Using Technovation For Service Classification: Some Industry Examples

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Abstract

Several service classifications based on servicespecific attributes, service delivery, channel strategies, marketing and management have evolved in response to the dynamics of the service industry. Service-specific attributes necessitate the need for strategic and operational focus, whereas technological advancements have significantly contributed towards providing different channels for delivery, increasing flexibility, improving quality and reducing time and distance. These advancements drive organizations to organize themselves and operate on a value chain level, in response to new ways in which services can be marketed, branded, operated and delivered. This creates important challenges and opportunities, which call for a realignment of strategic focuses, in particular with respect to the impact of technovation (technology, channels, and organizational structures) on services modus operandi and their resulting service classification.

This paper builds on, and illustrates a recently developed classification scheme, referred to as the Services Cubicle, that transcends current industry boundaries and includes upcoming service business trends in technovation. A cross-section of service industry examples is used to clarify the resulting service classifications, taking into account deployment of varying degrees of technovation in that industry.

These examples provide additional insights for service organizations, as well as a tool set to position, align, assess and validate the impact of their changing service offerings, whilst addressing the complexities of strategic alignment, value positioning, asset definition; as well as process, knowledge and relationship management.

1. Introduction

Today, innovations in technology and integration with computers and telecommunications are viewed not only as a powerful facilitating mechanism for service organizational growth, but in fact are a driver creating new service markets, transforming industries and seen as enablers for transforming the nature, content, context and scope of the service offerings.

Two key questions are the impact of technovation on the services industry, and the improvements in productivity of services. Technovation in this context Willem Selen Macquarie Graduate School of Management Macquarie University, Australia willem.selen@mgsm.edu.au

the application of IT, e-commerce, refers to telecommunications and information management, in conjunction with process, knowledge and relationship management; all of which are required in designing and managing a more effective and efficient service delivery in a fuzzy organizational setup. In the last decade, the technological developments and the use of e-commerce have in their unique ways contributed to the development of the service economy. In response to these dynamics, a number of industries such as the telecommunications, IT industry, and airlines are moving away from traditional organizational structures and are adopting clusters, value nets, value chains and holonic structures with fuzzy boundaries in a virtual or physical sense.

Because of service specific-attributes (i.e. intangible, heterogenous, simultaneous, perishable), productivity gains may not be readily achieved, but may result with the aid of technovation. Nevertheless, one needs to realize that, despite service automation, most service industries obligate the need for human interaction. As such, the discipline of behavioural and psychological sciences will have a significant contribution in dealing with the relationship aspects of service encounters involving customers, employees and society overall.

Services nowadays are increasingly designed and delivered on a supply chain/value chain level (ie mobile services), and hence include complexities of strategic alignment, value creation and positioning, asset definition and management, and the like. This in turn has impacted company organisational models, resulting in collaborations, third and fourth party logistics, alliances, joint ventures, and the like. Further, the impact of technology and web-enabled services are increasingly creating innovative and advanced service offerings to meet varied expectations of customers belonging to different market segments. Management faces two main challenges in this service environment to be successful: on the one hand the creation of strategic aligned alliances and the inter-linking required for managing the needs of the customers, and on the other the right use of knowledge, information, technological and processes information among key stakeholders.

With the dynamic changes and advent of technological advances in the services industry this research aims at broadening and strengthening the conceptual service classification concepts previously presented in [1]. In here, an enhanced services classification scheme, based on Schmenner's 2004 [39]

service classification titled Service Process Matrix (SPM) framework is further developed, by way of introducing a third dimension titled "degree of technovation" as shown in Fig 1. The addition of this new dimension along with the degree of relative throughput (measured for a service transaction as compared to others in the industry) and degree of variation (customization for and interaction with customers) provides flexible and dynamic ways of classifying services in ways that transcend current industry boundaries, and one which addresses upcoming service business trends that deploy technology and ecommerce. This paper describes the various dimensions underlying this development, and focuses on industry examples to illustrate the applicability of this new classification scheme.

