatives, and stakeholders*".

They are positioning business architecture in a business-focused way in the executive arena and separate from the technology division of an organization but business architecture remains in a state of evolution with numerous other definitions and claims in this evolving area. Business architecture has momentum, the profession is growing and may well join the ranks of accountants and lawyers in time.

10. Chesbrough & Rosenbloom: Capturing Value from Innovation

2002 and the dotcom bubble had burst when these two researchers explored the role of business models in capturing value from technology based on the amazing work done at Xerox PARC (17).

They offered their own definition with six variables: 1 the value proposition, 2 market segment, 3 structure of the value chain, 4 cost structure and profit potential, 5 position of the firm within the value network, 6 competitive strategy. They used this to explain how Xerox built a hugely successful business model based on photocopiers and laser printers in the 1960s and 70's. Xerox then developed many of the foundational technologies of desktop computing in the 1980s. Importantly, in this paper they argue the successful old business model constrained the Xerox leaders from exploiting these new technologies. This created the space for spinoff startups and Apple with new more viable models; and the rest is history. ...

11. Osterwalder: Business Model Ontology & Canvas

In 2004 Alex Osterwalder wrote an important paper, his PhD thesis (18), including a case study on the Montreaux Jazz Festival. He defined a business model (in part) as “*a conceptual tool that contains a set of elements and their relationships and allows expressing a company's logic of earning money*”, with nine building blocks (variables); value proposition, target customer, distribution channel, customer relationship, value configuration, capability, partnership, cost structure and revenue model. The paper excluded elements related to competition and implementation and excluded the modelling process. The concepts were clarified in 2005 (19) and rebranded as the Canvas in 2008 with the building blocks updated and symmetrically presented on a single page; 1 value proposition, 2 customer segments 3 distribution channels, 4 customer relationships, 5 key resources, 6 key activities, 7 key partners, 8 revenue streams and 9 cost structure. In 2010 the Business Model Generation book was published (20) and the modelling process explained, the idea is to draft a hypothesis about each component, how they relate to each other in the model and test them with colleagues and in the market. This helps to clarify how value is created, delivered and captured. The Canvas feels like the pinnacle of the Geek approach and it is widely used.

12. IBM's Component Business Modelling (CBM)

EA and BA is practiced in thousands of organizations but having been in at the start, IBM have branched off and developed a proprietary approach. In 2005 component business modeling was described as an aggregation of models, methods and techniques that are designed to organize, understand, evaluate, and ultimately, transform an enterprise (21) A business component or building block has five dimensions: 1 Purpose, 2. Activities, 3 Resources, 4 Governance, 5 Business services. In the CBM view, an enterprise is simply a collection of business components that are “networked” together (22). It was presented as a 5x3 grid that can be summarized, mapped, on a sheet of paper. The five along the top are Manage, Design, Buy, Make, Sell. Vertically are Direct, Control and Execute (23). It is not easy finding examples so for now, CBM gets a thumbs-down from me but as they used to say, “*Nobody ever got fired for choosing IBM.*”

13. Christensen et al: Reinventing your Business Model

2008 saw start of the global financial crisis and Barack Obama elected. It was also when three consultancy doyens, Johnson, Christensen (aka Mr. Disruptive Innovation) and Kagermann caught up with the geeks (24). They argued that successful companies already operate according to a business model that can be broken down into four interlocking elements:

1. a *customer value proposition* (CVP) that fulfills an important job for the customer in a better way than competitors' offerings do;
2. a *profit formula* that lays out how the company makes money delivering the value proposition
3. the *key resources* (such as skilled staff, technology and brand reputation)
4. *key processes* (such as workflows, training and planning) needed to deliver that proposition.

It is a thoughtful and coherent mix of variables in earlier models. Importantly, they propose two specific ways to use the model. Think of it like a clock face starting with the CVP at 12, profit formula at 3, processes at 6, and resources at 9. Always starting with the CVP, to compete

primarily on differentiation / quality, go counter-clockwise. To compete on price, go clockwise. By modelling your existing organization, you are better able to see how it works and whether it is worth the effort to reinvent it.

DISCUSSION

Which one is best for you?

Table 1 shows when the models were first published, approximately how many variables they have and the family I put them in; Engineer (E), Doctor (D), Geek (G) and Architect (A), remembering that all the authors are or were experienced academics and practitioners. In science, theories stand or fall by the evidence but in management we might say “*old business models never die, they just get M&A*”. This means quality improvement may be almost a hundred years old and the B-L model is twenty-five, but they are still highly relevant today. The Canvas components are a merger of previous ideas and the architects have been acquiring ideas from other models and improving their own for over fifty years.

Table 1.

