A REVIEW OF CUSTOMER SATISFACTION MODELS AND A PROPOSED BUSINESS GENETIC CODE

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Abstract

This conceptual study has traced the evolution of customer satisfaction index models over the last four decades (1970 to 2012). The aim was to assess the key strengths and weaknesses of the current models; identify knowledge gaps; and propose improvements. Review of the relevant literature identified a set of four generic firm upstream variables (*businessgenous bases)* namely governance, assets, working capital and teams, analogous to the four nitrogenous bases that form the biological genetic code. The authors postulated that these bases constitute a business genetic code because their combination and robustness drive employee attitude, cost competitiveness and efficiency of systems and processes that in turn define the firm's potential. It is posited that employee attitude has such a profound effect on customer satisfaction because service quality has a high knock down effect compared to product quality which in turn has a higher inductive effect. Reflecting on this, a satisfaction assessment model is proposed that presents results alongside the knock down- inductive phases.

Keywords: Customer satisfaction models, knowledge gaps

Introduction

Progressive improvement of product and service offerings is a key focus for companies and other organisations in their efforts to enhance customer satisfaction and loyalty in the face of growing intensity of competition. Over the years, much research and revenue have been invested in developing accurate ways of assessing customer satisfaction at both the macro (national) and micro (organization) levels. This has involved developing models that help to analyse the immediate preconditions of satisfaction and loyalty (Deming, 1993; Leary, 2007). Over the last four decades numerous satisfaction index models have been developed

(Andreasen & Best, 1977; Rusbult et al, 1982; Fornell 1992, Johnson et al, 2001, Keiningham et al, 2007, Close, 2010).

A number of quality award systems have been developed in Europe, USA, Australia and other places (Vokurka *et al*, 2000). These have mainly focussed on enabler variables necessary for the success of the direct quality drivers. However, there is little evidence of concerted efforts to link up the frameworks for satisfaction index models with those of quality award systems yet they both ultimately relate to customer experience. In this regard the study sought to establish the key generic enabler variables and the key immediate quality drivers and to develop these into a firm-wide conceptual framework that can aid in improvement and teaching programs. The reviewers further delve deeper on these direct quality drivers for possible characteristics that can help to explain the varied customer reaction across the drivers.

Literature Review

The Emergence of Customer Satisfaction Index models

Early work on assessment of customer satisfaction that preceded present day index models focused on consumer complaint behaviour. Consumers had three options when they experienced dissatisfaction with a firm; Exit (switch to a competitor), Voice (express dissatisfaction) or Loyalty, that is passive perseverance of dissatisfaction in anticipation that the situation will improve (Hirschman, 1970; Andreasen & Best, 1977). Rusbult *et al*, (1982) added a fourth element, neglect and postulated the Exit-Voice-Loyalty-Neglect model.

National customer satisfaction index (CSI) models were introduced in the late 1980s. Claes Fornell established the Swedish Customer Satisfaction Barometer (SCSB) in 1989 as the first national CSI for domestically purchased and consumed products and services and was applied to 130 companies from 32 Swedish industries (Fornell, 1992). In 1992, the German customer barometer was introduced but it does not involve either an index or model per se (Johnson *et al*, 2001). The Norwegian Customer Satisfaction Barometer was introduced in 1996 and was applied to 42 companies in 12 different industries in both business to consumer and business to business sectors (Johnson *et al*, 2001). Further interest on CSIs in Europe saw the launch of the European customer satisfaction index in 1999 (Johson *et al*, 2001). Other efforts were started in Japan, Denmark, Austria, France, Netherlands, Switzerland, New Zealand, South Korea, Malaysia, Hong Kong and Russia (Grigoroudis & Siskos, 2003; Nagashima, 2010).

In 1995 Thomas Jones and Earl Sasser Jr. established the Apostle Model that was later revised by Sasser in 2003 (Henning, 2008). In 1997, Heskett, Sasser and Schlesinger published ‘The Value Profit Chain’,

emphasizing the delivery of value to employees, customers, and shareholders (Heskett *et al*, 1997). Closely related to this is the Employee Customer Profit Chain. In 2003, Frederick Reichheld launched the Net Promoter Score that surveys satisfaction on only one question: the customer's intention to recommend a firm or its products and services (Keiningham *et al*, 2007).