2. Service Classification

Over the past few decades, various classifications have been developed to enhance strategic thinking in services by several researchers [21] [36] [37] [48] [7] [43] [44]. Katouzian [22] influenced the differentiation between services with respect to the course of economic development and traditional service sectors that were likely to decline, hence classifying services into three categories namely, new services, old services, and complementary services; Bell [4] presented a classic description of economic stages into "preindustrial", "industrial" and "postindustrial"; Hunt [20] demonstrated the importance of classification schemes in marketing services; Hill [19] defined service as a change in the condition of a person, or of a good; Browning and Singelmann [6] and Elfring [13] proposed a taxonomy which reflected a combination of the economic function performed by the service, the markets served, and the dominance of private or public provision categorising them into personal, social, distributive and producer services; Buffa [7] and Thomas [46] devised their onedimension continuum titled equipment-based versus people-based; [34] [8] [9] and [10] proposed the customer contact model where services are classified according to nature and intensity of customer contact, Bell [5] created a 2x2 continuum based on levels of tangibility and customer involvement; Chase and Gavin [11] looked at the relationship between interaction and customization; Mersha [32] differentiated between active versus passive contact; Silvestro et.al. [45] emphasises on customer focus and service delivery; [26] [27] and [28]'s framework combined the two dimensions of service performance to create four categories of services tangible acts on people, intangible acts on intangible things, tangible acts on physical possessions and intangible acts on people's minds, which highlighted the importance of the humane and intellectual knowledge possessions with service encounters; Miles [33] and Evangelista and Savona [14] described a taxonomy for better understanding technological change and innovation in services; Kotler [25] distinguished product services into maintenance & repair services and business advisory services; Kellogg and Chase [24] addressed the difficulty

in operationalization of the customer contact construct; and Maister [29] focused on professional services with degree of contact with the customer and degree of customization of the process as the main dimensions of classification.

[49] [30] [50] and [3] elaborated on their Service Process Analysis (SPA) building upon a model of service channel strategies. Further work by Tinnila and Vepsalainen [47] suggested categorisation of the service mix from simple to complex, namely mass transactions, standard contracts, customised delivery and contingent relationships with appropriate associations of service channel strategies.

At the same time of the development of service classification schemes, we witnessed the need to define service delivery processes from an operations and management perspective. Kellogg and Nie's [23] Service Process/Service package Positioning Matrix used customer influence to define the service process dimension, and customisation to define the service package. Collier and Meyer [12] presented a 2X2 Service Positioning Matrix, based on the nature of the service and the nature of service encounters that customers want. Polito and Watson [35] proposed an expanded framework using the Hayes and Wheelright's classification [16] [17], with the diagonal extended into the realm of service products using Schmenner's Service Process Matrix (SPM) [42] and Chase's customer contact model [9]. The new framework [35], known as "The Content Continuum", addresses the issues of higher service content of mass customised products, including higher heterogeneity and increased levels of customer involvement, specification and delivery convenience; but does not provide a framework for managerial decision making. During the same time, Schmenner [39] improved upon the Schmenner [42] SPM framework, whilst applying the principles of Theory of Swift, Even Flow [41][40], by retitling the axes of the SPM to degree of relative throughput (measured for a service transaction as compared to others in the industry) and degree of variation (customization for and interaction with customers), respectively.

Schmenner's 1986 SPM framework [42] has been subjected to a number of criticisms, i.e. interaction and customisation may not necessarily act in one direction [18]; straight-forward direction of causation from service encounter to service process choice [12]; capital-labour ratio not seen as the driver of a service classification with control of internal operations, and lack of theoretical evidence for the importance of the productivity diagonal [47] [45] [23]. In response to these criticisms, Schmenner modified his earlier model to state that the swifter and more even flow of information in service operations, the higher the productivity [42]. The challenge therefore becomes to hunt for bottlenecks within the service production system, and making sure that throughput, in the form of customers or employees lacking knowledge, information, or instructions, does not accumulate. Schmenner's [39] framework redefines the axes of the service process matrix as degree of variation (customisation for and interaction with customers) and relative throughput (measured for a service transaction as compared to others in the industry) with the lure of the diagonal resulting in greater productivity.