Model Description	Start	Variables	Family
Quality Improvement - Shewhart, Deming, Toyota	1924	4+?	E
Enterprise Architecture	1960	5+?	A
Diamond model - Leavitt	1965	4	D
7S Framework - McKinsey	1980	7	D
Lean Quality - Womak	1991	5+?	E
Burke-Litwin Causal Model	1992	12	D
Drucker's Theory of the Business	1994	3	D
eBusiness Models - Timmers	1998	3+1	G
Business Architecture	2001	10	A
Value from Innovation - Chesbrough & Rosenbloom	2002	6	G
Model Ontology & Canvas by - Osterwalder	2004	9	G
Component Business Modelling - IBM	2005	15	A
Reinventing your Business Model - Christensen et al	2008	4	D

A good model is a powerful tool: back to Apple and as Chesbrough explained, Xerox had developed amazing technology but didn't know what to do with it, they were intellectually locked in an unsuitable model, in a “psychic prison” of their own making. Steve Jobs had a vision for a computer business where great design creates value with customers who will pay a premium for something they love. With an obsessive passion for controlling all parts of the design he could see a central role for the Xerox graphical user interface. This “design” was not just of the products, but all parts of the business model; key partners, quality management, the website, the stores and the technology ecosystem.

It would be an interesting study to apply all the frameworks to a group of similar organizations and see what kind of business models emerge; same results and themes or wildly different? Given the diversity of the models I suspect they would show many differences as they guide to you ask different kinds of questions, but common themes emerge around the essential parts of a useful model as suggested earlier. Several of models are well worth using: Lean, B-L, Canvas, Business Architecture and Reinventing. The others can be considered intermediate steps in the evolution of these five.

Lean is usually not thought of as a business model but as a set of quality tools wrapped up in a philosophy. Perhaps it is due to the MBA folks rarely setting foot on the shop floor, the Gemba. As a business model, Lean has the right obsessive focus on customer value, process improvement and the elimination of waste to help generate profit. It's possible to imagine an elevator pitch, *"we will use QI methods and competitive wage levels to copy existing products at lower cost and higher quality thereby beating all the competition."* Lean is also seen as a startup method of using resources frugally and quickly to create a minimally viable product (MVP) to get feedback from potential customers, PDSA style, on whether it is of value, then develop a marketable version (Beta) that fully addresses the customer needs. Agile software development incorporates much of the lean approach. Innovation on its own is neither necessary or sufficient for a successful business, but an obsession on delivering customer quality and experience is well worth the effort.

Burke-Litwin was carefully researched to build a causal model that applies to real organizations and they don't make grand claims that it is ideal. It has been used by NASA and British Airways (12) and I find the main benefit is in drawing attention to the interconnectedness of all the parts of an organization when change (growth, improvement, downsizing) is proposed. Your project may not be to redesign a whole organization but to change one part of it and this model is great for helping you consider the intended and unintended consequences of proposed changes across the whole organization. It was, however developed before IT became all pervasive so you will need to update some of the variables especially Systems. The model is also too quiet on the actual product created (or service provided) and the financials. Rather it finishes with the Performance variable defined by metrics such as customer satisfaction, productivity, quality and profit.

The Business Model **Canvas** is now very popular so it is worth exploring the origin of the nine building blocks. Osterwalder was influenced by the Kaplan & Norton's 1992 Balanced Scorecard (it has four quadrants; customer, internal processes, learning and growth, as a balance to the forth, finance) and wrote (18), *"Basically, the nine elements of the ontology cover all the business model building blocks mentioned by at least two authors"*. (in his 2003 literature search). The selection criteria for what's included is just a literature review - contrast that with the Burke-Litwin approach of selecting variables based on what previous theoretical and empirical studies have shown are important. It is possible this is an optimal list but it is more likely that some variables were excluded at the time that are now seen as important (quality systems?) and if the search was done today new items may be included (technology platforms?). Leavitt and Burke-Litwin do include leadership and culture. The Canvas excludes leadership and management as Osterwalder argues that is part of the implementation of the model. But the Canvas does include people in the organization performing activities such as customer relationships / marketing. The canvas also excludes *"the competitive landscape"* but a key activity should be competitor analysis. Burke-Litwin were aware of the causal effects of the external environment including competitors, government and financial markets. That said, the Canvas seems an elegant and rather useful framework for modelling.

Whynde Kuehn from S2E Consulting ("strategy to execution") says **Business Architecture** is not business modelling but can inform or document a business model (25). Osterwalder however, sees a business model as a concept linking strategy, organization and systems. To me business architecture appears to embrace the model (noun) and modelling (verb) thereby setting out a path for implementation. Parts of it conceptually resembles the Burke-Litwin model although I don't find the causality claims and it omits culture and leadership. With all this talk of architecture, I'm surprised not to see the phrase "form follows function" in the literature. Integrated information

systems are critical for today's organizations and EA & BA have been part of that achievement, but attempts to fully codify the non-linear complexity of organizations are always going to be a stretch. Recognizing that, I see business architecture practitioners taking a pragmatic approach.

The **Reinventing model** is very strong on the CVP and causality is assumed in the two different ways the model is to be used. It is rather high level with only four variables but examples are given of key resources and processes. It feels rather intuitive and I enjoy using it combining spreadsheets with detailed narrative.