Classification of Quality Drivers

Quality drivers are often classified along several lines. The American Marketing Association Handbook (AMA) classifies quality drivers into three main categories (Dutka, 1993). Product attributes include quality, benefits, features, design, reliability and consistency, value-price relationship, and the range of products offered. Service attributes include delivery, complaint handling, problem resolution, and warranty or guarantee. Transaction attributes include communication, ease of doing business, company reputation and staff competence. Crawford (2007) argues that after the quality of the product or service, customers want friendly, professional, helpful and competent staff and efficient problem solving.

Ronald (2010) identifies six quality drivers, namely attributes related to product, service, and transaction (accessibility), firm or brand image, value and customer expectations. Value refers to both tangible and intangible benefits and costs. It is a combination of quality, service, and price. It increases with quality and service and decreases with price among other factors (Kotler & Keller, 2006). Service reflects on employee attitude and has been found to be a major determinant of customer defections (Adams, 2006).

Critique of the Customer Satisfaction Index models

Improvements have mainly been in model scope and treatment of model constructs. The original SCSB had two primary antecedents but later derivatives such as the EPSI have 4 primary variables. Where the original SCSB had perceived value, the ACSI added perceived quality as distinct from perceived value (Fornell *et al,* 1996). However, a comparison of the common CS models shows wide variation on the range of drivers used and variable relationships. The ACSI has six latent variables surveyed on fifteen questions while the Net Promoter Score (NPS) uses only one question (Fornell *et al*, 1996; Reichheld, 2003; Reichheld, 2006). There is considerable debate over the objectivity of the NPS, being a single metric and therefore is limited in directing firms towards the key aspects that need improvement so as to increase satisfaction (Keiningham *et al,* 2007). Some models have weak or unclear variable links such as between quality and value in the ACSI model. Quality is not a pure antecedent to value because it is related to value by definition. One cannot tell how much effect of quality

on value is due to cause and effect (Johnson *et al*, 2001). The ACSI also has a link from expectations to value yet through cumulative experience expectations become precise leading to confirmation rather than disconfirmation of expectation (Rust *et al,* (1999). Ultimately expectations become passive or cease to exist (Oliver, 1997).

Complaint handling should be treated as a driver rather than as a consequence of satisfaction because gradually firms have come to focus on complaint resolution and not complaints *per se*, yet the ACSI model has it as a consequence (Johnson *et al*, 2001). The EPSI model has corporate image as a driver of satisfaction but it is more logical to have satisfaction as antecedent to corporate image (Johnson *et al*, 2001). Word of mouth has gradually gained recognition (Jones & Sasser, 1995; Adams, 2006) yet the ACSI and many of its derivatives do not include likelihood to recommend. Furthermore, the existing models lack conceptual frameworks to show how the cascade of policy or strategy implementation impacts on the measured drivers of satisfaction and related constructs.

Enabler Variables

Enabler variables include dimensions of governance such as leadership, people and resource management as well as policy and strategy. Pfeffer (1998) found better people management as the single greatest source of competitive advantage. This is supported by the Service Profit Chain which argues that value is created by satisfied, loyal, and productive employees (Heskett *et al*, 1997; Saari & Judge, 2004; Capek, 2007). Heskett *et al*, (1994) observed that staff desertion dropped CS from 75% to 55% while Simmerman (1995) observed that 70% of customers left due to poor service compared to 20% combined for price and product quality. Adams (2006) reported employee attitude to be a leading cause of customer defections (68%) followed by other dissatisfactions (14%) and defections due to competition at 9%.

