Teaching Marketing Science

Marketing science *is an approach to marketing that uses scientific methods in the pursuit of "truths" in marketing.*

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Elgar Guides to Teaching

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This chapter begins with a description of a simple exercise to generate data that can be manipulated with basic maths to create a body of evidence from which lessons can be drawn. The exercise is the first step in helping students to not only discover patterns of human behavior, but also to develop an understanding of how to approach the study of marketing evidence. Along the way, the accumulation of knowledge leads to a deeper understanding of the underlying behaviors that establish what marketing interventions can and cannot do. The data from the exercise is analyzed in different ways as the chapter progresses and key lessons are laid out step by step. This sequence of data, evidence, analysis, pattern, and explanation is an inducto-deductive approach to developing a marketing science mindset. It is designed so students can begin to develop an understanding of how to go about solving marketing problems and respond with reasonable, evidence-based strategies. Marketing science here is meant to be applied, not abstract, and threfore useful for students in their business careers.

A. Start simple, use your own data: Choosing marbles part 1

In a principles of marketing class, a bucket of marbles was passed round the room and students chose one, then put it back, and passed on to the next student, noting their selection of red, green, blue, etc. All choices made by the students were recorded in Excel.

The class was asked to describe the market for marbles based on the choice data. First, they listed the colors and added up the number of choices, which should have been 720 (120 students X 6 trips round the class), but turned out to be 664—a discrepancy in need of explanation. Eyeballing the data showed that some colors were chosen more often than others and also that no-one chose only one color. The main pattern was that most people chose three or four colors, including red and green.

Using Excel's counting functions, we worked out the following as shown in Table 1:

- number of times each color was chosen,
- the share of choices (100 x (choices of color/total choices)),
- penetration (total number who chose a color at least once / total number of choosers).
- Loyalty was measured in two ways—
  - Repeat buying--% of choosers who choose the same color again,
  - Share of category requirements (SCR)-- number of purchases of a color / total purchases by people choosing the color.
- Purchase frequency was calculated as the sum of choices / penetration.

Table 1. Choices of color are determined by the popularity of the color in the bucket

Number of Marbles	chosen	share %	Pen%	Repeat%	SCR%	Freq
35 Red	220	36	79	66	61	2.7
20 Green	127	19	63	55	55	2.0
15 Blue	88	13	55	51	39	1.6
10 Yellow	55	9	36	34	36	1.5
8 Silver	50	8	31	32	24	1.6
5 Clear	24	4	21	18	21	1.1
5 White	26	3	16	20	18	1.5
4 Turquoise	25	4	21	21	17	1.2
3 Cat-eye	27	4	22	22	16	1.2
Average		11	41	35	31	1.6

Arranging the results by share made it easy to see that the most-chosen colors were the ones with the most marbles in the bucket. Popularity or penetration was about availability. The most popular colors were also the ones chosen most frequently.

It was also clear that penetration varied much more, from 16 to 79% a factor of five, than did purchase frequency which varied from 1.1 to 2.8, or a factor of just over two. Higher penetration also went with higher loyalty. This is **double jeopardy** (DJ) in action—big brands have many more customers, who are more loyal, while small brands are punished twice by having far fewer, less loyal customers who buy less often. (see Ehrenberg, 1969)

The simple exercise above illustrates the importance of developing facility with numbers and basic maths (see section D), and presenting data for analysis and understanding (Section E). The data are used again to discuss the sharing of customers to demonstrate the Duplication of Purchase law (DoP, section F). DJ and DoP are examples of empirical generalizations in marketing (Section G) that are building blocks for strategy formulation and core elements of marketing knowledge that supports theory development (section H).

B. Teaching Marketing Science

This chapter proceeds much like a taught course in marketing, but it starts not with theory or questions designed to stimulate discussion (those come later) but with a simple exercise in making choices. This is after all what consumers do all the time. These choices, the data, are the 'what' that we have to work with in teaching marketing science. A set of observations can be used to describe an outcome or choice situation. Looking at the results, a bright spark might jump to an explanation or theory about why the data fell out the way they did. And the explanation might be right. But when the exercise has been done a few more times, perhaps with different classes, different colors of marbles, or perhaps stones or rubber balls and the results are consistent, then they begin to look like a general finding, or an empirical generalization (Section G below). From there a theory of explanation might be elaborated for 'why' the finding occurs the way it does. In this way, students can gather, process, analyse and present their own data and findings in the context of previous work and in the process they can learn about marketing, and how marketing science works.

This process can be described as induction that proceeds from concrete information and experiences to abstract explanatory theory where conclusions are based on repetition. Topics are introduced by presenting specific observations, case studies or problems, and theories are taught by guiding students to discover them by establishing the need for an explanatory theory. Commonly used inductive teaching methods for marketing science include: inquiry learning, problem-based learning, project-based learning, case-based teaching, discovery learning, and just-in-time teaching. The inductive process is in contrast to, for example traditional deductive instruction in engineering or the harder sciences that begins with theories and progresses to their application. While the strength of the evidence varies from one method to another, the reason for focusing on inductive methods in marketing science is that they are consistently found to be at least equal to, and in general more effective than, traditional deductive methods for achieving a broad range of learning outcomes (Prince and Felder, 2007). Once principles or theoretical explanations are established, then further studies can take a deductive approach to test the limits of theory.

The following sections lay out some of the key tools, skills and abilities that students need to build an understanding of marketing science and to put it into practice. We start in the next section (D) with numeracy because not only are numbers the core language of business, but they are at the heart of scientific analysis. Being numerate also equips marketers with the language needed to talk to the people in accounts, finance, production, logistics, etc.

We then use the marbles data in a more detailed exercise (Section F) to introduce new concepts and set the stage for understanding empirical generalizations in marketing. This is followed by a set of rules for presenting data designed to make it clearer and more understandable (section E).

C. Teaching and learning Step By Step

Marketing science teaching can be enhanced through experiential learning, a technique where learning comes from direct, hands-on experience (Hagan, 2012; Kolb and Kolb, 2005; Lewis and Williams, 1994). This includes not only applied experience, but also observation, leading to the formation of abstract concepts and the opportunity to test hypotheses in new situations. Experiential learning is important because it provides educators with the opportunity to link core theory to situations replicating those that occur not just in the marketplace, but also in the workplace. Passive learning on the other hand, falls short in developing the critical thinking and analytical skills necessary for modern marketing careers.

While marketing science can be taught at any stage in a degree program, it can be most effectively taught at early stages because it helps students embed a critical mindset and develop skills with which to evaluate taught content and theory. Early-stage students engaged in experiential learning can take what they learn incrementally to build their knowledge. And because it comes from experience that tallies with the world as they know it, it makes sense to them both empirically, and as and explanation for their own observations.

