# Service Design Innovation for Aquarium Customer Value

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*Abstract* - **Aquarium business service is an unexplored area of research, from the prospective of customer value. The research question has been posed to explore the service encounter of hobbyist, children, business person, youngsters and other segments of aquarium users. The purpose of the study is to map the aquarist reaction against aquarium user's actions and to trace the interactions of interfaces in promoting aquarium related artifacts. The study has been designed with triangulation of brainstorming, expert-depth interview, real-time observation, focused-depth interview (real-time fish exhibition) using Human Activity Modeling (HAM). The qualitative data for applying grounded theory have been collected and processed with QSR NVivo software. The customer value constellation map depicted five different unique customer values viz., planted-design, pet-companion, prosperity/evil-protection aesthetic, exotic-marine and up-gradation. The service design requirement has been identified with hobbyist, children, business person, youngsters and other segments of aquarium users.**

*Keywords* - *Service Design, Customer Value, Aquarium, Grounded theory, Human Activity Modeling*.

## I. INTRODUCTION

Services rendered by businessperson to final customers vary while understanding customer's requests in relation to him (interface-technician) and performing activities with artifacts (physical attribute-aquarium tank). These variation is observed in service industry depending on the pricing formats like hire charges, subscription fee, interest rate, rent, service charge, production agent's fee, consulting fee, ticket, premium, and commission for taxi, magazine, banking, hotel room, auditing/tourism, advertising, hospital, cinema entertainment, insurance, and matrimonial service, respectively. Depending on the understanding level of customers and ability to perform activities on their own with physical attributes of service, the price of service varies. In the age of moving from information asymmetry to information symmetry, Customer's request for service means different values. Again, the complexity in performing their activities gives way for waiting and failure. In order to keep ones values, the continuum in service providers support persist like teacher-student, agent-policy holder, attorney-inventor, lawyer-acquit, doctor-patient, aquarist-hobbyist, taxi-traveler, guide-tourist, bridegroom-matrimony agent, bearer-guest, banker-account holder etc. The growth in India's services sector is projected around 5.6 per cent in 2015 with 60 percent share of GDP. The aquarium business represent a major avenue for over 150 aquatic species around the world. Andrew et. al., (2009) reported retail trade of ornamental fishes largely of Indo-West Pacific and South American tropical species marketed and sold in other regions of the world devoid of invasion risk.

**Service Design:** The purpose of service design methodology is to design services as per needs of customers or service encounters enabling user-friendly, competitive and relevant to the customers. Service design informs changes to an existing service or creation of new services. Service design involves artifacts, interface and other things including communication, environment and behaviours. Several researchers (Eiglier 1979; Normann 2000; Morelli 2002), emphasized that service come to existence at the same moment they are being provided and used. Consequently, service design suggests behavioral patterns or "scripts" to the actors interacting in the service. These analytical tools refer to anthropology, social studies, ethnography and social construction of technology. It is proposed with video-ethnography and different observation techniques to gather data about users' behaviour. Design tools aim at producing a blueprint of the service, which describes the nature and characteristics of the interaction in the service. Design tools include service scenarios, which describe the interaction and use cases, which illustrate the detail of time sequences in a service encounter. The functional requirements of a system have been adequately adapted in order to include more information, concerning artifacts and interface component of a service, time sequences and physical flows.

**Customer Value Proposition:** Customer value takes the perspective of what they want and believe while buying and using a seller's product. Value is the consumer's assessment of his *utility* based on perceptions of what is received and what is given (Zeithaml 1988); the perceived worth of set of economic, technical, service and *social benefits*(Anderson, Jain, and Chintagunta 1993); a *tradeoff* between the quality or benefits they perceive in


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relative to the sacrifice they perceive (Monroe 1990); market *perceived quality* adjusted for the relative price(Gale 1994); *emotional bond* to provide an *added value* (Butz and Goodstein 1996); a *means-end-way* of customer hierarchy (Woodruff et. al., 1991).