The role of enabler variables is also highlighted by quality award systems. The European Quality Award, the Malcolm Baldridge Award, the Deming Prize, the Australian Quality Award and the Canadian Common Measurement Tool all stress the roles played by leadership, people management, policy and strategy, resources and processes as well as information and innovation in driving quality (Vokurka, *et al*, 2000; Calingo, 2001; Heintzman & Marson, 2003). The European Quality Award has five quality enablers, namely; leadership, people management, policy and strategy, resources and processes (Vokurka *et al* 2000; Calingo, 2001; Conti, 2007). Leadership and people management have a combined rating that is close to 20%. The Malcolm Baldridge has seven drivers, namely; leadership, strategic planning, customer and market focus, information and analysis,

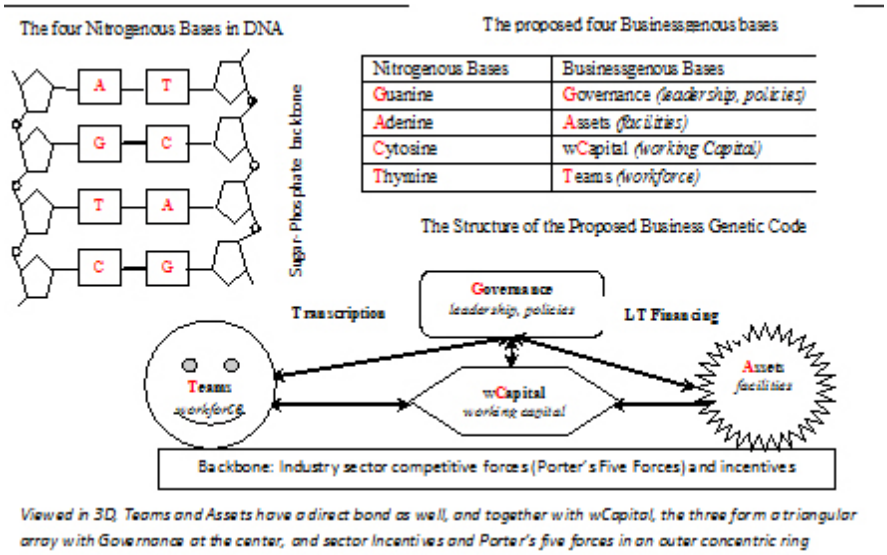
human resource focus, process management and business results (Vokurka, 2000; Calingo, 2001). The Australian Quality Award has seven variables like the Baldridge award but lays them out on a simpler framework. The effectiveness of implementing these variables determines a firm's organisational performance (Vokurka *et al*, 2000).

The Proposed Business Genetic Code

Enablers of quality drivers can be grouped into two categories based on the cascade hierarchy. There are the generic/ basic enabler variables that are the responsibility of proprietors and senior executives or require the direct attention of such executives. These include the governance of staff (teams), long and short term financing (assets and working capital respectively). Next are the variables derived from the generic level, that is, their robustness depends on how prudent the generic variables are blended. These include employee attitude, cost competitiveness and the efficiency of systems and procedures.

The blending of **G**overnance, working-**C**apital, **A**ssets and **T**eams *(let us call them businessgenous bases*) is analogous to the coding of the differentiating units in the biological genetic code which are the four nitrogenous bases; namely **G**uanine, **C**ytosine, **A**denine and **T**hymine (Figure 1). The biological genetic code is thus a language of four alphabets. A set of three bases codes for a primary biological outcome giving 64 possibilities although the main outcomes are 20. Drawing analogy from this (biomimicry), we propose four *businessgenous* bases (Governance, workingCapital, Assets and Teams) to construct a business genetic code that can help to characterise firms. Governance cannot exist without people (Teams), it has no form of its own, and therefore we propose a three letter code. The resultant combinations are shown in Table 1 in which we assume that cells with triple/ double letters in a row or interspersed are redundancies. The opposite sides of Table 1 along the diagonal are like mirror images with the first two letters interchanged, each with twelve possible outcomes. The left half of Table 1 has 6 cells starting with Assets, 4 starting with Governance, and 2 starting with *working*-Capital. Likewise placing C or G in the last box of the first letter column would result in each of them having 6 start points.