Late-stage students on the other hand, may well feel that the scientific approach challenges accepted marketing theories. The evidence from marketing science is often at odds with common practice, the latest fads, textbooks and the business press, all of which make unsupported assertions such as: it costs over five times as much to get a new customer than to retain an old one (Kuusik, 2007; Jandaghi et al, 2011; Tu et al, 2011), brands must differentiate or die (Trout & Rivkin, 2010), marketing should be highly targeted (Kotler, 2012), and so on. With a scientific mindset, such assertions are open to question, or better yet, to examination—such questions make excellent subjects for dissertations. But for late-stage students who have been diligently imbibing such beliefs and learning the systems behind them, marketing science can be frustrating because it requires them to un-learn or discard unsupportable theories and ideas. Take the idea that brands can be built by attracting new customers via price-reducing promotions. While this seems sensible because everyone likes a bargain, when tested however, price promotions tend not to gain new customers (Bogomolova et al, 2017; Srinivasan et al, 2004, Tiltman, 2012; Blattberg & Neslin, 1990). Instead, they reward existing customers with lower prices. This might be a good thing, but it comes at a high price, and it won't build the base and help the brand grow. So if growth in the customer base is the goal then other strategies or tactics will have to be found.

The same is true in teaching marketing science to company executives where fresh-out-of-university managers struggle to reconcile empirical results against what they have been taught. New marketers are often tasked with projects like reinvigorating a loyalty program, driving up a Net Promotor Score, feeding the social media machine – all schemes that seem to hold great promise, but rarely deliver, much to the frustration of the eager young marketers. More experienced peers on the other hand, eschew such unrewarding projects because they know better. On the plus side, learning about marketing science often helps them to find explanations for their accrued experience—they know what works and doesn't, and marketing science can help them understand why.

D. Numeracy as a cornerstone for science

One way to understand numeracy is to think of it like mathematical literacy. Literacy is the ability to read and write and a bit more—the latin root *litteratus* means learned. In the same way, numeracy can be functional—the ability to understand numbers and perform mathematical functions, or expressive—the ability to use numbers as a means of communication. For today's business students numeracy is essential. This is true even in marketing, to which some business students flee in the belief that it is much less dominated by numbers than say, finance or accounting (Bhowmick et al, 2017). Even so, they are likely to be disabused of this notion in the workplace when confronted with marketplace data, spreadsheets, the need to make sales projections, and the myriad metrics generated by digital marketing and social media. Numeracy is therefore a key foundation for marketing science and for coping with the evolving nature of modern marketing practice.

Numeracy is also critical to the scientific method involving hypothesis testing, tests of significance, correlations, and so on. Fortunately, many programs such as Excel make calculations of all sorts quite simple. Unfortunately, that simplicity does not translate into knowledge or understanding of either the calculations nor the results, increasing the likelihood of imperfectly understanding them, especially for the maths refugees. For example, most people have an idea of what average or standard deviation mean, but when they come to work out their ideas in Excel, they will find four different definitions for each. This can be confusing, and potentially lead to wrong results, and to results that are inexplicable to the person presenting them. Spreadsheet programs are like pianos—they require time and practice to develop proficiency.

Playing with marbles can enhance numeracy and introduce core elements of marketing knowledge. By using simple tools, to create their own data, then manipulate that data with simple and hopefully familiar maths, learners begin to progress toward understanding more complicated concepts. Take market share, a term used by all marketing students, many of whom struggle to define it mathematically, or to calculate it from simple data. By laying out calculations as in section A students rapidly begin to internalize the idea and will be able to repeat the exercise on other data. The marble exercise or other simple exercises give them a way to refresh and operationalize their understanding. From there, other terms such as share of category requirements (SCR) can be introduced. This is a small but important increment because SCR is one of the most common measures of loyalty used in consumer packaged goods (CPG) businesses and it links to other ideas like share of wallet, share of voice, etc. And while SCR is a simple concept, it implicitly acknowledges that most customers are not 100% loyal, and that leads into a second, more advanced set of calculations for duplication of purchase analysis (section F) along with profound managerial implications.

Numeracy for marketing can build from simple foundations, learning by doing, and using student-generated data. The marble exercise typically takes 3 sessions, after which more concepts can be added. For most students it is a lesson in applied maths, and also a refresher in the use of spreadsheets that enhances their technical capabilities.

Table 1 was meant to be accessible and easy to understand. This is hardly the case for most of the data that we generate or are presented by researchers. This is partly because numbers are a different sort of language, but it is mainly because numbers are often very poorly presented. For example, tables are often organized alphabetically, which is better than no ordering, but still presents big difficulties in identifying patterns or deriving meaning.

Presenting Numbers

Andrew Ehrenberg's seminal work in data reduction (Ehrenberg, 1972) led to his formulation of 5 simple rules for presenting data. These rules underpin the tables used in this chapter and are straightforward, but are not built into analytical or spreadsheet software, and so must be thoughtfully applied.

1. **Order the rows and/or columns by some measure of size**
   Table 1 was organized by size or share – from 35 Red marbles down to 3 Cat-eyes. Market share was a derived measure of size based on the choices made by students. When organised by size, the underlying pattern of choices were immediately evident, including for measures of loyalty.

2. **Round to two effective digits**
   The table used rounded numbers (percentages) which make them easy to comprehend and to remember. They are also easy to compare against each other. It would of course be more 'accurate' to include some decimal points but this would in no way improve our reading or understanding.

3. **Calculate an average to give visual focus**
   Row and/or column averages help to provide a visual/mental focus. In table 1 we can easily compare two and one digit numbers with each other and compare them to the average, helping us know whether a number is big or small because we have something to compare it to.

4. **Use table elements to guide the user's eye**
   Tables should be laid out so that it is easy to scan down the columns. This is because it is much easier to scan downward than across – simply put, bigger numbers look bigger because they are longer.

5. **Give a brief verbal summary**
   The brief verbal summary is in the title of the table. It could also have a paragraph of explanation, so the reader understands the main point of the table and doesn't have to search for meaning or work it out for themselves. A title like 'Student choices of marble colors,' is technically accurate, but also rather meaningless—it is much more useful for titles to deliver meaning, as in, 'Choices of color are determined by the popularity of the color in the bucket.'

Deepening the Analysis

Table 2 is a typical switching table created using the rules for presenting data. The table is designed to give the reader an almost immediate understanding of how marble choices are spread across the colors.

E. What we can learn from habitual behavior: Choosing Marbles Part 2;

Since people chose more than one color of marble, was there any pattern to their choices? Since the number of each color was important, the next step was to lay out a matrix, ordered by popularity as in Table 1, from top to bottom and from left to right. The choosers of any color were tracked for their other color choices and it became clear that choosers of any color also chose more popular red and green at the left of the table than unpopular turquoise or cat-eye on the right.

