SERVICE VALUE NETWORKS: FROM THEORY TO PRACTICE

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ABSTRACT: Smart business networks are built on Service Value Networks (SVNs) across the business's interaction environment. SVNs are constructed via interconnecting and networked value chains linking suppliers, peripheral partners and external support or legislated external sources into the networked internal business cells including executive strategy, target marketing, innovation, operations, IT/web communications and economic value (Hamilton, 2005, 2006).

The upstream business cells and their front-end customer interactors are deigned to ultimately generate a customer exchange. Hence the SVN extends beyond the business environment and into the realm of the customer.

The customer exchange is driven by customer perceptions, and these in turn are driven by the local and global external environmental – including political/legislative, economic, socio-cultural, technological, legal and environmental drivers (Johnston et al, 2005). The business and its integrated networks is also affected by the same local and global externals, as is the final business-customer encounter and exchange.

Understanding the SVN components presents a mechanism that may increase the likelihood of generating a business-customer encounter and a successful exchange. This exchange may be a physical and/or services exchange, and/or an information and/or ideas exchange. To the business this encounter is in effect a trade, and as a result, the business targets acquiring an economic exchange that will ultimately deliver a net positive economic outcome, and hence is the focus of this study.

This study employs SVNs – an approach conceived and developed by the author. It uses the author's SVN theoretical approach to develop a front-end business cells approach from which measurements of the SVN may be developed, develops a means to capture data that enables modelling the business-customer encounter of SVNs, and offers a procedure employable across the entire SVN – at a business or industry-wide level. It also develops a Structured Equation Modeling (SEM) method to highlight business-customer interaction pathways, and offers this process as a means to provide additional tools to further pursue the targeting of enhanced business-customer encounter alignment – ultimately delivering a more aligned full SVN system, that is capable of delivering win – win, business-customer solutions

This study unfolds the complexities of the real service industry business and its SVN type interactions at the front-end business to customer exchange interface. This business-customer encounter interface may be measured, and modelled, and may define, elucidate and measure the relevant business-customer encounter pathways for the service industry investigated. Targeting the key measures connecting business cell interactors and their pathways to customer value delivers a specifically and customer targeted SVN that if effectively mined may deliver a truly smart business network.

Key Words: Service value networks, business customer encounter, alignment, SEM, structured equation modeling

INTRODUCTION

Service Value Networks (SVNs), conceived and developed by the author, deliver a key pathway to establishing, and likely retaining future strong competitive positioning within a service industry sector. The SVN offers a future pathway for business to also develop their supply (and e-supply) chain systems. It captures the contacting customer, and integrates the customer's (physical and/or virtual e-customer) demands via its information technology or website interfaces into its integrated back-end, or downstream, business service networks. Here, it then seeks solutions, and delivers the appropriate business solutions back to the customer. Thus, value enhanced business encounter solutions may be readily delivered upstream to the targeted customer. The transfer point occurs across the business-customer encounter.

The business-customer service encounter has the capacity to deliver holistic customer solutions.

SVNs are considered the pathway to establishing and likely retaining future strong competitive positioning within a service industry sector. The procedure to research and develop a SVN is described.

SVN's

SVNs (Hamilton, 2004; 2004a; 2005) offer an integrated approach to investigate both off-line and on-line services. These service delivery mechanisms reconcile two conflicting but concurrent requirements from clients – to leverage economies of scale, and to deliver solutions, specific to the needs of the customer (France et al., 2002), to be able to deliver highly-specific customized solutions (Brown & Vashistha, 2002). SVNs utilize integrated sets of bi-

directional service supply chains, working in networked harmony with customer driven demand chains to deliver customer value (Sampson, 2000). They incorporate interlinked partnering companies that team together throughout these chains, to maximize combined successes and profitability (Chen & Paulraj, 2004).

The SVN has two components - the physical and the virtual SVN components, and both may participate in the business-customer encounter. These touch-points may impede the delivery of the SVN. The key strategic business performance and value dimensions that influence the effective management of the SVN encounter with the customer are outlined.

AUSTRALIAN PHARMACY INDUSTRY

Recent research by the Siegel (2002) at US Sloan's School of Management indicates that all players in an industry benefit from aggregation or sharing of information, ideas, and knowledge. They suggest a wealth of knowledge may be garnished by combining organizational expertise. Aggregation analysis delivers relationships with greater combined competitiveness. It was further posited that it remains prudent for organizations, like the pharmacy industry, to consider their e-strategy, and to add aggregated information and knowledge capabilities into their competitive frameworks (Siegel, 2002; Zain et al, 2002). This supports emerging new business models involving multiple aggregations like e-pharmacies, and the proposed concept of a SVN.

Emerging technologies often deliver disruptive solutions that may radically change the status of competition (Christensen & Anthony, 2004; Evans 2002).

For example, e-pharmacies, networked medical services, direct customer targeted solutions, fully integrated supply chains, logistics solutions, and other efficiencies constitute genuine threats to existing pharmacy industry business structures. In particular, competitive threats from Australia's supermarkets, the Australian Medical Association, and the Australian Consumers' Association are encroaching on the pharmacy industry, with the aim of opening up this traditionally protected pharmaceutical industry allowing free and open competition. The industry has responded to this threat creating e-pharmacies, up-market new business models, and low price solutions.