Figure 1: The structure of the proposed Business Genetic Code



Source: The authors

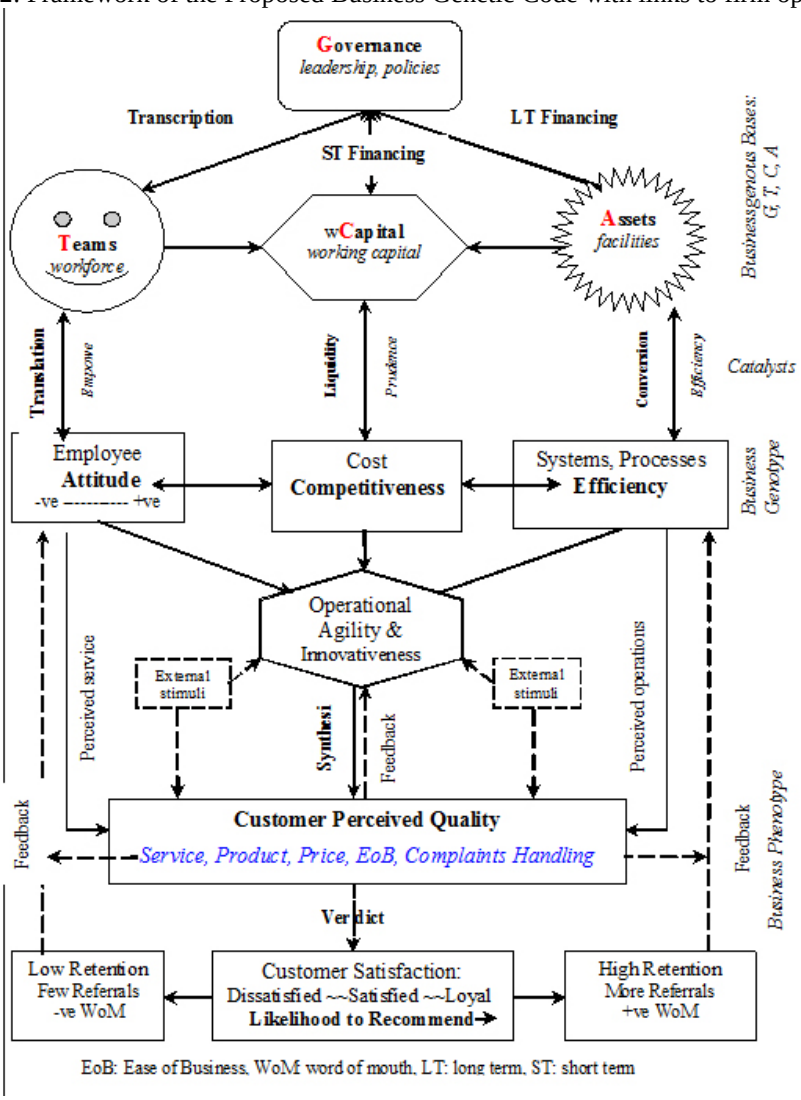
1st Letter	2nd Letter: T	C	G	A	3rd Letter
T			TGC	TAC	C
		TCG		TAG	G
		TCA	TGA		A
C			CGT	CAT	T
	CTG			CAG	G
	CTA		CGA		A
G		GCT		GAT	T
	GTC			GAC	C
	GTA	GCA			A
A		ACT	AGT		T
	ATC		AGC		C
	ATG	ACG			G

Table 1: Functional cells of the proposed Business Genetic Code
Source: The authors

The sequence (coding) of the nitrogenous bases on the biological genetic material (Deoxyribonucleic acid- DNA) determines the type of genes the organism has (the genotype) that then code for the observable traits (the phenotype) such as tallness and behaviour among others. Likewise how robust and how well the four '*businessgenous bases*' are managed gives rise to the actual potential (*business genotype or the genes*) that is, what the

business can achieve at optimal management and in the right business environment (Figure 2). Three primary '*business genes*' are proposed namely: employee attitude, cost competitiveness and the efficiency of systems and processes. Combinations of different 'magnitudes' of these three primary genes are possible and their interplay determines the level of a firm's operational agility and innovativeness that, subject to external influences, gives rise to the observable business traits (phenotype) which are the common drivers of customer satisfaction such as service and product quality, price, ease of doing business, and speed of complaints resolution among other traits. In the proposed conceptual framework governance is at the apex as it sets the vibrancy of the other three bases.