Table 2. The choosers of all colors of marble also chose other more popular colors

	% Who also chose								
Choosers of	R	G	B	Y	S	C	W	T	C
Red	-	71	63	60	65	29	40	33	44
Green	66	-	59	60	50	44	45	32	38
Blue	70	67	-	55	55	44	41	31	31
Yellow	61	65	53	-	47	36	38	34	41
Silver	59	60	58	55	-	43	39	44	28
Clear	71	67	54	51	45	-	28	33	41
White	72	66	55	54	24	42	-	42	38
Turquoise	58	55	61	53	45	41	22	-	44
Cat-eye	75	57	56	54	43	20	30	52	-
Average	68	63	57	55	47	37	35	36	36

Starting with the obvious—the numbers in the rows decline from left to right. Of those who chose white for example, 72% also chose red, 66% green, and so on. The pattern is the same for all colors and on average, red was about twice as likely to also be chosen as cat-eye. Describing this relationship can be reduced to saying that the choosers of all colors of marble also chose other colors in line with the popularity of the other color.

Describing the pattern in the columns is simple because all the numbers in each column are about the same. Just over half of the choosers of all colors also chose yellow, whereas just under half also chose silver, and a third, cat-eye. The pattern is the same for each color, and having chosen any color to start, the likelihood of choosing another particular color is about the same regardless of the color chosen first—about two thirds of all choosers also chose red, and about a third also chose cat-eye, and so on.

The exercise opens a discussion about loyalty and switching for any competitive category of goods. Rather than marbles, consider mobile phone services—when it is time to renew a contract many customers stay with Vodafone, the largest brand. If they switch though, will they choose O2 or T-Mobile next? Since O2 has about 20% market share and T-Mobile about 6%, a reasonable guess is that they would be more likely to choose O2. Another way to think about it is that mobile service providers share their customers unequally, in line with how big they are in the marketplace. Phone services vary more than marbles, but in real-life buying situations, the choice patterns are much the same, and dominated by the size of the competing brands.

The exercise makes key points about:

1. Marketplace data is imperfect (fewer choices than expected, declining base e.g. the bucket started with 105 marbles, but ended with 97) but can be organized and analyzed to reveal patterns such as,

2. Similarity of customers—most chose 3-4 colors. In contrast, no one was 100% loyal and a few always chose different colors.

3. Doing simple calculations (counting, percentages, etc.) helps to embed marketplace metrics and their meanings,

4. Organizing market data by size helps make patterns apparent,

5. Spotting patterns between metrics establishes relationships between them,

6. Spotting exceptions in the data (e.g. turquoise and cat-eye had higher penetration than expected), leads to questions to be answered,

7. Finding explanations--what customers chose is clear, but not why—which might be answered by different research, e.g. asking the customers to explain their choices, perhaps using qualitative data to explore meanings that lie behind the patterns in quantitative data,

8. Routine or habitual choosing is seen to be almost thought-free, with clear implications for brand choice in other categories,

9. Tying the data and insights back to existing knowledge (the exercise is novel to the students, but the patterns, laws, and implications are well established) reinforces patterns such as the dominance of size over other marketplace metrics,

10. Deriving managerial implications, e.g. strategies to increase size—number of marbles in the bucket—will drive up loyalty metrics through availability, etc.,

11. Extrapolate to real-world markets—marbles are marbles, but are candy bars much the same? Or airlines? Or cars?

F. Practice with Purpose

Being able to manipulate simple numbers and present them to tell a story helps us understand the data, observe patterns and exceptions and then eventually recognize established empirical generalisations. The marbles exercise introduces double jeopardy and then duplication of purchase, two very well-established empirical generalizations that apply in competitive choice situations. And while these EGs are somewhat counterintuitive, they form a solid foundation for developing marketing strategy and tactics.

Double jeopardy is why every manager wants their brand or company to be the biggest, though they may not say it that way. Being big, of course brings bragging rights, but it also improves all the performance metrics. And since size matters so much, most marketing

strategy is focused on getting bigger. Double Jeopardy says the way achieve growth is to get more customers -- because there are always customers in the market who don't buy even the biggest brand (some people did not choose green or red marbles either). It is therefore possible to raise penetration (increase the size of the customer base) and grow. Trying to grow by getting existing customers to buy more is very difficult because the purchase rates vary very little across competitors (in theory, it does not have to be this way, but in practice it always is). DJ means that raising the purchase rate requires getting more customers, and not the other way round.

DJ (Ehrenberg, 1959:) has been a prominent concept in marketing for over fifty years (Ehrenberg & Goodhardt, 1990). Through hundreds of replication studies it has been identified across time, in different markets and market situations, different countries, industries and services (Sharp, 2010). It is the classic case of an empirical generalization that through a process of marketing science has come to be known as a law of marketing (Uncles, et al, 1995).

Empirical generalizations are discussed in the following section, followed by an unexpected real-world application in section H.

G. Useful knowledge—Empirical generalizations

An empirical generalization (EG) is a *relationship* between two or more variables that has been observed across a range of conditions, i.e. water boils at 100˚C, more or less. Because the relationship is observed repeatedly it is regarded as a pattern, regularity or sometimes as a law. By knowing that an observed relationship holds under a range of conditions (and that it does not hold under other conditions—e.g. water boils at less than 100˚ at lower air pressure) it is possible to use knowledge of the relationship for practical purposes, such as making routine predictions and stating principles. It is also possible to start to theorise about why the relationship occurs, and why it holds under some conditions and not others, thereby moving from empirical description to theory-building (Barwise, 1995).

Empirical generalizations can be viewed as core knowledge much like the laws of physics, without which engineers and architects could not build things that remain standing. Marketing has few laws, but it does have academics who take a scientific approach to research and the development of marketing theory. Such academics typically employ a "data first" rather than "theory/model first" approach to search for law-like patterns in many sets of data. In this approach, initial findings tend to be simple, but repeated testing and extension to new contexts then add depth and identify boundary conditions. This approach views science as a gradual process of knowledge accumulation and refinement, rather than as a quest for revolutionary new ideas and places great value on theories and knowledge that are useful. In the marketing literature, replication and the growth of empirical knowledge have been a constant theme in the work of Scott Armstrong and periodically, leading journals like *Marketing Science* call for more replication studies and publish special issues on empirical generalisations (1995), while the *Journal of Advertising Research* published two issues on the topic in 2009 and 2013.

Two famous advocates of the EG approach were Andrew Ehrenberg and Frank Bass, both of whom made huge contributions to establishing useful EGs. One reason they were influential is that they usually based their research on industry-sourced data and metrics and therefore

produced results that became popular with the managers who use them. Another reason for their continued influence is that they both set out to produce reusable knowledge by design, applying a scientific approach to studying issues in marketing.