A customer value proposition (CVP) consists of the sum total of benefits which a vendor promises a customer receive in return for the customer's associated payment. A good customer value proposition provides convincing reasons why a customer buys a service or product, and also differentiates services from competitors. Gaining a customer's attention and approval build sales faster and more profitably, as well as work to increase market share. A deep knowledge of the potential/current customer base is invaluable in coming up with a strong customer relationship. Firms develop a strong relationship through relationship by identifying customer needs through service analysis research. A service with a successful consumer value proposition is directly linked to a service encounters actual and sustained performance versus competition. The two main attributes that allow consumers to differentiate service are their quick-easy understanding and ability-to-performance. The customer value proposition is the keystone for effective product marketing activities. It brings together customer intelligence, competitive insight, and product valuation. It delivers a concise, supportable statement of the transparent service's value. It quantifies how that value is realized based on all of the target user's satisfaction and fulfillment of service experiences. The customer value proposition provides a focused approach to understanding the target user in the context of service encounters.

## II. REVIEW OF LITERATURE

**Service Design:** The demand chain perspective to the service design of customer care satisfies customer needs and improves customer acceptance willingness (Shu–Ping-Lin, 2012). The "new service happen" is becoming competitive rather than a formal new service development processes (Larry J Menor, 2002). Verity of practitioners, academics and companies were involved by researcher to study the large spectrum of practices and service design (Roberto M Saco et al., 2008). Service Design Consultants build knowledge about service design by paying attention to the service experience design of touch point; making a service tangible and visible; conceiving of a service as on arrangement of artifacts, people and practice (Lucy Kimball, 2009). New service development process differs between service sectors (Fredrick Nyongesa Oduori, 2010). Service usage and potential for continuous development and rapid use of service charges is becoming a key to new service development process (Christoph Riedl et al.,2009). Design culture is considered as one of the important aspects that pressure designer decisions and actions especially in design for base of the pyramid (Jiehui Jiang et al., 2010). Industrial designer are not specifically educated to understand and overcome their own culture from unconsciousness in favor of corporate culture requirements of a potential user group.

**Customer Value Constellation:** Theory of customer value specifies eight values as efficiency, play, excellence, aesthetics, status, ethics, esteem and spirituality (Halbrook, 1999). Service Network structure affects value constellation aspects in business networks, in terms of value recipients and value outcomes. These are not alternative independent structures, but rather they interact with each other through actors spanning their boundaries. This study provided an understanding of network configurations relating to specific value consequences and provided evidence relating to the interactions between different configurations. A bridge is established between business marketing and strategy perspective on value in networks (Daniela Corsaro et. al., 2012). Value modeling allows us to find more detailed goals, to analyze conflicts among goals of a value web, and to operationalize these goals (Gordijn et. al., 2006). Small and Medium Enterprises differentiated themselves through heterogeneity in new value constellations of service offerings within business networks (Christian Kowalkowski et. al., 2013). Service system analysis based on model composition was used design and evaluate stakeholder relationships through what-if scenarios that was found opportunities for reconfiguring roles and relationships that unlock value (Cheryl A. Kieliszewski et. al., 2012). A longitudinal in-depth case study based sustainable service system analysis has been used to identify values that are related to system innovation, product-service systems, value constellation, service-dominant logic and related streams of research (Christophe Sempels and Jonas Hoffmann, 2011). The Business Model Ontology BMO and the e3value ontology have been adopted for the design of business models and value constellations (Jaap Gordijn et.al., 2005).