Figure 2: Framework of the Proposed Business Genetic Code with links to firm operations



Source: The authors

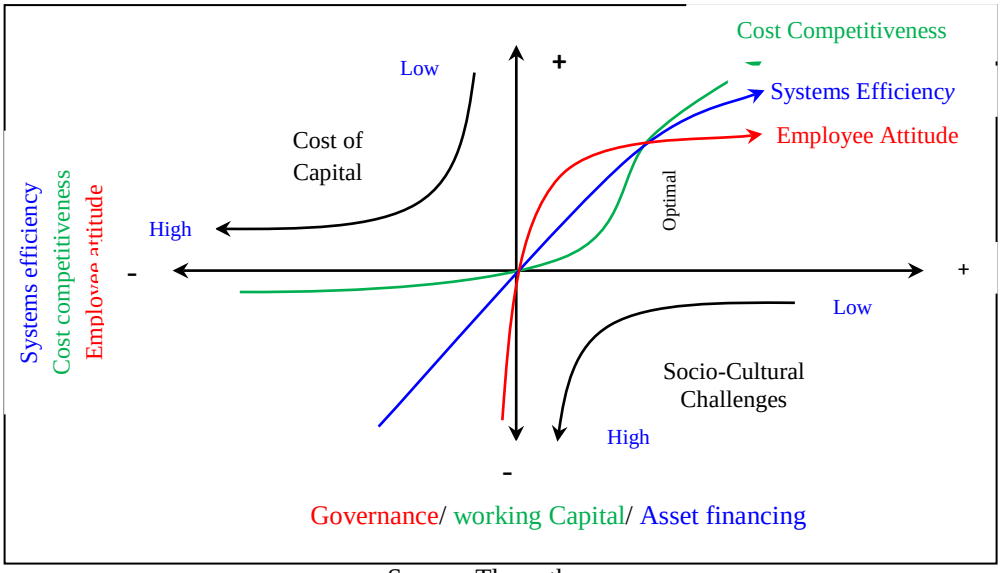
In living organisms information coded in DNA is usually transcribed onto messenger molecules and later translated (read) during the assembly of proteins. In business systems we can say that through 'transcription' managers learn a firm's policies from directors then this information is later 'translated' by the workforce into output. The accuracy of both transcription and translation is key to goal achievement. Transforming a workforce into teams of high positive attitude can be said to be catalysed by empowerment and development. Working capital is a measure of a firm's efficiency and short term financial health. It is the difference between current assets and current liabilities.

The interplay of the three proposed primary business genes

Performance levels of the three primary genes (employee attitude, cost competitiveness and systems efficiency) can be plotted against levels of corresponding businessgenous bases- Governance, wCaptial, and Assets (Figure 3). Employee attitude would be expected to improve with governance up to a point then decline as the firm over controls staff. As working capital improves cost competitiveness would be expected to improve due to better current assets and liabilities management other factors remaining constant. As asset financing (renewals) improves, systems efficiency would improve but can cause idle capacity, and raise staff retraining costs and therefore some decline could ensue after some time.

Socio-cultural factors may tend to impede employee attitude and are drawn asymptotic to the x-axis because no matter how well attitude is enhanced, some drag due to such factors may still remain. Likewise cost of capital is drawn asymptotic to the y-axis because it hardly gets to zero. The steeper rise in cost competitiveness and systems efficiency when employee attitude is rising followed by their fall in gradient as employee attitude flattens is informed by the numerous findings that employee attitude is often a key driver of firm performance (Heskett *et al*, 1997). From a supplier's perspective it appears that positive employee attitude favourably 'warps' the performance of other variables while negative attitude has a reverse effect. In an industry customers would then 'orbit' and switch suppliers depending on the prevailing 'warps' within the suppliers-customers satisfaction space-time. We suggest that the reason for this is that employee attitude acts as a dominant gene and this produces the warp effect. Efficiency of systems and processes and working capital management would act as recessive genes as they have no innate drive. An optimal equilibrium is possible (Figure 3) as the intersection of the three plots. The lesson from this is that firm operations need to be coupled with adequate employee attitude for optimal returns on investment.