An e-pharmacy may be defined as a virtual shop front pharmacy, often working collaboratively with a physical pharmacy outlet to enable rapid selection and distribution of customized and generic pharmaceuticals and associated products. In recent times, several major e-pharmacies including: PharmacyOnline.com.au; ePharmacy.com.au; HomePharmacy.com.au; and PharmacyDirect.com.au have emerged in Australia.

This emerging business model creates new challenges of value creation and modes of interaction for customers. Of particular interest is the notion of the underlying SVN (2004; 2004a; 2005; 2006), and its partners, and dimensions and issues that shape its customer interface, service offering, and enabling service delivery system. A similar process occurs in the physical business-customer encounter. The identification of a common business-customer interface capable of delivering both physical and virtual solutions is a focal point of this study.

PHARMACY SVN

The SVN at an industry wide pharmacy level, operates as a collaborative network of supply chain partners – such as pharmacists, drug companies, distributors, beauty care suppliers, health and natural product suppliers, medical practitioners); sales channels (website e-sales, direct over the counter sales, and referrals); operational and network administration personnel (working with, and serving the needs of its off-line and on-line customers).

Figure 1 displays a global perspective of the industry, and the capabilities required from a SVN (Hamilton 2006). A simplified version of this structure may also apply at the individual pharmacy level. In Australia, the global external environmental perspectives impacting on a SVN (such as a theorized pharmacy SVN) show little change. The environmental impacts remain stable, the geopolitical area is stable, the economic climate is stable and the technological area continues to develop incrementally.

Recently emerged E-pharmacies, along with physical pharmacies incorporating highly sophisticated integrated technologies may be considered as operating as store level SVN's or as industry wide SVN's

At an industry wide level the centralised SVN data storage solution may be accessed by individual stores, store groups, store chains, or e-pharmacies. Development of such a SVN solution in the future requires pharmacy industry-wide information sharing. Such a solution may eventually lead to enhanced value propositions and possibly cost savings (Hamilton 2004; 2004a; 2005; 2006).

In the tourism industry a movement towards a SVN approach at the industry wide level is in process. The Australian Tourism Export Council is currently compiling a national database in preparation for linking up its industry partners under a SVN-like framework (Anwar and Hamilton, 2005).

At an individual store level a lower level SVN system may be developed, albeit at a smaller and less sophisticated level.

At the industry wide level an envisaged full pharmaceutical SVN would likely comprise a service related strategy, the strategy and its interrelated business cells in turn drive four business cells projected to be involved in the service encounter - the services/products provision; customer targeting; the underlying communications information technologies and web related infrastructures; and the economic imperative. The business-customer encounter would cater for physical (direct in-store customer sales) and virtual (across the web, or using technologies to purchase from a distance), accessing the intranet data storage system, and its peripheral support systems. For example, to fill-in a customer's prescription details, the intranet information networks are tapped, checked, approved, supported with value adding drug taking information such as: safe drug dosages per body weight; possible cross drug mix complications; and the like. Cheaper generic drug options may be suggested to the customer – and in a personalized manner.
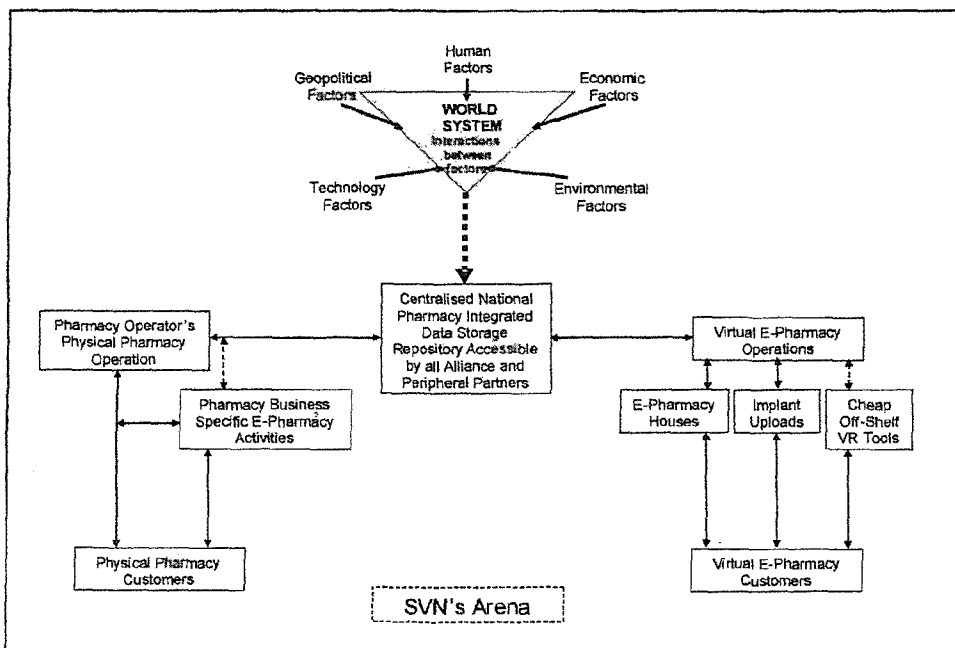

Figure 1: The Service Value Network – Global Perspective, adapted from Anwar and Hamilton (2005).