Another important contribution is that of Tinnila and Vepsalainen [47], with an efficient matching of services and channels based on trade-offs between production and transaction costs. Their framework provides an explanation of how individual services are positioned strategically and how restructuring of services inter- and intra-organisations are affected, which is a key and relevant factor in organizational dynamics. As a result of the impact of technological change on service channels, different associations of service channels exist, resulting in different service processes.

All in all, service classifications have been important for several reasons [1]:

- allow service firms to gain strategic insights based on their position in the matrix and to investigate the strategic changes of service operations over time
- lead to enhanced understanding of productivity for service operations and marketing,
- develop understanding of customer encounters and association with service delivery mechanisms,
- provide insight and rationale into service companies accepting change when and why, and finally helps to explain trends on how some leading service companies have been able to sustain their competitive positions for decades
- provide Service Managers a structure and tool set to address the challenges of the service industry

Next, a new service classification scheme, as developed by Agarwal and Selen [1] is discussed, which addresses the use of technovation as a new dimension in the strategic positioning of service offerings.

3. Strategic Positioning and the Services Cubicle

Recently, Agarwal and Selen [1] posited a number of key questions that are critical to service firms in evaluating the potential for success and repositioning their organisational strategies:

- Should the service classification be directed at just internal operations, on a customer-supplier one-to-one relationship basis, or should it be derived based on internal and external operations which affect the service offering, hence striking an optimal balance for information sharing amongst key players at inter-and intra-organisational level?
- Should the service continue to be purely based on technical characteristics of the delivery medium, service-specific attributes, customer focus or throughput time, or a combination of these attributes

as they have been done to-date? In fact, in addition to the earlier listed characteristics, should the service classification analysis include more complex factors of technovation, service channels and organisational structures?

- Is the impact of information, technology, knowledge, relationship and overall processes known, understood, and considered feasible in the context of a global service offering with a global service delivery process?
- As alliances and collaborations are formed among stakeholders, how does the core firm strategically package its services and reposition itself amidst other stakeholders and the industry overall, such that the resulting service offering fulfils market segment specific customer expectations?
- Do firms have the ability to assess their strategic position in the global market with respect to relative cost efficiency, productivity, value adding, profitability, and above all customer satisfaction, in relation to other existing services or equivalent service offerings, as to facilitate the analysis of make-or-buy decisions?

The diversity of the service sector, its globalisation, changing business processes, rapid influx and use of web enabled services, along with the inception of service value-chain management concepts, demand a new service management paradigm. In light of the deployment of ecommerce, service industries are transforming radically the manner in which firms operate within a context of globalisation and service delivery mechanisms, thereby creating new service industry and market opportunities, with ongoing progression and dynamic ways of converting tangibles to intangibles (and vice versa) along a specific industry service value chain. For example, with the advent of broadband and internet, there is major competition amongst various industry players - TV, telephone service providers and internet, popularly known as the Triple Play. As a consequence, companies like Telstra Corporation in Australia and SBC in USA, prime providers of telecommunication services, are lately positioning themselves with new generation service packages including services such as video-on-demand, and example that will be elaborated on later in greater detail.

Agarwal and Selen [1] recently developed a new theoretical services classification scheme, based on Schmenner [39], by introducing a third dimension to classify services in ways that transcend current industry boundaries, and which addresses upcoming service business trends that deploy technology and e-commerce.

Schmenner [39] shows that the movement of services from Professional Services to Service Factory along the productivity diagonal is due to the use of technology, innovation and standardisation in processes caused by the relative split of front-end and back-end functions, but all in the context of internal firm service operations. Innovation and technological change are without doubt the main drivers of economic growth at organisational, sector and economy-wide levels, which means technovation is the basis for future economic growth. A strong and well-developed innovation system and culture will underpin economic growth and social well being. The authors have defined *technovation* as the use of "technology", "process", "relationship" and "knowledge" management conjoint with "innovation" amongst key stakeholders of the value network consortia, in order to enhance the service creation and service delivery process and/or service offering, whilst interacting with the external environment in a Services Value Network Consortium (SVNC) setting as described in [2].