**Grounded Theory:** It (Roman Ingarden) is one of the key methods for generating ontologies where substantial uniform quality text was available to the ontologist for seed coding and domain concepts (John and Simon). There are issues encountered to date on a grounded theory study (Enda Dunican, 2006). Grounded theory analysis of a case study provides an account of characteristics of service development process (Maddalena and Francesco, 2005). Service innovation enables in harnessing the advantages enjoyed by a large organization and stayed competitive in the market place (Shiv Shankar et. al., 2013). Although grounded theory includes the conditional relationship guide contextualized the central phenomenon and related categories link structure with process, the reflective coding matrix served as a bridge to the final phase of selective coding (Karen Wilson and

Dana Howell, 2008). There are three work activities through which knowledge for innovation is generated viz., the continued generation, capture and use of practice-based knowledge for innovation (Deborah Dougherty, 2011). The theory emerged from the collection and analysis of data according to the central tenets of business research (David Douglas, 2003). The paper theory brings out a theoretical proposition for the concept of contextual sensitivity (Miguel Baptista Nunes et al., 2010). It is by local research novices wishing to explore and explain social phenomena in the qualitative tradition. (Johann Burden and GertRoodt, 2007).

**QSR NVivo Application**: Nvivo a qualitative data analysis software tool support data analysis in the context of the critical ethnography with the file sharing sub-culture as part of Actor-Network Theory(ATN) (Jenine et. al., 2010). There were outline seven types of qualitative data analysis techniques viz., constant comparison analysis, classical content analysis, keyword-in-context, word count, domain analysis, taxonomic analysis, and componential analysis (Nancy and Anthony 2011). QSR-NVivo software was used to support good quality grounded theory research by facilitating many of the key processes and characteristics associated with this approach (Andrew et. al., 2009). Researchers pursuing of the relationship between categories and themes of data seeking usually utilize coloured pens to sort and then cut and categorize to manage the 'coding' (Hilaland Alabri,2013). However, qualitative researchers now have the option to "technologies" their approach in data management and data analysis to easiness the complexity of the research procedure (Ishak and Bakar, 2012). It describes in the analysis of observational (video) data, interviews and field notes (Ozkan, 2004). It has strengths and weaknesses (Walsh, 2003).

## AQUARIUM SERVICES

Aquarium service is becoming popular among people as a pet as well as part of lifestyle. The physical attributes of an aquarium, users' action, onstage reaction of service providers, backstage actions of service providers team and support service have been considered as construct of blueprinting in service industry. The customer segment is the key in deciding the service offering in terms of profitable size of operations. Sankaran A. and Selvarasu A. (2012) have reported user segment as individual household consumer, hobbyist, businessperson and institutions for aquarium. The services offered at residential, commercial, institutions, floor, coffee-table, wall hanging, plasma, column tower, cylinders, bars, cubes, semi circle, hexagonal and tunnel Aquarium depending on the external structures. Based on the fishes, Marine aquariums, Tropical fresh water aquariums, live Natural planted aquariums, Angle fish aquariums, Chicled aquariums, Vasthu Arowana, Flowerhorn aquariums, etc aquarium services have been differentiated (Aquarium Design India)

India has a population estimate of above 1.22 billion (2012) and India is the second largest in the world population. Based on the population, the demand was proposed to increase, hence companies were introducing various service design for their consumers like Banking service, Hotels service, Hospitals service etc. The services are standardized properly by corporate companies. The ornamental fish aquarium business service was developing and very little efforts are identified in developing service mix for the aquarium business. The aquarium business service was attempted to design a structured service design like restaurants, coffee shop, and ice cream parlor. The study was aimed to enhance business growth and to fulfill the customers' expectations as services. Hence, the study was attempted to provide design up to prototyping and the experimentation of the study was directed for further study. The research aims to create the aquarium business service design in the prototype form with its service mix. The study offers alternative forms of aquarium designs for aquarium keeping customers (AKC). The marketing strategies vis-à-vis consumer preference for ornamental fish aquarium business service (Sankaran A. & Selvarasu A., 2010) and Indigenous ornamental fish marketing Kerala (Mini Sekaran, 2006) have been reviewed. The extension of aquarium service design (ASD) helps to focus on the potential for aquarium business service (ABS).