Empirical Generalizations are important to marketing for four main reasons:

First, ***they are a basic form of marketing knowledge*** (see Rossiter, 2002 on forms of marketing knowledge). EGs describe relationships that exist over a range of different contexts that have been studied systematically. Double Jeopardy is an example that has been observed over fifty years in varied countries, industries and product categories.

Second, ***EGs are fundamental building blocks for developing knowledge.*** The NBD-Dirichlet model (Ehrenberg, Uncles and Goodhardt, 2004) shows how a model can be refined, elaborated and extended. The Generalised Bass model (GBM) in the diffusion literature is another example of how a model can be built up from partial models with new observations.

Third, ***EGs are useful.*** For instance, a manager who knows about Double Jeopardy understands what to expect from sales-oriented interventions; growth is more likely to come from adding more customers than from increasing the purchasing frequency of existing customers. The strategy of securing more purchases from existing customers could be attempted, perhaps with a loyalty programme, but DJ suggests that would be going against the grain and will not work.

Fourth, ***EGs help protect against falsehoods and unsubstantiated claims to knowledge.*** Falsehoods take many forms—in research, a falsehood may be a reliance on a dubious result, as from a single innovative, un-replicated study. For managers there is also the danger of believing the hype surrounding fads or blindly following the herd into TQM, 6 Sigma, Marketing funnels or any number of compellingly promoted ideas that sound good, but have little of substance behind them, and may also be difficult in application.

Science and understanding advance when systems are in place for building logically from a base of existing knowledge. New studies may then reconcile conflicting findings, identify boundary conditions, and consolidate understanding. Ongoing marketing science also reveals both important gaps and suggests promising new directions for research to follow. None of this happens by accident however, and inefficiency emerges when studies are ad hoc, one-off treatments based on single sets of data that do not link systematically to the underlying body of knowledge. There is therefore a need to seek to build empirical generalizations, which has driven calls for papers from top journals soliciting systematic reviews and meta-analyses to consolidate existing EGs and generate new ones.

Section H below is a surprising example of the same sort of data exercise that was performed on marbles, however here the subject is large commercial aircraft.

H. Seek and discover

There are records for every large commercial aircraft ever sold and these records can be treated in the same way as other choice data to determine whether aircraft and marbles have anything in common in terms of how they are chosen. They really shouldn't because planes are hugely expensive, involve capital allocations processes, all manner of experts from finance to logistics, along with sales and purchasing engineers, banks and regulatory authorities. Also, they have lead times of up to five years during which volcanoes can erupt or pandemics break out that cancel the reasons airlines have for buying the planes in the first place. What could marbles possibly have in common with jumbo jets?

To answer that question, data were gathered from the Federal Aviation Administration in the US, the European Aviation Safety Agency in Europe, and from plane-spotting organizations that are fanatic about planes and data. Applying the same metrics and rules as to the marbles data, organizing by size and so on, produced a table showing how airline manufacturers share their customers. There are both expected results—Airbus and Boeing are very big (much higher penetrations), and surprises —lots of customers buy both Airbus and Boeing. There is also a split between those who buy Boeing and Airbus, and those who buy from everyone else. The overall pattern is similar to that for marbles, but messier.

Big Questions

Why would any airline buy from both Boeing and Airbus? After all, each manufacturer and every model adds a huge increase in fleet management complexity and therefore cost. Why don't airlines drive down costs through rationalization, simplification and concentration? Why spread purchasing between the manufacturers in this way?

These questions and many others can link analysis of market structure to strategic and managerial implications. The questions come out of the data, as reduced and manipulated so that the market's underlying competitive structure is exposed. Table 3 below looks like the marbles table, but is much lumpier and irregular. The table has a familiar form, but the irregularities and deviations cry out for explanation. Why does the table look like it does?

Table 3. Duplication of purchase in the Aviation industry (2009 to 2019).

% Buyers of brand	Pen (%)	Who also bought… Airbus	Boeing	ATR	Embraer	De Havilland Canada	Bombardier	All Other
Airbus	46		32	8	6	2	4	2
Boeing	39	37		7	9	3	4	2
ATR	18	20	15		7	11	4	0
Embraer	12	24	28	10		7	13	3
De Havilland Canada	6	14	19	3	14		11	0
Bombardier	6	34	25	13	6	13		3
All Other	4	16	20	0	8	0	4	
Average		24	23	7	8	6	7	2
Theo. Dup.		25	22	10	7	4	3	2

Source: Bennett & Anesbury, 2020, How do airlines buy aircraft? An empirical study of industrial buying behaviour, in review

Exceptions and irregularities need explanations

It turns out the structure is based on size—Boeing and Airbus make big planes of 150 to 450 seats, while others sell smaller planes of 50 to 160 seats. There is therefore a functional basis for choosing between suppliers. Large aircraft are bought by airlines with intercontinental routes, smaller ones by airlines with shorter, regional routes. Of course, some airlines have both longer and shorter routes, and will therefore need both larger and small planes. In addition, at every size and specification level, at least two or more manufacturers offer very similar planes, so customers are choosing between very competitive offerings. Planes are not exactly like marbles, but customers choose them almost as if they were.

So what? What should the competitors do, or do differently? Does knowing the structure of the market matter? Should manufacturers vary their strategies for different customers? Should customers play one rival against another. What should new entrants do, a Chinese manufacturer perhaps, keen to enter the market for commercial aircraft, should they make big planes or small? Who should they target?

The competitive structure in the market does in fact suggest that new competitors should enter via the more competitive, smaller aircraft subsector, not just because development costs are lower, but because customers in that subsector are inclined to buy from more suppliers. This is exactly what Comac of China did in 2016 when they introduced a 160-seat aircraft. By 2017 they had 517 orders and began deliveries in 2019. In turn, existing suppliers could respond in many ways, but given the nature of the marketplace, they should seek to gain (and keep) as many customers as possible. This despite the fact that many small customers make only occasional purchases, so this amounts to targeting the entire market, most of which are light buyers. This may seem paradoxical, but these smaller airlines buy nearly half of all aircraft.

The large commercial aircraft case above demonstrates what can be done with data to illuminate core concepts as a starting point for exploring, and doing, marketing science. As part of the student learning journey, a market or data set like the one used here could form the basis for a live case study (see section I below) to enable deeper exploration of the laws of marketing and also to establish more connections with actual marketing strategy and practice.

Real data are important, but as with marbles, do not have to be complex. Real data enable students to develop competences and skills to master the tasks they want to learn. As much as possible the aim should be to design activities and exercises that approximate what students will do when they are either conducting their own academic research or as part of their job.