To further enhance business-customer dialogue pathways, additional SVN sourced service-related value-adding options may include: consumer allowable limits, claim options, delivery options, nearest doctor, hospital, medical insurance options, tax benefits, local preferences and the like.

Such a SVN system could also allow the customer to directly assess a range of innovative or value adds like – sourcing or requesting annual tax return data, linking to a doctor's surgery to lodge an appointment booking, or for information, downloading personal local hospital information, monitoring health or making a personal pensioner claim.

In addition, business intelligence and knowledge/information from suppliers, research, and peripheral sources may be stored on a local or centralized industry database, but be accessible to allowed individual pharmacies.

Such data sharing and collaboration allows the business to move closer to its customers, and even allows the customer to use a variety of pharmacy stores for desired prescriptions, medications, information, and the like. Business stocking level data, linked to suppliers and logistics deliverers, may monitor 'use-by-date' stocks, general stock control, and may add customer generated requests as optional new additions for suppliers to consider. Hence, accurate inventory planning, without bullwhip effects is deliverabl, and both supply-related efficiencies, and net cost-of-delivery savings, are generated (Finch, 2005). The SVN may, in the future, add interconnectivity into other medical services like: hospitals, doctors, ambulance services, and even police to the deliverable pharmacy systems – thereby creating an efficient, better-informed, integrated medical services information network. Under agreement, peripheral partners including health and ambulance insurance funds, medical researchers, may share information across some general data fields of the SVN. To build such a system requires a key starting point, and in Australia

this initiator is likely to be the Pharmacy Guild of Australia – the peak lobby and decision making body for the industry in Australia.

This study seeks to deliver an approach whereby the pharmacy industry at a local, and industry-wide level, may better understand the pathways to build an effective SVN. The area of focus for this study lies in developing effective business-customer encounter, as this is a key driver of a successful SVN. This in-turn may show ways to enhance business performance, drive cost efficiencies, and deliver enhanced perceived customer-perceived satisfaction. If successfully investigated the business-customer encounter may set the framework upon which a full SVN approach may be developed.

SVN ENCOUNTER FRAMEWORK

Back-end business supply chain partners, logistics support/peripheral partners and other external data sources are interconnected across the business through integrated information technology networks. Here, internal and external data, logistics, and the like are pooled, shared, and modelled, to deliver new, improved, front-end customer solutions. The customer and the business network come together at the service encounter 'touch-point'. This is the interface where the business aims to deliver the 'best' possible value chain-customer response. This service encounter 'touch-point' displayed in Figure 2, is the focal point of the service network encounter framework.

This SVN encounter framework is embedded within the influences of the external environment, and the BSC financial, customer, business and growth constraints. It provides a framework by which an overall SVN business perspective may be generated.
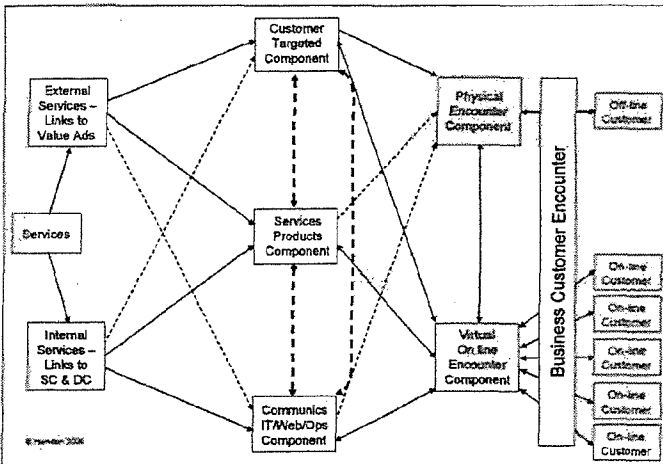

Figure 2: SVN Encounter Framework, adapted from Hamilton (2004)

The 'external services' component links the environmental scanning for complementary services and added value components and is based on the customer requested solution plotted.

The 'internal services' component delivers the integrated demand chain/supply chain, where value chain partners work together to deliver maximum customer value in the most efficient and effective manner. Here, partners aim to deliver both service quality and services, as a quality, financially accountable package.

The 'customer targeted' component addresses the service being offered in terms of its efficiency, relevance, scope and performance. In short, the 'customer targeted' component delivers the back-end activities or the 'when' (content order), and appropriately targets these features to the 'whom'.

The 'service concept' component integrates both the operations concept component, and the customer targeted component. It delivers multi-dimensional information through the business and its value adding internal and external partners, and delivers a broader customer experience. In short, the 'services concept model' delivers the 'what' to the service value encounter.