Best of Breed Business Model

Having reviewed the models, I suggest the following definition:

"A business model describes what an organization is and what it does to add value for customers and generate profitable revenue. It helps clarify plausible futures, informs strategy and execution as well as guide investment and divestment."

The five leading models selected above have strengths and weakness as discussed so I propose taking the best parts and adding a few others to create what is hopefully a new and coherent model with these core components, see diagram 1.

1. Customer Value Proposition (CVP)

The problem the customer wants solved and is willing to pay for. People usually don't want the actual product, they want it for the problem it solves or the benefit it delivers. As Ted Levitt said, "People don't want a quarter-inch drill, they want a quarter inch hole." The **output** of the organization is a product with features but they are buying tangible and intangible benefits. The **outcome** for the customer is the impact, the experience, the change made by the benefits they receive. The interplay of problem and solution is key and other examples include, the risk of measles and the vaccination, the loneliness and a drink at the bar, the urge to virtue signal and Facebook.

2. Supply Chain. The key resources & processes related to buying, making and preparing the CVP consistently. These are the ones that will make the organization distinct, not generic, and are sometimes called "capabilities" (tangible and intangible) when they become embedded within the organization. Examples of key resources are key suppliers and partners, technology, information and equipment. Examples of key processes are developing software, manufacturing products, metrics, design skills, procurement, research & development and training.

3. Marketing. The key resources & processes needed to deliver the CVP in a repeatable way. This could include understanding the target and actual segments and customers, their specific needs now and in the future, the channels to them, relationships with them and the firms brand. A number of resources may be needed to do this including systems and sales staff.

4. People: Culture, Leadership, Management, Skills

The Canvas advocates say people are not part of the model, they are part of the implementation. To a degree that is true but the Business Architecture domains include organization and stakeholders (BIZBOK Guide) and Burke-Litwin includes a raft of people variables. Startup founders have lots of early decisions to make but two of the most important are selecting the rest of the team and the equity splits. I see a business model without people like a car without fuel; it may look good but it's not going anywhere.

5. Finance: The Profit Formula, being able to make a net margin on each unit sold, selling enough units to cover the indirect costs and generate enough profit to reinvest. Understanding the costs

of the activities and the costs of waste. Having a positive cash flow that avoids overtrading is preferable, or sufficient finance to cover working capital and access to the resources needed as the business grows. It also includes the financial relationships the organization has with stakeholders.

6. Scale. There are two meanings to 'scale' in this context, the size of the organization and the process of growing it; more specifically, is the organization able to grow profit at a faster rate than revenue and manage cashflow? There is usually a minimum size (scale) for any successful organization; a one-person law firm is possible a one-person restaurant is tough and a one-person auto manufacturer is impossible. Think of the difference between a mouse and an elephant, they are not just the same design at different scales. The mouse only needs skinny little legs and has cute ears to hear with whereas the elephant needs tree trunk thick legs to support its weight and huge ears to keep it cool; components scale at different rates. The frameworks don't include scale and are silent on whether it is part of implementation. I feel it is part of both, when you are modelling you need to determine the initial minimum scale to create a MVP and a marketable version of your product. Scaling beyond that can be very expensive so you should also consider that.

Two key factors to scaling are IR & DR. Increasing Returns to scale means it gets better as you grow, perhaps through learning, perhaps through selling software that costs next to nothing once developed. Decreasing (Diminishing) Returns means it gets worse as you grow, perhaps due to increasing complexity. As an example, a SaaS startup should scale very well once a simple marketable product has been built, but if excessive customization and training are required on each sale then this can hinder scaling. Likewise, a single restaurant may be profitable but struggle to scale so a franchise strategy may be the answer.

7. Learn. The traditional approach to a business plan and model sets out goals (e.g. develop the software) with analysis of the environment to predict the likely results (e.g. year 1 sales of \$x with costs of \$y), then plan actions and implement. But the world is complex and rather unpredictable, especially for new ventures, and even carefully thought out strategic plans often fail to deliver (26). That approach is rejected and this business model sees a learning component as essential. Two methods are included. First the first is the rather formal QI and Lean plan-do-study-act (PDSA) experimental engine (27).

Second is a more informal method called effectuation (1); both methods are discussed in more detail in the Modeling section below. Learning is also the key to the Lean approach of conserving resources, reducing waste and seeing time as a key resource. Learning is also key to being agile, a style of incremental and adaptive change to achieve desired results. Learning is a key process requiring skills, culture and systems relevant to your CVP. The learning must be put into practice; execution. What is learnt can become a key resource in terms of knowledge both tacit (held by people) and codified into systems, libraries and processes.

8. Governance, Risk and Compliance (GRC)

So far we have a model that can seek customers, solve their problems for a profit and learn as it goes. But it lacks control mechanisms and may crash into a ditch. The B-L model has structure and system variables to address this and BA includes one variable for policies, rules & regulations. GRC is a relatively new integrated approach to this (28). The approach used has to be appropriate to the organization, its product, market and ambitions. Relevant skills is needed to establish processes. Governance gives a focus on the relationships between the founders and other stakeholders. Risk includes management procedures and a risk appetite awareness, see box 1.