I. Live case studies

Mixing real world elements into the curriculum entices students to think critically in new environments. Live case studies are one way to bring real companies with real business issues into the classroom. This is especially valuable to final year students to bring business

frameworks to life, but also to place them into unpredictable and challenging situations that further their learning.

In a typical live case, leaders from a participating company visit the classroom and present a business problem or brief that they need to tackle. Students are then asked to develop solutions. They generally do this as a team that works during the semester and then presents solutions to the professor, classmates, and the company. When a company visits and lays out a specific problem, students are suddenly put inside the business. They have to develop solutions and strategies, think about the implications, and then apply real performance and sales numbers to see how their proposed solutions affect company performance. The real-world application helps them attain deeper, more meaningful understanding.

Students must also work out how to present, explain and justify their solution to a manager or company owner. This gives them a level of responsibility, ownership and involvement that can only come from real-world interaction. This in turn means that they put in a lot more effort because they are not just going for a mark, but they also put themselves up to scrutiny when they stand up in front of a company and make a proposal to it.

Setting up Live Cases

Live cases generally fall within a class curriculum designed without knowing which company or problem will be studied. The company brief is critical and may require extensive discussion between the tutor and managers to lay out the problem to be solved, but also why the exercise is valuable to both company and students.

It is important to understand both the company's and students' boundaries. Live cases take a lot of time, effort, and involvement from all parties to be successful, and it is important to agree not just a process, but who does what and when. Live cases are valuable learning experiences because they not only help develop marketing science skills, but they also help nurture a scientific mindset for approaching marketing problems. The marketing science mindset will be explored further in section K below.

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At the beginning of 2020 Stefano Cutrona, Managing Director of Galbusera, presented a challenging brief to a marketing class at London South Bank University. Galbusera is a family company that over the last 100 years has grown into one the most progressive and innovative bakery companies in Europe, becoming the leader in "healthy bakery" in Italy. In 2014 the company expanded into the "indulgent" segment by acquiring the Tre Marie brand, growing it to second largest in the wafer segment in Italy. In both healthy and indulgent bakery Galbusera brands stand out for high quality, innovative flavors, advanced technological solutions, and being able to command price premiums vs the competition.

Students were asked to define an effective go-to-market strategy for Galbusera brands in Europe. Using marketing databases to evaluate market potential and strategies for launch. they were asked by the company to tackle real-world problems, and with no teaching notes or pro formas, they had to come up with their own solutions. The company provided background and market research data and sample products.

Students soon discovered they knew little about the business of biscuits. So Galbusera provided detail about products, competitors, logistics and so on, and outlined their budgeting processes. By the end of the briefing, the students realised they needed to pull together what they had learned to develop proposals and make real decisions.

To begin, student teams organized available category data country by country, following the rules of data presentation. Since they had participated in the marble-choosing exercise, they knew about DJ and DoP and in analysing the category data found that big brands had much higher penetration and slightly higher repeat rates and that people who bought crackers (savory biscuits), or cookies (biscuits), or wafers, bought across the baked goods spectrum. In other words, the baked goods categories conformed to DJ and DoP expectations. This was important when they began to formulate market entry and market development strategies.

The next step was to research consumer attitudes to 'healthier' and 'indulgent' as applied to baked goods. They developed a questionnaire that was circulated online across Europe and each student gathered 20-40 responses which were pooled into a dataset of 1100 respondents with cross-tabulatable data on attitudes towards salt, fat, sugar and natural ingredients in baked goods and what would improve baked goods' healthiness.

The survey showed that many consumers don't see cookies as particularly healthy even though they are the most popular regular snack, while the most-healthy baked good, crispbread, was the least popular.

	% Claimed regular snack	Perceived healthy minus not healthy	To improve healthiness			
			Less sugar	Natural ingredients	Less fat	Less salt
Fruit/Veg	31	58				
Crisps	18	-54				
Cookies	18	-37	49	22	14	6
Crackers	15	15	15	22	16	23
Wafers	6	-50	45	26	19	5
Crispbread	1	32	12	28	11	14

The popularity of the snack did not seem to depend on whether it was seen as healthy—crisps and cookies were seen as unhealthy but were nonetheless very popular.

		To improve healthiness			
	Perceived healthy minus not healthy	Less sugar	Natural ingredients	Less fat	Less salt
Cookies	-19	34	27	16	11
Crackers	37	9	32	21	23
Wafers	-26	39	9	22	2
Crispbread	69	7	33	6	11

On the other hand, the perceptions of regular users were much less negative. This was important because it hinted that usage or trial might change marketplace perceptions, and also that users' views can be very different than non-users.

The market entry and development strategies proposed by the teams generally emphasized the importance of targeting bigger markets with established baked goods categories. The main goal on entry was to maximize trial and penetration through wide distribution and extensive marketing activity using traditional and digital media. Some teams emphasized health advantages, some indulgence, and some healthier indulgence, but most emphasized driving penetration up to capture repeat purchasing. This was a direct and focused application of what they had learned from studying empirical generalizations.

After the project, the students did reflective assessments of their experience and talked about the skills and tools the case enhanced. Taken altogether the reflections had three main themes: the live case helped build *confidence*, it *prepared* students for their future by enhancing relevant skills, and it helped make their theoretical or 'book' knowledge practical. Many saw the live case as a stepping-stone to professional life. They felt it had immediate benefits from learning by doing (Experiential learning). This included greater engagement and a sense of ownership than they had experienced before. Some students added that it was hard, but that having done it, they felt prepared to take on other real problems beyond the safe university context, and ready to explore the wider world.

J. The marketing science mindset

It is too much to ask that marketing students have great technical knowledge, but they do need to develop a mindset of learning, breaking down problems, and developing solutions. Live cases such as Galbusera showcase how non-technical people often struggle with problems, e.g. they can't find an example to match their issue, or they aren't able to break it down into workable pieces, so they feel overwhelmed. Problems are like puzzles and while scientists may not know exactly how to solve them, they do understand how studying a problem through iterations and varied approaches can help them build sufficient understanding to achieve their goals. Developing a scientific mindset requires acknowledging lack of initial understanding and not knowing what to do, but also the need to be comfortable with the struggle to find a solution. Adopting this mindset is not easy, especially for numerically challenged, non-technical students, but practice and reinforcement help. The Galbusera teams travelled a challenging intellectual path, the same path as technical people who were also once novices struggling with the same problems.

The scientific mindset is an asset to students who increasingly see higher education as a total experience that encompasses lectures and tutorials, but only as small parts of their learning world. That world can include part-time jobs, side hustles, clubs, societies, extra-curricular travel, and online communities in huge and shifting variety. Students, or as some call them, education customers (George, 2007) are also increasingly diverse, and so delivery of education is becoming more personalised, reflecting different learner motives for study, different patterns of study from full to part-time, modularisation, apprenticeships, on-demand remote-access– anytime, anywhere, and outcomes including traditional degrees, professional certifications and micro-credentialing of course components.