The 'operations concept' component houses networked information systems, and extensive data storage and retrieval systems. In conjunction with developing web measurement metrics, computer based fuzzy logic techniques (computer based data analysis and approximation techniques), and artificial intelligence tools (that mine the business networks databases, and provide reasoned and added value solutions to the customer's business requests interrogate the databases, sort and interpret available information, and deliver customized, or personalized solutions) that target

perceived customer expectations. This 'renewal' and learning networked system is very different from normal website service offerings. It also incorporates issues related to failures and recovery. The 'operations concept' component delivers the 'how' to the service value encounter.

The operational, services and customer strategies of the business are drawn together as interconnected data sharing models, delivering unique customer services encounters – ones aiming to exceed customer expectations, and house much of the business's intellectual property. They remain integrally linked downstream with their relevant back-end partners and ad hoc additional sources, seeking to deliver dynamic service value chain network responses for their physical or virtual customers.

The operational, services and customer component areas are integrally connected across the modern service value chain network. Data is pooled, shared, exchanged and cross-concept applied (between customer servicing, operations and business strategies) to provide new learning and new customer solutions. The component areas mesh together across the business-customer encounter. The customer receives the business's appropriate, approximated, value added set of services. This mix is intelligently sourced and retrieved from its networked combinations of databases and possibly other external sources.

The business customer encounter – the actual customer 'touch-point' with the service provider, is seen as a continuous improvement model that feeds operational, service and customer data down and throughout, the networked system of the business service value chain network. Thus the service value encounter framework connects the key business-customer information flows across the service value chain network. It may be further separated into two components - the physical' (tangible) encounter between the customer and a business contact person or persons, and the 'virtual' (intangible) encounter with an IT based website structure, which is often visually connected via its internal or external business website. The physical and virtual SVN encounter framework as displayed in Figure 2 is proposed as a research model (Hamilton 2004; 2005), from which service value chain network encounters may be investigated. The close relation between the physical and virtual encounters means that this research likely has applications to both the physical and virtual SVN encounters.

Customer knowledge and data capture remains crucial to delivering appropriate services. Frohlich and Westbrook (2002). have researched some internal business-to-business-customer effects, and although many have written about the business-to-consumer dyad, it has not been empirically studied (Chen & Paulraj, 2004).

The model developed above requires one more component as defined by Kaplan and Norton, (1992). A financial / economic measure is also required. A business – especially a pharmacy, seeks to generate exchanges that ultimately deliver economic value, hence this business cell required inclusion.

The Service Network Encounter Model displayed in Figure 3 sets the framework for this Australian pharmacy industry research. It houses the SVN dimensions, developed from the literature and projected into the customer arena. The external environment impinges on both the business and the customer, having some effect on the final encounter.
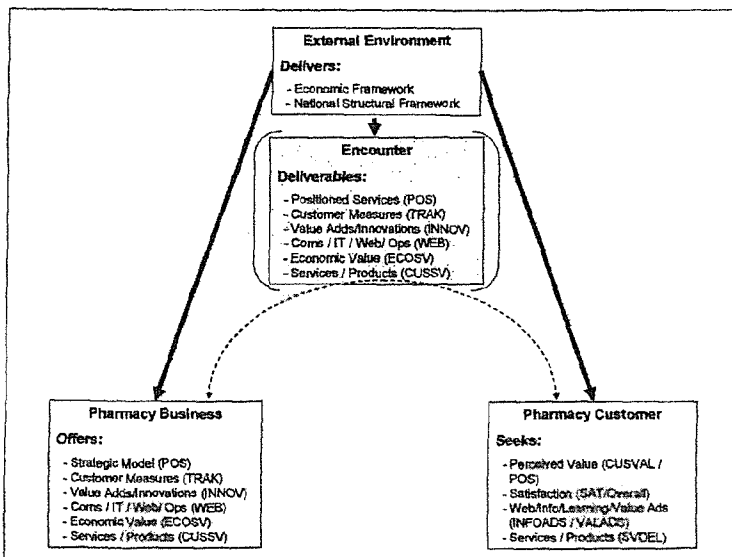

Figure 3. Service Network Encounter Model, © Hamilton (2006)

The pharmacy business offers a positioning strategy by which it sets its business model. Embedded within this positioning is its premise of how it targets its customers, possibly using: service, value adds, innovative additional features, services/products, price or structures. In today's arena many businesses offer an on-line web based information solution to their business encounter. This additional customer 'touch point' may incorporate a host of customer interconnection features (Hamilton, 2005). It may even allow on-purchases, pharmacy, supply chain and peripheral business communication channels, past year prescription tax information and non prescription deliveries of web purchased items. Pharmacies monitor their derived economic value carefully. This is influenced by the range they present for sale to the customer. Pharmacy prescriptions may range from near 100% of sales (hospital pharmacy dispensaries) to well under 50% for those specifically targeting cosmetics, baby products, sports goods, and the like as mainstream sales and prescriptions as their minor sales focus. In Australia, pharmacies, by law, constitute the only business sector allowed to sell prescription drugs. These specific purpose items often necessitate the provision of concise, high quality, service specific customer guidance information. Hence the business-customer encounter from many viewpoints is a key service deliverable. This mechanism may be a virtual (or web based) encounter, or an in-store physical encounter. The business seeks to convert the customer into a purchaser of one or more of its products, or to make their investigations of available items an enjoyable experience.