It is to be noted that the use of technology and ecommerce in the earlier 2X2 matrix of Schmenner [39] refers to internal operations, and is distinct from the usage in the context of inter- and intra-organization structures. Our social infrastructures and inherent knowledge experiences play a vital role in relationship and information management in facilitating service encounter design and service delivery across value networks. Hence, this new dimension is a key element of a service business process and is pivotal in the new service classification scheme. In response to these dynamics, traditional organizational structures are adopting clusters, value nets, value chains and holonic structures with fuzzy boundaries in a virtual or physical sense, which leads to the definition of collaboration. Collaboration means inter-weaved and loosely-coupled multi-directional service relationships belonging to the same or different industry value chains, whilst leaving room for firms to manoeuvre, enter and exit alliances, collaborations or networks, in the quest for identifying value propositions.

In the three dimensional Service Cubicle framework. Agarwal and Selen [1] have introduced the degree of technovation (technovation and collaboration) as a third dimension, comprising the use of technology and ecommerce, along with new organisation structures as a result of collaboration (from loosely coupled alliances across multiple industries, to partnering, virtual network consortia etc.) in conjunction with degree of relative throughput (measured for a service transaction as compared to others in the industry) and degree of variation (customisation for and interaction with customers). The joint measure of degree of technovation has a high value when a service displays both a high technovation and a high degree of collaboration. Similarly, when both individual measures are low, the joint measure of degree of technovation has a low value. Where there is a mix of high technovation and low collaboration (or vice versa), the joint measure of degree of technovation falls somewhere in between the two extremes.

The *Service Cubicle framework* [1] is illustrated in Figure 1 with Service Factory (SF), Service Shop (SS),

Mass Service (MS) and Professional Service (PS), with the Degree of Technovation being assigned Low and High:



Figure 1 : The Service Cubicle Framework

Using some of the same industry examples which Schmenner referred to in his previous models [39] [42], our focus shifts next to identifying proposed shifts and impact of the degree of technovation in today's service developments. Similarly to Schmenner's 2-dimensional service process matrix [39], the cubical diagonal of the 3dimensional matrix also shows the path to increased productivity, not necessarily to profitability. If there is any relationship to profitability, it may be purely due to an increase in productivity. This is still to be established in future empirical validation of both classification schemes.

We now turn to a detailed discussion of this service classification with a number of relevant service industry examples.

4. Industry Examples of the Services Cubicle Classification

4.1 Telecommunications Industry and Film/Television/Video-CD Industry

The traditional telecommunications industry faces a threat to its traditional voice services, with cable companies like Cox in the U.S. offering phone call and high-speed internet access over its cable in competition with local phone companies. Further, with the advent of broadband and internet, there is major competition amongst various industry players - Television, telephone service providers and internet, popularly known as the Triple Play. Regulatory requirements for phone and cable services are different in different countries, eg. in Australia, Telstra Corporation who owns half the cable, and SBC, a phone company in the USA which owns no while both are prime providers cable. of telecommunication services. In response to competition generated by different value chain services, cable providers and power companies providing broadband services at TV channel speeds are lately positioning

themselves with new generation service packages, including services such as video-on-demand.

Video-on-demand services affect the service value chains of several industries, grouped as telecommunications (telephony, internet broadband access and Television), and multimedia (Television/film sports and entertainment, and industry, retail purchase/rental of DVD), respectively. This example is unique in the sense that two major industry chains, offering a multitude of service offerings via different channels meeting different market segments, are affected as a result of technovation. This is further elaborated on below in how the two separate and diverse industries are affected, how technology innovation creates opportunity for new markets and new channels with new service delivery methods, which eventually results in an elevated win-win value proposition for all partners involved.