As the educational horizon shifts and atomizes, practical, job-ready skills are becoming increasingly important. Today's student CVs typically list levels of proficiency in widely used software and business tools. Among these are data handling skills including knowing what data to search for, and how to retrieve, select, analyse and present it. While a toolkit and skill base are important and also reflect students' orientations to problem solving, it is critical that these are applied within a framework of useful knowledge—the basic principles that govern the practice of marketing.

Marketing science requires scientific method, which is an approach to answering a question. For example, what happens when a brand influencer is pictured on social media wearing a fur coat. The answer might be obvious because fur coats are loved by some and abhorred by others (an hypothesis), so the predictable answer is likely to be that some people will react negatively—which can be tested in a variety of ways. From there it is possible to make more refined hypotheses and predictions, and more importantly, to make managerial decisions about the influencer, influencers in general or even about fur coats.

Marketing science is not just about math and statistics. Marketing happens in a business context with social and behavioral aspects and it requires knowledge or context to make sense. Moreover, it goes beyond statistics because data analysis can seldom be done well with automated software of the sort that most people don't understand. How does a marketer choose between JMP, KNIME, Orange, Python or R—all popular data analysis software packages. A reasonable person might fall back on IT professionals, statisticians or consultants, but this is really just kicking the can down the road because eventually they will have to try to understand what the experts say in order to make a business decision.

The *meaning* to decision makers is the important thing, and judgment and experience are essential to the scientist, or to a new marketer who has to justify a recommendation—usually on the basis of a quantified measure of something. An obvious exception to this rule is when all that is really required are predictions that are likely to come true, of the sort that experienced marketers can make, e.g., if we have a two-for-one deal in June we're likely to triple our sales that month. This prediction is based not on understanding the underlying data or behavioural mechanisms or the 'why' (though it might be) but is instead based on knowledge of the 'what.' Common sense and pricing theory say that twofers increase sales, while the tripling forecast comes from experience and judgement.

Being able to understand the *qualitative* aspects of quantitative research, therefore, is an aptitude that good marketing scientists must have. Good scientists are tenacious but, at the same time, creative problem-solvers who can *feel* what the data are saying. There are analogies with music - a technically gifted classical musician is unlikely to go very far without the ability to play with feeling.

Interpersonal and communication skills are important for many jobs and marketing science is no exception. An analyst who is technically clever will be underutilized if he or she can't get along with people or communicate with them in language they can understand. A core task of the marketing scientist is therefore to translate and communicate data in the context of marketing knowledge so that it can be acted upon by decision makers.

K. The problems of Knowledge.

The development of knowledge faces two big hurdles. First, any knowledge may be based on fallible observations (Hunt, 1990; Zaltman, 1991), and second, it is logically impossible to prove any statement to be universally true. This may sound a bit stark, but while empirical knowledge may be fallible and there is uncertainty in searching for it, it is still possible to obtain reasonably objective knowledge about the world through observation and experience.

Karl Popper (1935) dealt with the impossibility of conclusive proofs of universal statements or theories, saying that we should not try to prove theories to be true, but instead try to prove them to be false by subjecting them to stringent tests and comparing them to *competing theories* to determine which provides the best predictions with the least falsifying instances. Any theories or ideas that survive rigorous examination can then be accepted as 'true'. Modern marketing scholars (Armstrong, Brodie, and Parsons, 1997) suggest a practical way of ensuring that theories are strong is to test multiple competing hypotheses, and prefer the one that over time, performs the best for given conditions.

In the real world theories are rarely tested *per se* because managers are not very concerned with making testable predictions. Instead, they examine data on consumer behavior looking for insights that may improve their decision making. This is the approach of many marketing textbooks—that *understanding* leads to better decisions, e.g. managers who want to satisfy consumers need an in-depth understanding of those consumers in order to develop effective marketing strategies. This is why empirical generalizations matter so much—they provide benchmarks for expectations and guidelines to shape strategy. In the next sections, we discuss where marketing science can play a role for managers.

L. In the real world

Less than 1% of businesses achieve long-term growth, according to a study of over 3900 brands in 58 CPG categories in 21 countries (Kantar 2019). This despite nearly every marketing plan having growth as a goal. For most businesses, becoming a member of the 1% club is a wish, like a kid's dream of playing professional football. Marketers know growth is hard, but with experience they learn to write strategies with achievable KPIs like increasing penetration, engagement, the number of mentions on social media, or incremental sales growth, if not market share growth, when the economy is good.

But he one percent dream can also be dangerous because it makes marketers believe the promises for growth made by wily management consultants, crafty advertising gurus and these days, sophisticated data-wonks. Customer Relationship Management (CRM) is a case in point--in the name of improving customer service, CRM drove big far-reaching changes in

staff training and investment in IT systems, some of which were useful, but also expensive. To be sellable, the high investment costs were set against other desires and so improved brand loyalty and lower customer defection were added, both of which promised astonishing gains in revenue and profit.

Understanding why CRM failed to deliver as promised requires clear-eyed examination and scientific evidence (See Reichheld, Schefter & Rigby, 2002). The bottom line is that the incremental returns from CRM didn't cover the costs of investment. Now consider the promises made for content marketing (where valuable content is shared). Or Artificial Intelligence (AI), where a trained computer thinks about data, or influencer marketing where media mavens move markets, or blockchain systems that are meant to randomize data and protect competitive intelligence. These and many more hot ideas are promoted as game-changers that just might take a business into the 1 percent.

That's where marketing science comes in. By approaching marketing from a foundation of evidence it allows marketers to place the promises made for any form of marketing activity into the context of knowledge about that activity. For example, much is known about how advertising works—or what to expect from direct-response or brand-building campaigns, leading to calculations for advertising ROIs. It is also evident that price elasticity is generally about -2.0 (a 10% change in price generates a 20% change in sales in consumer packaged good), and that big brands have more loyal customers than small ones do. And while experienced managers know all this and a great deal more, their knowledge is usually confined to a few companies, and is not systematic or generalized across industries, which is where marketing scientists come in.

Marketing Science or Science in Marketing?

In short, there is science in marketing—it even has some laws. Ries and Trout (2017) claim that there are twenty-two immutable laws of marketing, which is probably over-claiming, possibly in reaction to those who doubt the scientific status of social sciences in general. This re-opens the old question of, "Is marketing a science?" (Brown, 1948) which after seven decades still embroils scholars (though probably not practitioners) in heated debate. Social sciences, such as marketing are seen as complex because they involve people. The point of any field of scientific enquiry however, is the derivation of principles, or laws which can serve as the basis of prediction, decision and action. Prediction of anything is possible only when there is great uniformity in the phenomena under study as can be found in nature. And since the conditions and events in nature are found to have high uniformity, predictions concerning them are seen as reliable, and the methods by which such phenomena have been studied have become the standard for scientific research.