Compliance includes regulations, which usually exist for a purpose, including to prevent harm (e.g. to health and safety) and to advance a goal (such as healthy eating, environmental protection) and the activities needed to get your product approved and compliant as necessary. Note that having put in the effort to do this, it becomes a barrier to entry for potential competitors. Good GRC will also help build investor confidence.

Box 1. Risk Matrix aka. Risk Heat Map

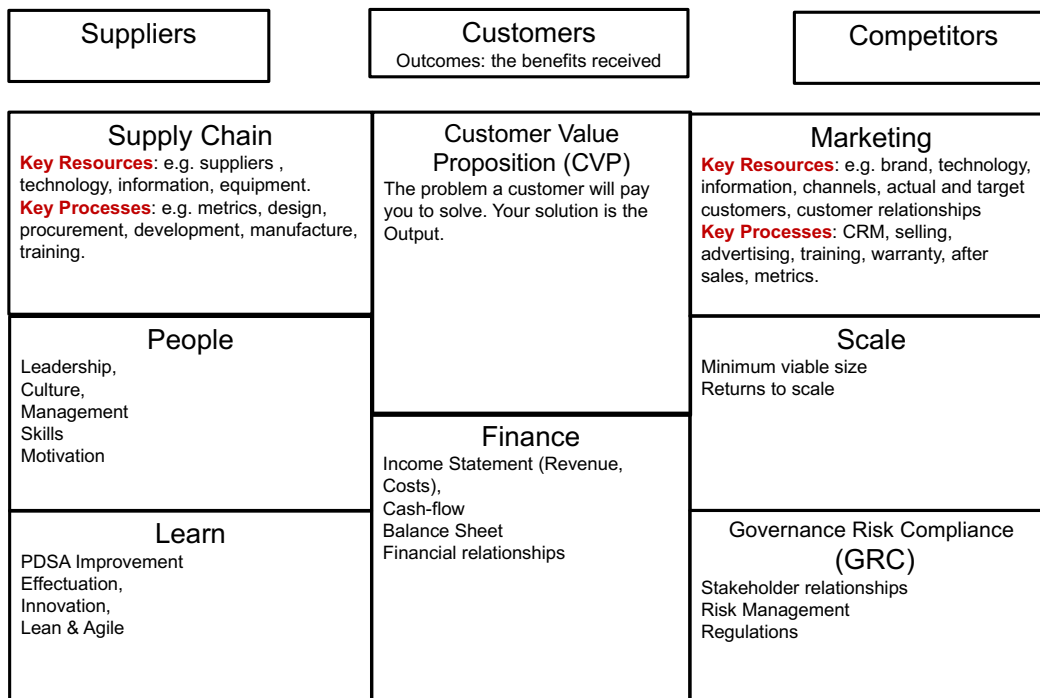
A little risk management will be valuable. Not so much as to kill good ideas but enough to open everyone's eyes to what could go wrong. Risk equals impact x probability. Use a 3x3 grid with 1=low, 2= medium and 3=high. For example, the risk for the Year 1 sales could be high impact x high probability = 9 the highest risk. The risk of finding the right suppliers may be 3x1 = 3 a medium risk. Finding a location may be a 1x1, although higher for a restaurant. Do at least one for each component. What to do with these risks? There are five options; a) **Tolerate** if they are within your risk appetite. If they feel too high consider; b) **Transfer** e.g. insurance. c) **Terminate** e.g. stop doing the risky activity. d) **Treat** e.g. fit a guard, training, warning signs. e) **Business Continuity**; have a plan what to do when it happens.

Finally, and not part of the business model but for consideration to improve the modelling, are the following based on Michael Porter's frameworks on competitive forces and value chains:

- Suppliers: supplying what products and services? Relationship partners and transactional suppliers, resilience in the supply chain.
- Customers: the importance of getting the first one to pay bills and learn from. Target segments, needs, motivations, quality expectations, price.
- Competitors: analysis of existing and the threat of new entrants

Best of Breed Business Model (B.o.B.)

Diagram 1



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Taken together these components can be weaved with a compelling narrative and spreadsheets to create a business model. Note a good model may not be all it seems on the surface, consider IKEA, the CVP is based on self-assembly by customers and they will proudly and rightly say a key component of their business model is high quality Scandinavian design. But they don't advertise too much that most of the furniture is made of low cost particleboard rather than wood, although this is a key part of the model. Similarly, Facebook don't sell much data but are more like a free newspaper where most of the revenue comes from advertising and with the added element of not needing journalists; we the users provide the content for free. The aim is to tweak the model to make a virtue, a brand, out of some components such as "proudly made in America" and quietly design other parts to control costs, ensure quality and make life easy; all to add value to the CVP.