Several telecommunication service providers are taking a lead and providing video-on-demand services packaged as part of their traditional telephony and internet services, which cover a range of sports, entertainment and film related services. On the other hand, companies like Cox in the USA, represent pure cable services providers that are packaging their core broadband internet services with telephony, and videoon-demand services. Benefits are greatly realised by the film industry from a pirating perspective, traditional telecommunication and cable service providers from ancillary services which are slowly becoming core of the operations, and end customer with a unique service experience (the value add) whilst at home. Further, the downloading of pay movies through broadband connected computers at home with the use of CISCO consumer electronic devises that sit beneath televisions and receive wireless signals from computers to reproduce internet content on other screens around the home, will be available. This provides the home theatre viewers with an innovative means of fulfilling the home experience within flexible and accessible reach. These new service offerings are indeed feasible only because of technovation, due to the partnering and collaboration among stakeholders of different value chains, resulting in alteration of service value chains, transformation of complete organization structures, or resulting in some form of networked collaboration. However, this downloading of movies may pose a threat to the operations of several other service industries - CD/Video shops, movie theatres, and multimedia/film entertainment, unless innovation provides a difference in experience that appeals to customers.

If films were to be released directly to the internet on a pay per view system at some point in time after the release of the film, this may prevent illicit pirating which benefits the film industry. Another school of thought suggests that internet awareness for a particular movie may more than offset the negative side effect of pirating resulting in growth for the industry. Irrespective, the film industry needs to find ways to capture this lost market or take advantage of the growth in the market – encoding films such that they could not be saved, or watched once only so that there is a market for DVD when purchased later, and the likes.

Traditionally two decades ago, the notion of movie theatres becoming obsolete was raised when video renting became popular. For an increasing number of people, going to the cinema was an outdated notion, especially when it is more comfortable to stay home and watch a film in your own private home theatre. But the creation of movieplex-facilities proved to be a huge success, creating a social "night out" experience, rather than a pure movie experience. In a similar vein, as people are becoming more and more comfortable watching movies in their own home theatres at a cheap price with access round the clock, the movie theatre business needs to provide a difference in experience in order to survive and remain competitive. An experience that concatenates the sensory and physical real-time Disneyland experience with the 3-d IMAX theatre visual impacts, may be an example of the next wave of new customer experiences in this regard.

Whilst these developments are purely based on technological developments, the different players in the industry must strategically position themselves whilst working collaboratively, and must redesign service offerings to meet different market segments accordingly.

According to Schmenner [39] and referring to Figure 2, back-of the house operations of telephone services (network connection design and operations etc.) would be classified under Mass Services at A, while front-end activities (ordering etc.) would be classified as a Service Shop seen at B. However, due to technology advancements in the telephone infrastructure and operational management systems, telephone services and features (calling line display, call waiting etc.) under [39] have re-classified telephony services as a Service Factory shown at C(x1,y1,0). Technovation, in broadband internet in particular, has impacted several industry value chains, some favourably and some adversely. Based on the new proposed framework, this new service-offering proposition as discussed above is placed at D(x2, y2, z2)in a 3X3 'service cubicle' framework, with the new service offering placed at the high end of the degree of technovation, relatively reduced degree of relative throughput and degree of variation such that $x_{2\leq x_{1}}$, $y_{2} \le y_{1}$ and $z_{2} \ge 0$ as shown in Figure 2.





Research to gather empirical evidence to support these, and subsequent shifts illustrated in further industry examples, is currently in progress.

4.2 Logistics/Meat Industry

In the context of cold chain distribution, network use of an IT system called Smart-Trace (developed by Ceebron in partnership with Toyota) deploys radio tags with a barcode to track meat and livestock produce. Coles and BiLo have had such trials of the paddock-to-meat system, which allows producers or retailers to trace a single meat product to a single animal, and where the system provides the accuracy and speed with which all parties involved can respond to a product recall situation. Furthermore, these radio tags are far more intelligent and rugged than RFID (radio frequency identification), as they have the capacity to drive the information over a much longer range, such as through a full-laden sea container. The networking tag has sensors, for light, temperature and other metrics, enabling real time capture of data onshore via GPRS, mobile communication, or even satellite phone if offshore. This is a prime example of a technology breakthrough, combined with an innovative and heightened service and product offering, which guarantees better product guarantee and recall

procedures, which is only possible because of the collaboration and strategic alignment amongst all parties, in this case the Producer, Supplier, Logistics Partner, and the Retailer.