The customer seeks a delivered service that meets their needs, wants and desires and at a personally economically acceptable. This perceived value must be delivered in a timely manner, and in an acceptable form. Customer satisfaction is another key business target. The customer in this industry is generally satisfied with their purchases as in most cases (and particularly with prescriptions) they obtain the items they require at a government regulated price.

The Australian pharmacy industry is competitive, with one pharmacy in existence for every 3,800 persons. Each business outlet must manage considerable overheads, large stock holdings, quality and security issues, and the like. Traditionally, positioning strategies have utilized marketing modes like television, radio, newspapers, magazines and mailouts to win business, or they have used remodelling or on-line web sales avenues to improve the business situation. However, there is scant information to indicate this approach is successful.

This research uses the Australian pharmacy industry as a services industry test bed and investigates SVN solutions to the business-customer encounter. It uses a SVNs approach to identify key business cells and their interactors. The six tangible business cells targeted include: the business positioning; the customer targeted value adding and innovations; the business economic value attributed to customer sales; the business-to-customer targeting (and innovation) orientation; the services / products offerings delivered; and the learning, information sharing and web provisions. These business cell 'interactors' combine with the external environment 'sources (and external value adds) to deliver customer perceived value and the servicing of needs, wants and desires, in a timely, efficient, cost sensitive manner. The ultimate goal is to generate high levels of overall customer perceived satisfaction.

Figure 4 houses the above business cells drawn down to SVN model consisting of five major interacting blocks (numbered 1 to 5), each delivering different cells of information.

The environment encapsulates the external business-customer arena, and houses items such as PESTEL influences (Johnston, Scholes & Whittington, 2005).

The business block holds the cells that operate behind the sales environment – including supply chain, peripheral suppliers, operational and information aspects, economic contribution mechanisms, the competitive model, the value add options, the strategic customer and tracking mechanisms the services and products presented, and the communications channels.

The business-customer encounter engages four key cells - the services, the customer tracking/targeting mechanisms, the information tools, and the economic exchange. Three cells – services/products accessed, customer tracking /targeting awareness shared and information tools (informative communications) shared, engage the business and the customer via a pathway (or pathways). Here, the business and the customer move towards an economic exchange. In the economic exchange the business delivers its product and service solution, and the customer receives the business offered solution. Hence this pathway may also be active, but it may also be considered as a result of the exchange.

The customer perceived value in the exchange is a measure of the customer satisfaction generated in and through the business-customer encounter, although outside influences may also affect these perceived value and satisfaction measures.

Within this business environment the customer seeks efficient, simple, effective, timely interactions with the business environment. Parasuraman et al. (1985), suggested consumers judged companies. Their 'reliability, responsiveness, assurance tangibles and empathy' measures help provide a service quality customer perception. Where the business and the customer interact, these measures may be considered as operating in a 'servicescape'

dimension, where loyalty dimensions may be included (Baker and Cameron, 1996). In conjunction with perceived services, customer perceived value — "the consumers' overall assessment of the utility of a product based on perceptions of what is received to what is given" is another important customer SVN dimension to be assessed (Zeithaml, 1988). Customer perceived satisfaction levels are often influenced by the business's response(s), and the customer displays a dynamic and emotional demand for a greater variety of reliable products, delivered with short lead times (Hunt, 1977; Draaijer, 1992). This dimension is also a target SVN measure of the business-customer encounter success. Hence measuring such features, defined under this SVN model, and mapping their effects, may deliver new insight into the complex nature of the business-customer encounter.
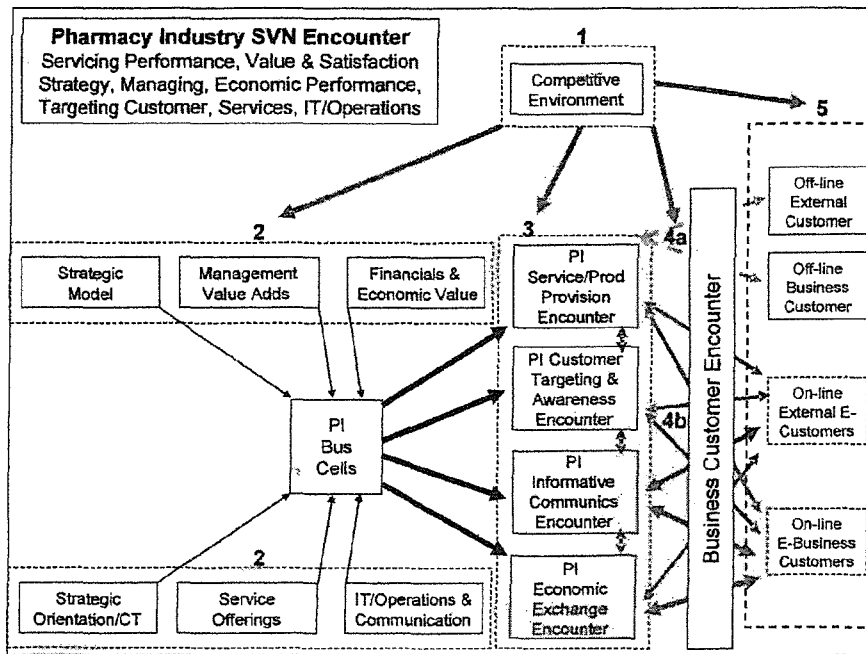