THE ART OF MODELLING

Before we get down to business, a few words on what to wear for modelling work. My daughter blogs about fashion at dinosaurdances.com and this has me wondering. I have seen and been amazed by the Nissan engineers doing their Kaizen and TQM on the assembly line in their polo shirts and golf caps. I can imagine the doctors at their up-scale consultancy firms in formal business attire from Neiman Marcus, using their Lenovo ThinkPads to link their models to the wide range of methodologies at their disposal. Meanwhile the geeks, who may have been hipsters a few years ago, are on their MacBook Pro updating a Canvas model from a stack of post-it notes, in smart casual for their clients but keen to get their jeans on. Finally, the architects have their powerful Dell XPS laptops and are dressed for the C-Suite from Nordstrom but with a little touch of "inner geek", perhaps a colorful scarf or socks, to remind them of their IT origins.

As mentioned earlier, the traditional approach to developing a business is linear and binary; prepare a strategic business plan and then implement (aka execute). For an entrepreneur, this implies coming up with a great CVP, then implementing as fast as possible before competitors come in and dealing with problems as they occur. If the startup has a plan (perhaps to win over investors), or a model, then it is used almost like steps in a recipe and if the business fails then either the CVP, strategy or implementation or all are blamed.

Here the preference is to blur the lines between strategy and implementation, for a symbiotic relationship with co-produced outcomes. Strategy is central to a business model and in this context strategy is concerned with designing, communicating and implementing the model.

Modelling a business that becomes a success is usually a mixture of talking and listening to people, implementing plans, reflecting on the results plus a fair amount of trial and error and luck. Modelling is an art and science combination; creatively developing and nurturing an idea and a feel for what's needed to make it a reality - and at the same time collecting data, doing the numbers, making and recording the decisions, the story.

A four-part modelling process is proposed:

- a) PDSA Cycles in the real-world
- b) Effectual experiments in the real-world
- c) Simulations to develop the model and inform the business
- d) Real-world implementation with reflection

Box 2 explains this further and Diagram 2 shows how it works. The idea is to zig-zag between the model and the real world based on simulation, implementation, experimentation, results,

decisions and events in the environment to iterate to a coherent model and successful business. There are, arguably five distinct versions.

Model version 1: CVP

The CVP is always the place to start. It's often a solitary pursuit, perhaps coming from a moment of inspiration or desperation based on knowledge around a market segment. Test check embryonic CVPs with lots of study and research. Then turn it into a team sport even if it's bouncing ideas off trusted friends and family. The next step is to simulate the CVP in a spreadsheet to capture your ideas on the customer problems and your solution, perhaps draft the relevant customer workflow and use CAD to model a product.

Box 2. Four-part business modelling process

a) PDSA Cycles are a process normally used for quality improvement. They consist of agreeing what you are trying to accomplish, **planning** how you will do this, generating ideas, options and predictions, **doing** the plan in the form of small experiments, **studying** the results, seeing what was learned and if it's good, select and go with it (**act**), if not, try again or try something else. This is based on the Model for Improvement (27) This can be expensive and time consuming but provides high fidelity results to both inform the business model and the actual business.

b) Effectual experiments, or effectuation, conceptually puts the effect before the cause and again starts with consideration of what you are trying to achieve. It is a process of taking opportunistic low cost, low risk actions to create new information and seeing what happens, what emerges, then deciding what to do next based on the results. Examples include discussion with stakeholders, prototypes, offering a new service in response to customer needs, a temporary use of resources with no real goal in mind to gain new insights. Effectuation tends to be used when uncertainty is high (28).

c) Software simulations of business models are a standard method. Usually this is a spreadsheet, PowerPoint and Word Documents. But it could be based on mathematical models, agent-based models, AI or some combination. The models provide a fast, low-cost way of experimenting, exploring scenarios for the CVP and the financial and other resource implications. They tend to be low fidelity compared to real-world experiments.

d) Implementation of the model to form the real business must happen sometime unless the results of experiments, discussions with stakeholders say otherwise. The preferred approach is incremental unless the scale determines otherwise; it's tough to launch half a restaurant or a single plane airline. As with other parts of the process, the aim is to take some time to reflect on what is happening in the business, learn from results, inform the model and adapt as required.

For example, consider an extra feature in the service provided to customers that requires more staff and more training. Starting with the desktop business model, plan then run simulations with the extra costs and expected extra revenue. Study the results. If they seem reasonable then decide to update the model. Use this to inform a real-world experiment, at first this might be just discussions with customers (effectuation) or a short-term trial with temporary staff (A PDSA trial). Based on the feedback you then decide how to proceed, whether to build it into the updated model and go around the loop again or build it into the model and implement in the business by hiring staff, developing and delivering the feature.

There is evidence (29) that effectuation is the most likely logic to be used by founders in the CVP with an emphasis on action over analysis, although, large organizations may use more formal methods such as the Innovation Funnel.