Under the Schmenner [42] framework, trucking was placed as a capital-intensive service factory, later repositioned by Schmenner [39] with a split to express service of a trucking company such as Yellow (faster relative throughput times) under "Service Factory" shown at F in Figure 3, and the company's traditional ground service placed at E in the "Mass Service"- quadrant. It is suggested that technovation, along with the alliance structure amongst all key stakeholders with their strategic alignment and value positioning, created an elevated service offering for customers. Quick throughput times and standardisation are clearly tied with issues of investment in this new technovation, as are scheduling and demand management by all partners. It is evident that without the value-added partnerships and the strategic alliance, this technovation was useless. In Figure 3 the service cubicle diagram shows a 3-dimensional shift towards the productivity diagonal of the cube as positioned below at G(x4, y4, z4), as compared to the 2dimensional diagonal arrow as shown by [39], such that x3 = x4, y3 = y4 and z4 > 0.



Figure 3 : The Service Cubicle Framework as applied to the Meat/Logistics Value Chain

4.3 Retail Banking Industry

Banking is a service industry that continues to be changed by advances in technology. With the introduction of ATM's in the late 1960's, bank customers were able to draw cash twenty four hours a day and could do functions such as dispense cash, accept deposits, transfer funds, and provide information on account balances. In the process, banks have already formed cooperations, nationwide networks that enable a customer of one bank to use an ATM of another for cash access worldwide. Although ATM's are a mature technology and its wider application is a proven example of technovation and partnering, as well as a proven delivery channel for banks, internet e-commerce applications have further changed the way people do their banking. Customers can now access account information and transfers, online bill payment, and financial investment services via e-banking. Since the turn of the century, the adoption of e-banking has greatly increased, with twenty percent of people with internet access now using online banking facilities [15]. The result is less human contact and more self-service with increased standardization, thus improving productivity. Further, [31] point out that it has been very difficult to get mature customers accept ATM and internet banking that cover the entire suite of regular banking services. Yet the fear of security breaches has been a major issue, and banks have tried to respond by emphasizing the benefits of ATM at the teller line, while increasing security measures as technology advances [38].

Schmenner [39] classifies retail banking with ATM banking included at H as a "Service Factory" in Figure 4, as opposed to "Mass Services" as shown at I in [42] framework for reasons explained in there. Although ATM was a completely different channel for delivering retail banking and has been successfully deployed, the authors believe that this service should have been deployed in a frame other than z=0, ie. z6>0. In spite of this repositioning, further benefits could potentially be realised with the use of voice recognition technology (VRT) in the area of retail banking, which recognises individual signature traits in the voice (rather than the words themselves), and has now advanced to such a stage as to be a reliable way of identifying a person. This technology would be especially useful as a way of uniquely identifying customers using ATM's, negating the need to carry cards or memorise pin numbers. This VRT associated banking technique could be used to improve the banking service value chain by making it unnecessary to carry bankcards, banks not required issuing them, and the like. Further, the same VRT banking technique could also be used to legally identify ones self while engaged in internet banking from anywhere in the world, thereby abolishing time and spatial differences. Banks are now partnering with telecommunications service providers to trial out these banking service delivery channels, which will lead to further partnering across industries as shown at J and will affect the banking value chain industry with the VRT ATM/internet banking etc being positioned at J (x6, v6, z6) such that x5=x6, y5=y6 and z6>0.