The fundamental belief for marketing scientists is simply that the methods of the physical sciences also apply in social science. The laws of buyer behavior and the principles of discovering such regularities are the same as in other science: collecting enough of the right kind of facts and studying them. And because humans, despite all their complexities, exhibit a great deal of regular behavior, so studying their behavior, leads to the discovery of regularities. Science can be simple. All one has to do is to pick regular things to study.

For students and marketers, the debate above is entirely academic. They are not very bothered that much of what we know about science remains confused and contentious. To them, it is more useful to know that implicit in observed phenomena are many lawlike

relations saying that if this occurs, so does that. The systematic uncovering of such relationships and their subsequent applications to practical problems are how science and technology progresses.

And marketers who take decisions based on knowledge can make better decisions. M&M Mars for example has many leading businesses and takes a scientific and systematic approach to marketing. To do this, Mars trains its staff repeatedly in marketing science. As a result, most Mars marketing interventions have a central goal of increasing penetration-- the size of the customer base. That singular goal however can be addressed with any number of strategies, from repetitive brand-building advertising, to edgy and exciting influencer marketing.

Marketing science *is an approach to marketing that uses scientific methods in the pursuit of "truths" in marketing. It is related to, but more general than marketing research, which is oriented towards a specific product, service or campaign.*

M. Challenges and developments

As goes marketing, so goes marketing science. In the coming year, both will look very different. It might be that for marketing, Covid-19 is like the asteroid that killed off the dinosaurs. Or maybe not – many fundamental changes such as Big Data, the Internet of Things, User Generated Content (UGC), AI, and Data security were already afoot. They may have been accelerated by Covid.

The effects on marketing science are likely to be seen in an increasing requirement for high levels of technical sophistication (e.g., Bayesian statistics, programming languages) and advanced computer science skills. In some ways, marketing science has long been a sort of black-box advantage that sophisticated, well-resourced companies use to dominate their markets. Now anyone can draw on analytical tools that are deceptively accessible, but don't require any knowledge of research or statistics or scientific method. As a result, though people can now perform analytics and generate presentations that were unheard of a few years ago, the risk of shoddy analytics has also risen.

This is a problem with many marketing trends. Take the hype about Artificial Intelligence (AI) for marketing. A tremendous amount is written about AI but practicing marketers read little of it because it is quite technical. Even so, they might want AI for what it is good for: performing very complex calculations, pattern recognition (with training), prediction, translation and collation of documents and languages, text mining. On the other hand, AI is not good at going beyond what has been programmed—it has no curiosity, can't make abstractions, read or feel emotions. AI is just one among many exciting developments that challenge marketers to keep up.

Teaching and learning marketing science and the associated quantitative skills is a priority area for companies, universities and governmental organizations. For example the ESRC has the Quantitative Methods Initiative or Q-Step in the UK (ESRC 2019) to assist teachers to improve the research skills of undergraduates, and the Applied Quantitative Methods Network (AQMeN, 2017) for postgraduates.

In modern classrooms, Students come from many academic and professional backgrounds, are enrolled in very different university degree programs, and have highly varied knowledge and skills bases. Sheer diversity complicates the organisation and structure of any course, but for marketing science it also requires teachers to make complex decisions about the purpose of the course and who it is aimed at. They will also need to determine what it will cover; the balance between theory and practice; the order in which ideas, concepts and skills will be introduced and built upon; how to engage students in the subject, and how to use data.

Attitudes towards scientific thinking are far from uniform—academics and those employed as marketing scientists care a lot about it, while managers tend to want reliable solutions they can apply with confidence. There is also an element of fear or apprehension when it comes to quants and statistics, not to mention programming and data analytics. In teaching marketing science this anxiety is more than just something to overcome because it affects confidence and ability to learn. Anxiety can result in a sort of mind-lock that precludes learning unless carefully unpicked and remedied with patience, practice and positive feedback.

N. Course Design

Structure and sequence are critical to designing any learning experience, and especially important when developing online learning. This chapter was built on the experience of teaching marketing courses, not all of which were Marketing Science courses. Whether entry level or final year however, they followed a similar progression from small student-generated data sets, (sometimes involving marbles), to analysis of business data sets, (sometimes in live case studies), to formulation of marketing strategy.

Design of marketing science courses either in-class or online should follow well established guidelines. To begin, it is important that courses have a clearly explained structure that is easy to understand and navigate. This also applies to the user experience of the platform and course. Second, content and tasks should be structured so that students can progressively build competence. Content should be incremental so that it is easy for the learner to understand why it matters and what it is about. Complex tasks can be broken into a number of stages with constructive feedback at each stage. As the learner progresses and builds competence the number of stages can be reduced. Considered structure and sequencing also allow students to move at their own pace, especially if they require re-learning of some concepts, or need to refresh their skills in maths and numeracy.

O. From Art to Science

Science, not art, drives marketing. Yet there is a certain artistry required to marketing as science. Inaccurate data, biased readings, poorly defined experiments and woolly hypotheses represent just some of the dangers of ill-applied marketing science.

Students of marketing who want to pursue marketing as a science as opposed to an art need to both understand marketing and have a decent set of skills in a data-related field such as statistics. Potential career candidates need to have a thorough understanding of marketing terms and techniques, data collection, and analysis.

Students in a marketing science course will learn about data techniques and how to analyze the gathered information. This is useful for a career in scientific marketing as it allows students to expand the tools needed for data handling and analysis. It is important to learn not only how this data is tracked and analyzed, but how to use this data to create and implement powerful and effective marketing campaigns.

Marketing science as a discipline applies equally to different subjects within marketing. While the discussion in this chapter is mainly about purchasing or brand buying, a marketing science approach applies equally well to courses on advertising, social media marketing, marketing research, branding and so on, but with data and metrics appropriate to each. The marketing science mindset allows students, teachers and practitioners to look at any subject with the intent to develop reliable and useful understanding.