### Research question and paper structure

Our research question is to explore the customer value in keeping aquarium and the orientation of service providers. The study has been conducted to identify the resources like depth interview, pictures, videos, web resources depicting aquarium keeping values among users. The research question is whether there is difference in the value orientation of aquarium keeping customers and its related interfaces and artifacts in the service offerings.

### Research Objectives

The following are the objectives proposed for the study

1. To determine the aquarium keeping *customer's value requirements for users' actions and aquarists reaction.*
2. To determine the *influence of interfaces and artifacts on aquarium users' value* and its attributes in aquarium keeping values.

### Research Propositions

There are two propositions (Hypothesis) drafted to study the proposed objectives.

P1. The failing point and waiting time of users' actions and aquarists reactions do not vary significantly with aquarium keeping values.

P2. The *influence of interfaces and artifacts on aquarium users' value* and its attributes do not vary significantly with aquarium keeping values.

The paper is organized initially with an introduction to services, service design, customer value proposition, grounded theory and QSR NVivo software. In the similar lines, the related studies have been traced and reported as literature review. This section is to indicate the research problem and the structure of the paper. The next section focuses on the research methodology, application of Human Activity Model of grounded theory with findings.

Research methodology is presented in this sections highlighting design of research, method of drawing sample data sources and limitations of the study.

## III. RESEARCHMETHODOLOGY

**Research design:** Aquarium business service design encompasses its methodology framework with exploratory research design. The study on aquarium business service design was attempted using qualitative research. The triangulation of study has been done at three levels viz., (i) real-time observation by researcher in the laboratory, (ii) focused interview on customers in a real time fish show, (iii) field visit and interview of aquarists. In addition to interviews in real-time fish show exhibition, pictures, videos, web resources have been collected. The researcher has selected the grounded theory research method, based on the perspective of constructing word by word or line by line analysis about aquarium service designs. The primary source of data for grounded theory research was drawn using focused depth interview describing a particular experience which was supported by aquarium exhibition and aquarium service design videos, pictures and web services. The identifications of customers' value proposition of design details have been proposed to be studied using quantitative method for QSR NVIVO software.

**Pre-Test:** It has been done in two phases. The first phase involved field visit to ornamental fish production (Kolathur, Chennai, Tamilnadu, India) and five aquarium shop keepers (Chennai &Cuddalore District), in addition to expert opinion on product variance and promotion. The second phase has been done as brainstorming involving school and college students.

### Main Study

The main study is presented as outcome of expert opinion during in-depth interview, 2-in-1 aquarium prototype test, video launch, aquarium setting up, fish show experience. The sampling, statistical tools, aquarium business service blueprinting, interview schedules, and data set extracts have also been presented in this section.

i) Excerpt of depth interview (branding for aquarium): The expert interview discussed with aquarium business service mix such as product, price, place and promotion. The expert suggested improvement for creating an aquarium brand based on 4p's of marketing mix. Product consists of six qualities as size, model, and shape, equipments of tank and size of fish. Price consists of six dimensions as discount, geographic area, rural price, urban price, metropolitan city and service cost. Place consists of geographic area, rural area, urban area, metro city, export market and importing country. Promotion consists of door delivery, installments, advertising, aquarium club, client campaign and brand name.

ii) 2-in-1 Aquarium Prototype Testing: The 2-in-1 type of aquarium has been set up as real-time study. In this newly designed (Innovative) 2-in-1 aquarium, the aquarium tank was divided into two parts, one side of the tank was filled with marine fish and the other side was filled with freshwater fish. More people like 2-in-1 aquarium design model. Researchers have made observations for a period of six months to one year.

iii) Launch and closure of the model aquarium exhibition and video presentation: The videos regarding the aquarium service design in foreign countries and in India were collected from the internet and the video were displayed in the fish exhibition. The people, who show interest, were interviewed with the help of investigators. The aquarium business service design videos displayed was initiated by the researcher.