Even at this early stage, if you feel the idea is worth protecting, seek professional advice on intellectual property (IP) rights rather than waiting until you have completed your model and built a prototype. You should also consider nondisclosure agreements (NDAs). Time spent doing this may also improve the CVP.

Model version 2: Desktop

Informed by the CVP and assuming it has merit, the other components of the model need to be specified and they deserve as much effort as the CVP for it is here where you will make it all happen at a profit, or a loss. The Burke-Litwin model asserts most influence comes from the variables for people, mission (CVP) and external environment. This might be a starting guide followed by the components in parallel in a spreadsheet with draft numbers for costs, revenue and timescales. Rather than the BoB model, you may wish to use a popular set of components such as the Canvas or BA but the process is similar. Crank up a spreadsheet to sketch out the numbers on how the income compares to the cost. For the GRC component, consider preparing a Risk Matrix, it will help you focus your efforts and help show stakeholders your grasp of the new venture (Box 2). Given the high level of uncertainty at this stage it is likely you will want or need to change components in time.

Note the customer doesn't always have to pay directly for the product; Facebook has one set of customers using the product for free while a second set of customers pay to advertise to the first. In healthcare customers (patients) rarely pay the providers directly for the services (apart from copays and deductibles), but usually do it via insurance or taxation.

At this early stage consider some of the archetypes (say Freemium) as a shortcut to a full model. It is rare that a new business model is totally unique and common first step for a startup is to think about historical archetypes. For example; Razor/blades, Reverse razor/blades, Franchise, Advertising, Leasing, Subscription etc. etc. Even these are not new as can be seen in the Wedgewood example doing direct mail over 200 years ago.

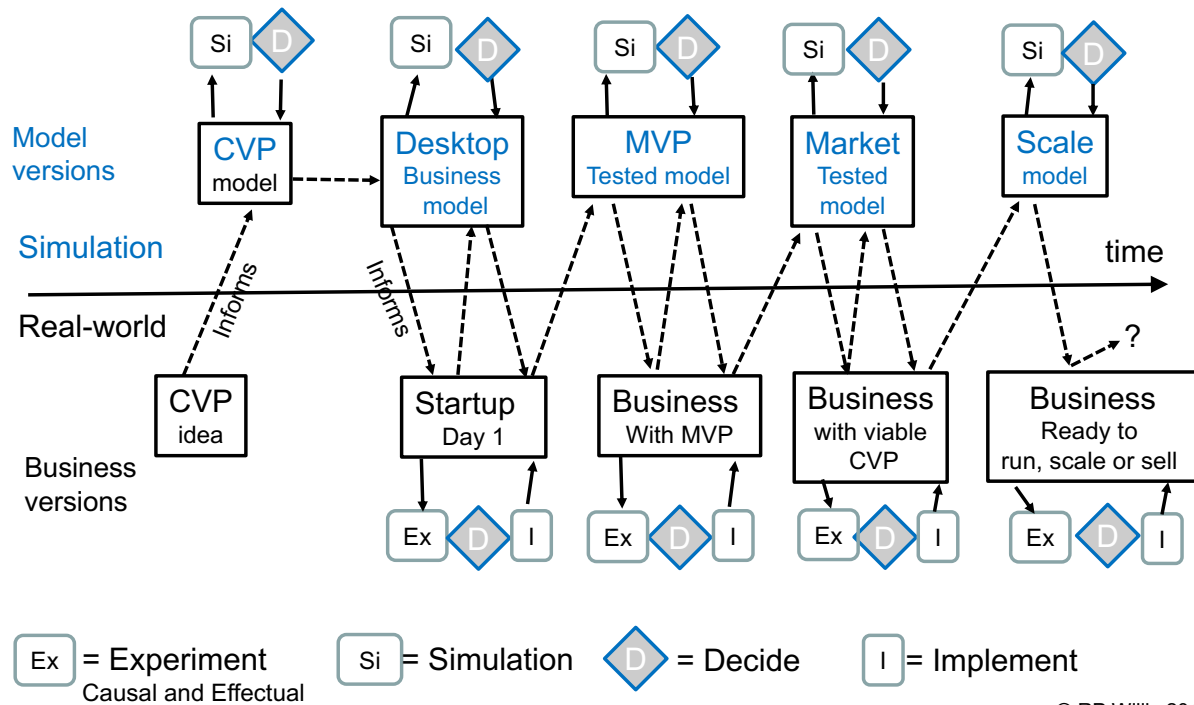
You may also feel that doing all of the supply chain and marketing yourself is not realistic as it is not key (essential capabilities) to your CVP. A solution is to contract out these processes and let others use their specialized resources in exchange for some of your financial resources. It is easy to underestimate the time and effort needed to build capabilities so if there is a fast-track, consider it. In the example of a new restaurant, you could take over an old one, employ the good staff and reverse in your new CVP.