Figure 3: The hypothesized interplay of the proposed three primary business genes



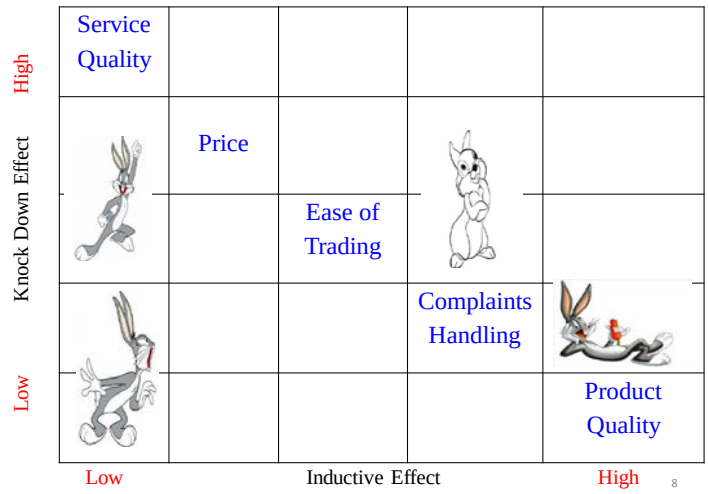
Source: The authors

Properties of the Quality Drivers

Previous studies show that quality of service is a leading driver of customer satisfaction, but there is scanty information as to why this is so. Based on reviewed literature we propose two properties of the primary quality drivers. The first is a Knock Down effect, that is, the ability to cause instant annoyance and disappointment when performance is below expectation. The second is Inductive Effect (persuasive appeal over time). With knock down effect on the y-axis and inductive effect on the x-axis, quality drivers can be plotted based on the rapidity of their impact on customers. Service quality would have the highest knock down effect but lowest inductive effect and product quality the opposite. By inductive effect we mean 'use-experience facts about a product leading to general opinions about it and gradual verdict'.

Service quality is often produced and consumed simultaneously, resulting in instant customer verdict (knock down effect: delight or annoyance), product quality is judged over time as it is used (inductive effect, Figure 4). Complaints handling and ease of doing business are likely to exhibit properties intermediate to service and product quality. The lesson is that a firm needs to pass the service quality test to allow for further product evaluation. By characterizing more business terms and concepts along their inherent features it may be possible to compile a 'periodic table of business elements'.