Figure 4: Service Value Network Encounter Model, © Hamilton (2006)

The business-customer encounter is projected to exhibit a combination of four pathways — a customer targeting (awareness) pathway; a service (and/or product) encounter; an informative communications channel set; and an economic exchange. These pathways may interact together, and may also interact with the other internal and external business cell effectors. The customer drives the encounter by completing an exchange with the business, for example, the customer may be pursuing the business for information, services, products, or possibly another customer perceived reason like feeling.

PHARMACY SERVICES INTEGRATION POSSIBILITIES

Integrated services within the pharmacy industry may deliver new options for the industry. These possibilities are displayed in Figure 5. For example, the individual pharmacy business typically offers a low service integration model where networked solutions are not integrated. Typically a national prescriptions register requires all pharmacies to be linked to a federal database, but automatic inventory management (and supply chain integration), marketing, human resources and financial databases options when in use, are rarely incorporated into the business solutions. This low level integration typifies a busy individual store, with little or no computerized operations, and it constitutes the oldest and least value adding model

The next level of customer interactivity captures those pharmacies with degrees of supply chain inter-connectivity and some computerized operations.

Those working as higher level responsive, demand-driven pharmacies may utilize sophisticated, well-integrated information systems to place in-depth requests and gain responses that may be relayed to the customer, and updated in their customer databases.

The peak model is envisaged as the industry-wide SVN, as depicted in Figure 3.5 above. Here, fully integrated computerized solutions may be intelligently delivered to the customer, via the serving staff, or the pharmacist, or via direct on-line customer engagement into the business network. The SVN enabled business intelligence tools may deliver agile, dynamic, flexible, customerized business-customer encounters capable of offering 'elevated-services' and 'added-value' solutions in response to customer requests.
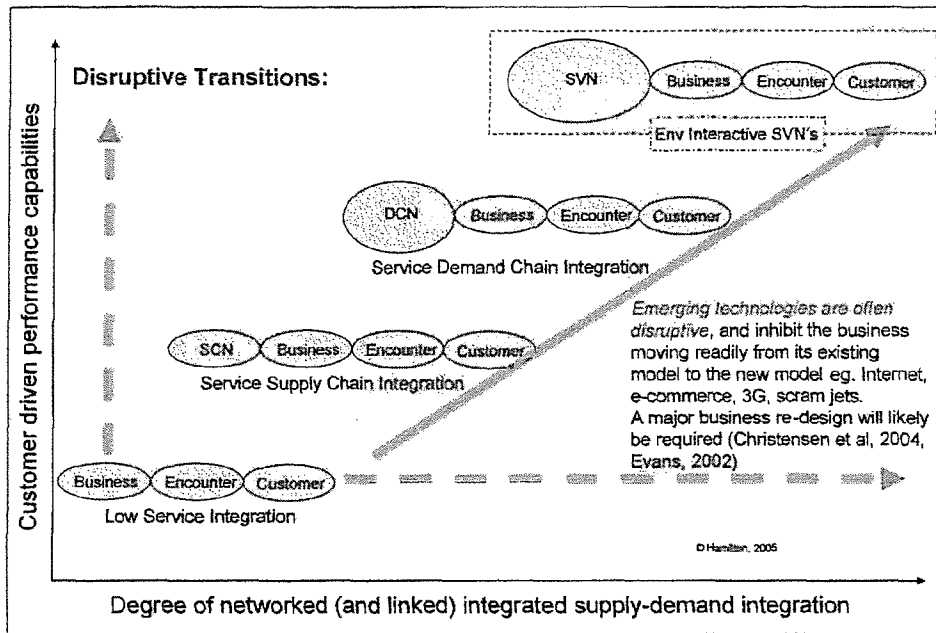

Figure 5: Disruptive Transitions towards the Service Value Network, adapted from Hamilton (2005)

Figure 5 is a key figure in that it displays a commonality for different levels of business integration – in that to enable an exchange to occur, all business and customer interaction systems funnel into a business-customer encounter. Hence this key area is the focal area of this SVN study. This Australia-wide pharmacy industry-wide research aims to provide a new knowledge base of relevant business-customer encounter models that may be used enhance understanding of this key interface channel, and to show the potential relevance of a SVN approach for the industry. Parameters relevant to the front-end business-customer encounter interface are captured, sifted and sorted.

SVN SEM – PHARMACY RESEARCH
Considering the SVN model above (Figures 1, 2, 3, 4, 5), the business environmental considerations in Australia were stable and consequently exerted little effect on the pharmacy industry. In addition, this industry marketspace has a restricted pharmacist only legislated ownership provision, hence the industry must only compete with itself, and not as vigorously as it would in an open market situation. The industry also self-regulates to some degree maintaining a pharmacy to every 3000 to 4000 persons. As such, most pharmacies successfully operate as small independents, and experience a degree of safety (protected) within their current environment. This is reflected in survey results, where 79% of respondents were independents or members of a small chain of fewer than ten stores outlets.