Figure 4 : The Service Cubicle Framework as applied to the Banking Retail Industry

4.4 Medical Industry

With the aid of mobile technology, Telemedicine kiosks are used to trial processes that support emergency health care. A consortium drawn from 10 countries - the USA, Britain, Australia, Japan, Korea, India, Indonesia, Bhutan, Greece and France, is developing these kiosks. Schmenner and Swink [41] highlighted that nations where groups of companies routinely pursued "swift, even flow", should industrialise more quickly, and to a greater extent, than those nations whose companies did not pursue swift, even flow in their processes. If this is true, then medical facilities in developing countries need to move within an alliance structure where researchers, doctors, and institutions are all collaborating. The resulting value add is the provision of such services as mentioned above, made possible by new technology applications and the creation of new service delivery channels through collaborating consortia of industry partners. One can easily envision the progression of such services beyond emergency services, to include more advanced applications such as heart scans and medical diagnostics made available to places where these services are currently non-existent. E-health systems exhibit a range of applications, including emergency telemedicine, epidemic control, and combating bioterrorism, all which can be worked towards. The value-add of these type of service offerings is self-evident, and will result in a shift in productivity for under- developed market segments as shown in Fig 5.



Figure 5 : The Service Cubicle Framework as applied to the Medical Value Chain

4.5 Education Industry

Recently, the use of mobile phones in Europe is extended to purchase goods such as drinks and snacks, by dialling a particular phone number on the vending machine, or sending an SMS to the mobile operator, and hence is becoming a popular channel for economic disbursement and charging customers for services/products of nominal value. This technology can also be used in enabling the education service industry to start operating on an organisational consortium basis level, as follows:

Several niche service markets such as one-to-one home coaching and ad-hoc tutoring via the web, including online assignment assistance at some nominal fee, can be seen as part of an educational value chain. Payment for such services through a mobile operator is greatly facilitated, especially when charging small denominations via the internet mediation broker or via credit cards is not readily accepted for use by customers as being safe, nor feasible or practical, and one which affects the educations industry's business operations. Given the innovative scenario, the technological and

information advancements have helped identify a new service offering opportunity in the education value chain in unification with the mobile value chain industry whilst catering for a particular market segment. This innovative way of service delivery operations results in a change of the role of the intermediary (on-demand on-line education provider) and establishes a new relationship between the mobile service provider, the education service provider and the customer with the prime control still lying with the Education Service provider. The functioning of these new consortia requires the cooperation of all members of the network such that related end-to-end processes across the two value chain industries are synchronised and efficiently dealt with, resulting in on-demand tutoring, and improved and reduced ordering-to-payment cycle. The on-demand tutoring is a result of the transformation of the service to a heightened service offering with technology not only facilitating the management of the new process, but also becoming a means for value creation. Subsequently, it is expected that the mobile industry value chain and the education value chain industries respectively will have a ripple effect in their own value systems affecting the internal operational processes and systems, all of which illustrate the very essence of the SVNC concept. However, knowledge and relationship management will pose operational challenges to the provider, and these issues will also have to be addressed by the service provider in order to become competitively successful.

According to Schmenner [42], college or university teaching required high visibility; however the interaction with the students was less, but required high labour intensive services, making it a "Mass Service". As Schmenner revised his SPM, college and university education split into several industries, namely traditional form of teaching at college or university, distance learning, correspondence courses, private colleges, coaching colleges, one-to-one tutoring, etc. Whilst oneto-one coaching currently would fall under Mass Services, inclusion of technovation and alliance structure may create a similar shift as the Meat Logistics example referred to earlier, and shown in Figure 6.



Figure 6 : The Service Cubicle Framework as applied to the Education Value Chain

5. Conclusion

Service organizations increasingly organize themselves and operate on a value chain level, in response to new ways in which services can be marketed, branded, operated and delivered. This creates important challenges and opportunities, which call for a realignment of strategic focuses, in particular with respect to the impact of technovation on service creation and services modus operandi, their resulting service classification, and the restructuring amongst different service value chain industries.

This research builds on a recently developed classification scheme, referred to as the Services Cubicle that transcends current industry boundaries and includes upcoming service business trends in technovation. The paper subsequently illustrates a variety of service industry examples in order to clarify the resulting service classifications, taking into account deployment of varying degrees of technovation in that industry. These examples were carefully selected in relation to recent service process classifications by Schmenner, and compared to his earlier classification scheme.

These examples provide initial insights for service organizations to position, align, assess and validate the impact of their changing service offerings, whilst addressing the complexities of strategic alignment, value positioning, asset definition; as well as technology, process, knowledge and relationship management.

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