Next, look at the whole model. Is it coherent, potentially achievable and worth the effort, sweat equity, of taking further? I've seen many images of organizations using a jigsaw as a metaphor for how departments connect. But I think Lego provides a better image as there are far more ways to assemble the bricks. Have the interdependencies between the variables been considered and is there a plausible causal chain? For example, follow this workflow through your model, starting with a customer, will they be sufficiently aware of your products through good marketing and are able to order and to pull products and services out of the organization because your supply chain works well and trained people are in place, backed up by the inputs from the suppliers at the right time all with minimal waste? This has to seem effortless from the customer perspective with the complexity hidden from them inside your firm; "click" and I've just bought a laptop, reserved a restaurant table or ordered a new desk; and the money is out of my account and into yours. Costs may be incurred everywhere, but is sufficient value added to the customer in the price to make profit? Run simulations to see how this flexes with different volumes? Run more simulations and decide on any changes to the model.

As you develop the model this far, your situation analysis and awareness improves; the state of your CVP idea, the level of available resources, financial requirements, the challenge ahead and your excitement will become a little clearer.

Diagram 2

Business Modelling Algorithm



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Model version 3: MVP

Assuming your desktop model makes you feel there is a green light to go, it is time to clear some space in your garage, home office, go to an incubator or elsewhere to start the business and build a minimal viable product (MVP). In 2010 Chesbrough (1) wrote about model innovation referring to the Canvas and IBM's Components, "Tools such as mapping are useful to explicate business models, but cannot by themselves promote experimentation and innovation with those models. For that managers need organizational processes and enough authority to undertake the experiments, and then the ability to take actions based on results from those tests." This explicit reference to experimentation is important and is underplayed or not mentioned in most frameworks. Here the ability to do this is an essential part of the model captured in the Learn component. This should also give comfort to startup teams wondering how they can beat big organizations, they may be stuck in their existing mental models and the more successful the big firms are, the harder it can be to change.

There is some evidence that entrepreneurs start with effectuation experiments to gain insights and make decisions on the CVP, money (revenue and costs) and who the customers are (28). This could be a storyboard of your software, cook a test meal for friends before opening the restaurant, run a focus group with potential customers, put a few adverts online and see if anyone

bites (examples of effectual experimentation). Or you could build a proof of concept product, do a pop-up restaurant for a few weeks (examples of PDSA causal experimentation). Then collect data, update the business model, study it, make decisions and probably tweak the model components. Whichever way you do it, there is logic in having some kind of project management system to list the activities, who is responsible for doing them with dates, milestones, sitreps and regular meetings to gain and maintain momentum. As you progress with executing your plans, update the model and see what it tells you and act accordingly. When you do have your MVP, update the model and call this version; **MVP tested**.

Model version 4: Market Tested

Based on the results, once again you are at a decision point. You can go forward unchanged to success, tweak some of the components, pivot to a significantly different model or quit before losing too much money. Pivoting is not to be taken lightly but if you have learnt the CVP is not right and a new and better CVP has emerged, then do it. If the decision is to go forward then it is time for significant implementation activity to build and release a marketable product (Beta); to open the first store and really see if the CVP fully addresses the customer needs. Continue to experiment throughout this phase and if uncertainty is declining, confidence growing, perhaps a shift to more formal methods to build on the rather anecdotal evidence that comes from effectuation with data that can be used to repeatedly satisfy customers and make a gross margin. Based on data from customers you can update the model becoming more confident about the components; call it version: **Market tested**.

There is something called an Operating Model and, like the Business Model, many organizations may not realize they have one. It is the play-book for running an organization, the collection of manuals, guidelines, procedures and workflows. Hopefully much of it is codified into systems although much always remains as tacit knowledge. The Market tested version of your business model provides an ideal framework to grow into your Operating Model.

Slowly but surely the business has moved forward with modelling and implementation hand in hand. Each time you expose the model to real customers and other stakeholders is an opportunity to tell your story, experiment, collect data, reduce risks, revise the model and improve the chance of success.

Model version 5: Scale

If you now have a business with a stream of satisfied customers, volumes growing and a net profit in sight, well done! There is no rule that the business must scale up from here and you may wish to run it as it is, a small healthcare firm, a single restaurant. Or if it looks like a valuable little business you and your early investors may decide to sell out to people who can take it forward. Or you may now wish to scale up and seek bigger investors. The decision can be informed by the scale component of the business model and if scaling is the way forward then repeat the modelling process and build a version: **Scale**.

CONCLUSION

I began this work as a review of existing business models. I ended by seeing their strengths and clear limitations leading me to propose a new best-of-breed model. Based on experience, I've long felt uneasy about the separation between "strategy / planning" and "implementation, execution" as it seems to imply smart bosses who know what to do and workers whose role is just to do it; *"Theirs not to reason why, Theirs but to do and die, Into the valley of Death."*

In thinking about the act of modelling it seems clear to me that the more a model is informed by reality the better it will become. Knowledge of business reality can come in the form of

experimentation and implementation. When combined with model simulation the result promises a useful way to turn ideas into practice.