Bibliography

Armstrong, JS, Brodie, RJ & Parsons, AG (2001) Hypotheses in Marketing Science: Literature Review and Publication Audit. *Marketing Letters* (12) 171–187

Barwise, P, (1995) Good empirical generalizations, *Marketing Science*, Vol 14 (3) G29-34

Bass, FM (1995). Empirical generalizations and marketing science: A personal view. *Marketing Science*, Vol. 14, No. 3, Part 2 of 2: Special Issue on Empirical Generalizations in Marketing, G6-G19

Bennett, D & Anesbury, Z (2020), How do airlines buy aircraft? An empirical study of industrial buying behaviour, *Marketing Letters*, in review

Blattberg, R & Neslin, S (1990) *Sales promotion - concepts, methods and strategies* Prentice-Hall, Inc., Englewood Cliffs, NJ

Bogomolova, S, Szabo, M & Kennedy, R (2017) Retailers' and manufacturers' price-promotion decisions: Intuitive or evidence-based? *Journal of Business Research,* Volume 76, 189-200

Bhowmick, S, Young, J, Clark, P, & Bhowmick, N (2017). Marketing Students' Mathematics Performance: The Mediating Role of Math Anxiety on Math Self-Concept and Math Self-Efficacy. *Journal of Higher Education Theory and Practice*, *17*(9).

Brown, LO (1948) Toward a Profession of Marketing, *Journal of Marketing*, Vol 13 (1), 27-33

Charlebois, S & Foti, L (2017) Using a Live Case Study and Co-opetition to Explore Sustainability and Ethics in a Classroom: Exporting Fresh Water to China, *Global Business Review*, 18(6) 1400–1411

Ehrenberg, ASC (1959) The pattern of consumer purchases, *Applied Statistics*, Vol. 8 No. 1, 26-41.

Ehrenberg, ASC, Goodhardt, G, Barwise, P (1990). Double jeopardy revisited. *Journal of Marketing*, 54 (3) 82–91.

Ehrenberg, ASC (1969) "Towards an Integrated Theory of Consumer Behaviour," *Journal of the Market Research Society*, 11 (No. 4, October) 305–37

Ehrenberg, ASC (1975) *Data Reduction*. Wiley, London and New York.

Ehrenberg, ASC (1988) *Repeat-Buying: Facts, Theory and Applications*. Oxford University Press, London.

Ehrenberg, ASC Uncles, M, & Goodhardt, G (2004) Understanding brand performance measures: Using Dirichlet benchmarks. *Journal of Business Research*, 57(12) 1307–1325.

George, D (2007) Market overreach: The student as customer, *Journal of Socioeconomics*, Vol 36(6) 965-977

Kilburn, D, Nind, M & Wiles, R (2014) Learning as Researchers and Teachers: The Development of a Pedagogical Culture for Social Science Research Methods? British Journal of Educational Studies, 62 (2) 191-207

Hagan, F (2012) *Essentials of Research Methods for Criminal Justice*, Pearson, USA

Hubbard, R & Armstrong JS, (1994) Replications and extensions in marketing: Rarely published but quite contrary, *International Journal of Research in Marketing*, (11) 233-248

Hunt, S (1990) Truth in Marketing Theory and Research, *Journal of Marketing*, (54) 1-15

Hunt, S (1991), "Positivism and Paradigm Dominance in Consumer Research: Toward Critical Pluralism and Rapprochement," *Journal of Consumer Research*, (18) 32–44.

Journal of Advertising Research (2009) What we know about advertising: Advertising Empirical Generalizations: Implications for Research and Action, June; volume 49, issue 2

Journal of Advertising Research (2013) What we know about advertising II: Research and Action, Field, (53) issue 2

Jandaghi G, Alireza, A, Parvaneh, P, Zahra A & Hasan K (2011) Survey the Role of Brand in Formation of Customer Loyalty in Financial Services Marketing by the Approach of Small Firms, *Far East Journal of Psychology and Business* Vol. 3 (No 3)

Kolb, DA, (1984) *Experiential Learning*. Englewood Cliffs. USA

Kolb, AY, Kolb, DA (2005) Learning styles and learning spaces: enhancing experiential learning in higher education. *Academy of Management Learning and Education* 4 (2) 193–212.

Kotler, P (2012) *Kotler on Marketing*, The Free Pres, Simon & Schuster, http://www.SimonSays.com

Kuusik, A (2007) *Affecting Customer Loyalty: Do Different Factors Have Various Influences in Different Loyalty Levels*, No. 366, Tartu University Press, Tartu 51009, Estonia

Lewis, LH, Williams, CJ (1994) Experiential learning: past and present. *New Directions for Adult and Continuing Education*, 1994. Wiley Periodicals, 5–16.

Marketing Science, (1995) Vol. 14, No. 3, Part 2 of 2: Special Issue on Empirical Generalizations in Marketing

Houston, M & Hulland J (2021) Call for Papers for a Special Issue and Thought Leaders' Conference on Generalizations in Marketing: Systematic Reviews and Meta-Analyses, *Journal of the Academy of Marketing Science*, forthcoming

Popper, K, (1935) *Logik der Forschung* (The Logic of Research), translated into English under the title The Logic of Scientific Discovery (1959), Routledge, London

Prince, M & Felder R (2007) The Many Faces of Inductive Teaching and Learning, *Journal of College Science Teaching*, Vol 36 (5)

Ries, A & Trout, J (2017) *The 22 immutable laws of marketing*, Online version, dln.jaipuria.ac.in

Rigby, DK, Reichheld, FF & Schefter F (2002) Avoid the four perils of CRM, *Harvard Business Review*, 80(2) 108-9

Rossiter, JR, (2002) The five forms of transmissible, usable marketing knowledge. *Marketing Theory*, 2 (4) 369–380

Rust, R (2020) The future of marketing, *International Journal of Research in Marketing*, (37) 15-36

Sharp, B (2010) *How brands grow*, Oxford University Press, Oxford

Srinivasan, S, Pauwels, K, Hanssens, D & Dekimpe, M (2002) Who Benefits from Price Promotions? *Harvard Business Review*, September 80(9)

Srinivasan, S, Pauwels, K, Hanssens, D & Dekimpe, M (2004) Do promotions benefit manufacturers, retailers, or both? *Management Science*, 50 (5) 617-629

Tiltman, D (2012) *Trends report on shopper marketing*, Online: WARC

Trout, J & Rivkin, S (2010) *Differentiate or Die, Survival in our era of killer competition*, 2nd Ed, John Wiley & Sons, Inc., New Jersey

Tu, Y, Lin, S-Y & Chang, Y-Yi (2011) "Relationships among Service Quality, Customer Satisfaction and Customer Loyalty in Chain Restaurant" *Information Management and Business Review* Vol. 3 (5) 270-279

Uncles, M, Ehrenberg, ASC, & Hammond, K (1995) Patterns of Buyer Behavior: Regularities, Models, and Extensions, *Marketing Science*, Vol 14 (3) G71-G78

Wind, Y, Sharp, B & Nelson-Field, K (2013) Empirical Generalizations: New Laws for Digital Marketing, How Advertising Research Must Change, *Journal of Advertising Research*, 53 (2) 175-180

Zaltman, G (2000) Consumer Researchers: Take a Hike! *Journal of Consumer Research*, Vol 26 (4) (March), 423–28