This research concentrated on the key to the remaining three dimensions of the SVN associated with the business-customer interface – the business cells and their interactors, the business-customer encounter and the customer perceived deliverables interactors, and on a new technique that allows tracking across the business-customer divide.

THE SVN SEM SOLUTION
This research successfully modelled the Australian pharmacy industry as a SVN, and investigates it from a customer and business perspective. The national pharmacy industry was surveyed. Data embedded in the literature, was: validated, matched, normalized, split into constructs, modelled and validated. A SEM approach was delivered significant pathways that may enhance customer perceived measures like perceived servicing and value and

customer satisfaction. Alignment of SVN business cell interactor pathways with customer requirements (coupled with the influence of external customer servicing and value interactor requirements), delivered a new mechanism (that may then be used within the business environment), to influence customer perceived perspectives.

AN INDUSTRY SVN SEM SOLUTION

SEM allows for the estimation of the construct reliability and construct validity, provides new tests of fit for systems of equations, and allows for the estimation of higher order factor analysis where no observed indicator of these higher-order factor is available.

SEM encapsulates multiple regression goals, but in a much more powerful way. SEM accounts for the modelling of interactions, nonlinearities, correlated independents, measurement error, correlated error terms, multiple latent independents (each measured by multiple indicators), and one or more latent dependents, also with multiple indicators.

A SVN SEM model for the pharmacy industry solution is portrayed in Figure 6, This SVN SEM model has a full compliment of fifteen covariances, and the WEB to INNOVATE path was required (not required under regression).
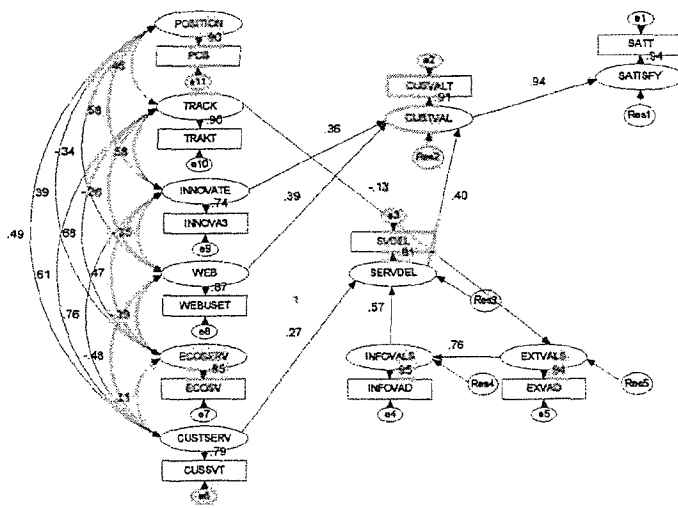

Figure 6: SVN SEM Model

The resultant full SVN SEM model consists of:
1. eleven observation-based manifest variables – SATT (customer perceived satisfaction), CUSVALT (customer perceived value), EXVAD (external value added), INNOVA3 (innovation), WEBUSET(customer communications/ IT / web-use operationals engaged), ECOSV (customer perceived economic value), TRAKT (business-customer targeting / tracking), POS (business strategic positioning), CUSSVT (business services / products delivered), SVDEL (customer perceived servicing), INFOVAD (information / value additions);
2. five customer mapped (business unobserved), endogenous latent variables - SATISFY, CUSTVAL, EXTVALS, SERVDEL, INFOVALS; and
3. 22 other unobserved variables including error terms – e1, e2, e3, e4, e5, e6, e7, e8, e9, e10, e11, INNOVATE, WEB, ECOSERV, TRACK, POSITION, CUSTSERV, Res1, Res2, Res3, Res4, Res5. Hence this SEM model encapsulated 38 variables.

Each observed manifest variable displays a kurtosis between zero and one, with a net multivariate kurtosis (Mardia's coefficient) for the eleven variables totalling 5.36 and a C.R. of 1.68. This being greater than Mardia's coefficient equivalent of 3.202 (Byrne, 2001), indicates a small degree of model non-normality exists. Transformations were used to compensate for deviations from normality, and to maximise SEM accuracy. These manifest variables were denoted with a 'T' at the end of their variable name. This data set showed no significant multicolinearity existed, and no large variance in path parameters was displayed, indicating sound discriminant validity, and suitable constructs built from measured variables. All SEM paths displayed *uniqueness* as model latent variables (factors). The eigen values also supported the eleven factors. Hence eleven latent variables (factors) were retained in this SVN SEM model.

All covariance pathways between business cells were significant and were retained Each displayed low to moderate influence., again indicating both little mulicolinearity, and sound discriminant validity. The negative covariance pathways impinged around the latent construct WEBUSE latent variable. This was due to the business (pharmacist) perception that the web related activities were not yet seen to be a key driver for their business. Yet, a significant relationship between the customer and the business via IT / web communications channels was shown. As such, the customer sees this communications avenue as a useful link, and the pharmacy industry may further investigate this area. The customer tracking pathway TRACK displayed a significant negative measure between business marketing-related captures and customer perception, indicating a misalignment of focus by the business existed.