Figure 4: Rapidity of attribute influence on customers

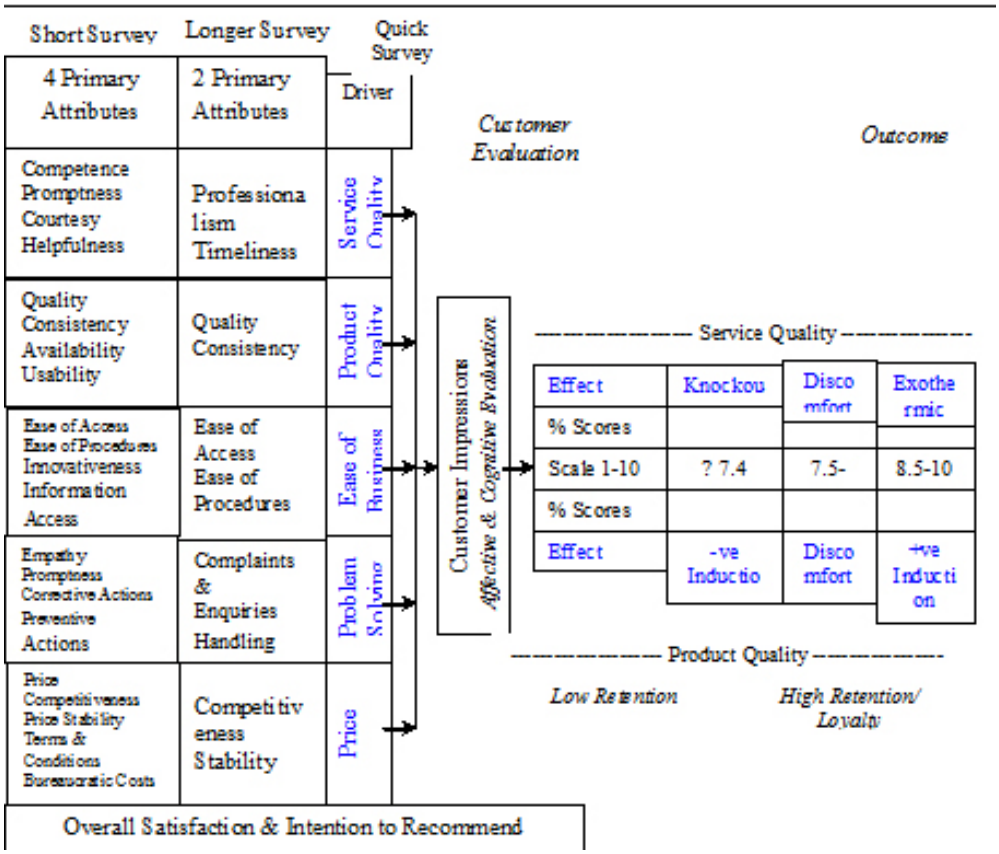


Source: The authors

The Proposed Customer Satisfaction Survey model

The proposed model incorporates a framework for the drivers of customer satisfaction in which the features of respective drivers are stacked behind the drivers, first as a set of two behind which is a more exhaustive set of four attributes (Figure 5). A firm would choose whether to survey directly on the five drivers of quality or whether to survey on the more detailed sets of features related to drivers. On a scale of 1 to 10 the model proposes grouping the scores for service quality and product quality into three categories namely ≤ 7.4, 7.5 to 8.4 and 8.5 to 10. The percentage scores for service quality and product quality corresponding to these classes are then posted on opposite sides of this scale. High scores of service quality (8.5 to 10) would be expected to 'radiate' immediate positive feelings about other quality drivers just like exothermic chemical reactions release energy. This then urges the customer to action paving the way for the inductive potential in product quality and other drivers to get expressed over time. Good product performance will lead to positive induction, that is, positive disconfirmation. The reverse is likely to happen under poor service leading to customer 'knockout' or desertion.

Figure 5: The proposed Pentose Score model



Source: The authors

Conclusion

The paper has shown that although satisfaction assessment has widened in model scope over the last four decades to the year 2012, the models largely focus on direct quality drivers with little attention to upstream firm dynamics. The paper proposes a firm wide conceptual framework that shows how the cascade of senior management policies ultimately drives customer satisfaction. The paper has established four generic enabler variables (businessgenous bases: governance, working capital, assets and teams) and has shown how firms can draw competitive advantage from these bases by fostering three robust business genes: employee attitude, cost competitiveness and systems efficiency. These three in turn shape the firm's operational agility and innovativeness. The paper suggests that the reason why service quality has such a profound effect on satisfaction is that it has a higher knock down effect than other drivers and it is necessary for a firm to pass this test to allow for the inductive use-experience phase.

It is hoped that the article will stimulate further dialog on multidisciplinary theory referencing that can help foster the interpretation and evaluation of business phenomena. There exists many similarities between phenomena in physical/ biological sciences and the business world that would benefit from hybridization of applicable theories and integration of laws across disciplines. For example, it is well established that customer satisfaction is founded on fundamental consumer behaviour laws and the tendency of consumers to conform to group behaviour which often is consistent enough to allow for the collection of empirical data and generalization of results (Bartels, 1951; Bagozzi, 1992). This may be a pointer that group behaviour is to some extent comparable to properties of waves in physical science. If it were established that consumer group buyer behaviour fairly conforms to wave properties (such as having frequency and wavelength), this would be useful in marketing strategies such as promotion and advertising. Just as waves can interfere or combine with each other so do marketing campaigns from competing firms done around the same time. Two releases can reach a particular market at just the right time for both to influence the market in the same way resulting in constructive interference. Alternatively, destructive market interference can occur if the 'disturbances' of different market campaigns cancel each other out. At consumption level, consumers respond to quality drivers as individuals (the equivalent of particles in physical science). It is therefore probable that consumer behaviour approximates the well established Wave-Particle Duality theory in physical science (Dimitrova and Weis, 2008). In view of the possible 'particle nature' at individual consumption, the difficulties of accurate assessment of customer satisfaction could probably be partly explained through the Uncertainty Principle in quantum mechanics (Hilgevoord, 2006) such that it could be that a customer's momentum in responding to a marketing campaign and his or her perceptual position regarding certain aspects of the offering cannot both be known at the same time. It is likely that for every biological and/ or physical science law, an approximate business or social science law/ phenomena exists, and vice versa.

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