1. If you want a better understanding of your organization or your startup idea then model it. None of the frameworks are perfect but a good approximation of reality is better than nothing and may save costly omissions and mistakes.
2. Which one to use depends on your knowledge and circumstances; perhaps the Canvas is more suited to startups, whereas Reinvention and Business Architecture may be better for existing organizations and Lean quality ideas should be part of all models.
3. A good model helps you understand the causal logic of your business and is a great way to share the story with stakeholders.
4. Perhaps you don't know your business model but your competitors do and they know your strengths and weaknesses better than you.
5. I have collated what I've learnt into my "best of breed" model and welcome feedback.
6. In this complex world, a linear method of planning and implementation seems unlikely to succeed. Designing models hand in hand with implementation, both informed by simulation and experiments, is offered as a better way to build a business.
7. If you want to learn more then follow up the references below or seek advice.

My interest is in the space where healthcare meets IT and applying complex systems thinking to reduce costs and improve outcomes for patients. In 2017 78,000 new health apps have been added to major app stores bringing the total to 325,000 health apps (30). These are staggering numbers. In 2016, digital health investment by USA VCs amounted to \$4.2 billion and 2017 was set to be higher still. That's a lot of effort by many people, a lot of startups, but few are gaining traction in the Darwinian jungle out there. Designing, evolving a business model will at least save you time and money and may help you survive and prosper.

Ronald P. Willis

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References

1. Business model innovation: Opportunities and Barriers. Henry Chesbrough, Long Range Planning, 43 (201) 354-363. 2010
2. Why Business Models Matter. Joan Magretta, Harvard Business Review, May 2002.
3. The Deming Institute <https://deming.org/deming/timeline>
4. The Contradictions that drive Toyota's Success, H Takeuchi, E. Osono and N Shimizu. Harvard Business Review, June 2008.
5. The History of Enterprise Architecture: An evidence-based review. S Kotusev, Journal of Enterprise Architecture, Volume 12, No. 1 2016
6. <http://www.architectureandgovernance.com/strategy-planning/importance-binding-business-system-architecture/>
7. Enterprise Architecture Frameworks: The Fad of the Century. S Kotusev, British Computer Society, July 2016.
8. Leavitt, H.J. (1965) Applied organizational change to industry. In J.G March (Ed.) Handbook of Organizations (pp. 1144-1170) New York, NY: Rand McNally
9. Waterman, R. H., Peters, T. J., & Phillips, J. R. (1980). Structure is not organization. Business Horizons, 23(3), 14-26.
10. Roos D, Womack J, Jones D. *The Machine That Changed the World: The Story of Lean Production*, Harper Perennial (November 1991)
11. Lean Enterprise Institute. <https://www.lean.org/WhatsLean/TransformationFramework.cfm>
12. Applying the Burke–Litwin model as a diagnostic framework for assessing organisational effectiveness. Nico Martins, Melinde Coetzee. SA Journal of Human Resource Management; Vol 7, No 1 (2009),
13. Theory of the Business, Peter F. Drucker. Harvard Business Review, September 1994
14. Business Models for Electronic Markets by Paul Timmers, European Commission, Directorate-General III, April 1998*
15. Business Architecture: An Emerging Profession: April 28, 2009. By Paul Arthur Bodine and Jack Hilty
16. <http://www.businessarchitectureguild.org>
17. The Role of the Business Model in Capturing Value from Innovation: Evidence from Xerox Corporation's Technology Spinoff Companies. Henry Chesbrough and Richard S. Rosenbloom Harvard Business School, 2002
18. The Business Model Ontology - a proposition in a design science approach. A Osterwalder, PhD Theses, University of Lausanne, Switzerland, 2004
19. Clarifying Business Models: Origins, Present, and Future of the Concept by A. Osterwalder, Y. Pigneur, and C.L. Tucci. Communications of AIS, Volume 15, 2005
20. Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers. A Osterwalder and Y Pigneur, 2010.
21. IBM Business Consulting Services <https://www-935.ibm.com/services/us/imc/pdf/g510-6163-component-business-models.pdf>
22. Accelerating Digital Reinvention with Component business modeling. IBM Institute for Business Value, 2017.
23. Using component business modeling to facilitate business enterprise architecture and business services at the US Department of Defense. Flaxer, Nigam and Vergo. e-Business Engineering, 2005
24. Reinventing your Business Model. M Johnson, C Christensen, and H Kagermann, Harvard Business Review, December 2008, pp 51 – 59.
25. *What is Business Architecture? Whynde Kuehn, S2E Consulting, 2017*
26. Why strategy execution unravels. D Sull, R Homkes, C Sull. Harvard Business Review March 2015, 58-66
27. Model for Improvement, Associates in Process Improvement, <http://www.apiweb.org>
28. Integrated Governance, Risk & Compliance <https://www.oceg.org>
29. Decision making for business model development: a process study of effectuation and causation in new technology-based ventures. Reyman, Berends et al, R&D Management 47, 4, 2017
30. mHealth App Economics 2017 Current Status and Future Trends in Mobile Health. Research2guidance.com.