A minimal (optimal) SEM solution was achieved, and the model was over-identified as desired, The low chi-square to degrees of freedom ratio ($\chi 2$ / df < 2), indicated a high goodness-of-fit, while the probability level above p = 0.05 indicated an excellent final model fit.

Paths of influence for this model indicated that the latent constructs POSITION and ECOSERV did not display direct pathways to either of the three customer perception measures, or to either of the two external latent variables. Instead, they appeared to generate indirect influences across all business cells, and hence appeared to contribute to the business-customer encounter pathways indirectly (via covariances). The remaining three business cells WEB, INNOVATE, and CUSSERV showed direct (variance) pathways between the business and the customer.

The business cell SVN approach highlights the complex 'multi-pronged' nature of a business-customer exchange, and shows that a SVN approach, using defined (literature, business and theory based) business cell interactors can locate business cell interactors that act across the business-customer encounter, and that not all business cell interactors act across the business-customer encounter. In addition, in this service industry some business cell interactors exhibited only an indirect influence across the business-customer encounter, while other business cell interactors presented both direct and indirect influences.

Hence, this research indicates that each of the six front-end SVN business cells directly, or indirectly, impinges on customer perspective measures.

This research delivers a new SVN approach for investigating the modern networked business and its business-customer interface In addition, without adequately understanding this key interface (termed the business-customer encounter), a true SVN (and its four matrixed interacting blocks) cannot be fully engaged, and thus far may only be approximated.

This SVN SEM approach unlocks the key to building a fully operational SVN. It is an important piece of competitive business research. The SVN SEM approach is predicted to apply to for all industries, along with greater alignment of the business to its customer-base.

Into the future the SVN-SEM approach will be capable of remodelling into a fully operational loop learning, smart business networks (SBN) intelligence system, that if correctly strategically positioned, may continuously learn and deliver both enhanced perceived customer perspectives (customer values), and significantly enhanced business economic value propositions?

CONCLUSION

A theoretical SVN approach defines key front-end business cell interactors which possibly effected, and / or affected, influence(s) across the business-customer encounter.

The theorized SVN model, developed by the author, presents many complexities including interpreting the relationships between the external environment drivers and the front-end business cells, along with their respective interactors, and potential implementable solutions. In this area, the SVN business cells are theorised to exhibit multiple pathways of direct and indirect influence, hence very complex interpretation measurement hurdles arise. Similarly, the capture of relevant interaction measures between the business and the customer (to generate an exchange) is highly complex.

This study helps untangle a new approach to measuring, understanding, interpreting, and possibly actually delivering SVNs, within a real industry-wide country specific environment – using the Australian pharmacy industry as the test bed.

The SVNs approach delivers a detailed understanding of the complexities of the back-end business, and its funnelling upstream towards the front-end business-customer encounter (and hopefully culminating with an exchange between the parties).

The SVN SEM approach assists in the understanding and definition of business cells close to the business-customer interface. This funnel recognition, and channelled focal point, encapsulates a prime reason for the business to exist – that is to generate an exchange, and hopefully to also gain a degree of economic reward via this exchange with the customer.

The SVN model considers the service industry – via the Australian pharmacy industry, as a series of external, business, customer driver cells. From the business perspective the SVN is a matrix of interactors drawn from the differing business cell blocks.

This front-end SVN business cells approach is projected as applicable industry wide to: low integration pharmacy stores; networked pharmacy stores, back-end integrated pharmacy chain stores, and e-pharmacy stores. In addition it is also be applicable at the store level. In each case the degree of SVN matrixing differs, but this research shows a lower degree of networking exists, and hence a full SVN is not yet delivered across the pharmacy industry or is store solutions.

As postulated by the author SVN's acts as a complex, network, capturing both its immediate and global environment, and its customers, as part of its matrixed business structure. Three key component blocks constitute this front-end SVN business-customer encounter, these are (1) the environment that affects the business and its exchange processes; (2) the business's customers and their operations cells; (3) the business and its operational cells; (3) the business-customer encounter / exchange pathways); and (4) the external environmental considerations.

In the pharmacy industry, this research shows a true SVN has not yet been achieved and clear misalignment issues (including pricing alternatives, services, value, information and information access) remain between the pharmacy industry and its customers. In effect, if the industry (or a pharmacy), operated as true SVN, the customer should receive the perfect 'what, when, where, how, and why' solution defined in the literature, and on-time, every-time, and at a customer acceptable exchange rate.

No industry to date has yet developed a true SVN as they do not operate in a fully aligned business-customer environment.

This research method, delivers mechanisms whereby management may move the business to a new smart business level, offering enhanced competitive positioning, targeted customer interaction solutions, and enhanced customer perceived measures, along with enhanced customer satisfaction. This process is efficient, understandable, calibrated, business specific, and appropriate for market leaders, innovators or differentiators. Combined with other developments it also delivers a mechanism by which a true SVN becomes a real deliverable possibility. and this research shows how a true SVN may be developed.

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