iv) Setting up aquarium tank: The researcher has setup and maintained aquarium tank in our University for the last one year. In this process, it has become real-time observation to identify the aquarium maintenance requirements, customer service expectation and aquarium cleaning process. During the process, wild fishes (ornamental) sustained but the other docile fishes were not maintained for long. The colour fishes that are docile have been replaced every three months. In the middle of a year, tank cleaner fish and freshwater plants have been added to make a clean look of glass in aquarium. Holiday foods have been explored to be used during holiday period of University.

v) Focus depth interview at fish show: The aquarium keeping customers expectations regarding the service design have been studied in this research. An advertisement has been announced at the fish - show exhibition in Chidambaram using print and multimedia tools. After collecting the details regarding the fish exhibition, Researcher has had the possibility of

meeting "Saravana Fish Show" exhibitors. Researcher explained about the plan of his research work and he got the details about the aquarium exhibition service as well as permission to collect the data regarding the research work during one month period from February to March 2013.

The aquarium visitors of 63 were interviewed regarding the aquarium service design and the consumers who are having an aquarium in their home, and the people who are willing to keep aquarium were also interviewed using a well prepared interview schedule and the interview was video recorded.

The interview was conducted only to the users of fish show who had interest in the interview. In this interview, the information regarding the maintenance of aquarium, the expectation of the aquarium business service design has been exchanged.

Analysis and interpretation has been done with the use of QSR NVivo software and the objectives are verified. The aquarium business service design was developed using grounded theory research. So, every step has been taken with that aim in mind. From codes to categories, and from categories to concepts, all interactions follow an analytic purpose, in order to create higher level concepts and construct the theory. Finally, researcher has identified aquarium customers requirements, customer support service, improvements of aquarium service design and created alternative service design for developing hypothesis of aquarium business service.

**Sampling:** The sampling was based on purposive method, for conducting brainstorming with 100 management students, in depth interview with 63 aquarium customers and an in-depth interview with 25 aquarium experts, 5 aquarium business service related videos, 20 images and 12 aquarium WebPages at all stages of data collection. Each interview lasted from 10 minutes to half hour in exhibition area, and video of interview discussion have also been recorded.

**Statistical analysis:** The researcher has adopted relevant summary of frequencies, matrix with cross classification and customer profiling analytical tools for describing aquarium business service design data. The following are the relevant tools used for analysis of data viz., brain storming method, axial coding (Strauss and Corbin, 1990) and blueprinting process (service scape measures) as pre-request and part of service design.

**Limitations of the study:** The focus on the study was mainly based on aquarium keeping consumers. The study has been carried out to understand the consumer expectation and service design for aquarium business service from aquarium fish exhibition visitors only. Many aquarium visitors are partially willing to give information and limited awareness of aquarium maintaining has been observed. The major institutional segment was given very little importance.

## IV. FINDINGS

The findings of the study have been presented for blueprinting, service offerings, real-time observations, activity-interface-artifact of aquarium service encounters, customer value constellation and confirmation of hypotheses.

**Users' action vis-à-vis service providers' reaction blueprinting:** Service Blueprinting is a service planning tool. It is used for developing aquarium business services as well as for improving existing services encounters experiences. The method is also appropriate for ensuring the service quality processes. It is used for aquarium users experience action and service providers reaction as a service blueprint overview. The Service-Blueprinting output consists of a graphically-presented overview of the service process and its activities. Service-Blueprinting allows for visualization of the service development process in its early stages. In each step of the process, physical evidence, aquarium user's action, service provider's re-action, for a tangible/ visible and intangible supportive process have been drafted.

The service blueprint for aquarium business service design has been traced. There are two main objectives of the Blueprint. The first is to analyze and see the aquarium customer's interactions, while the second is to have a map that enables better judgment of the business service reactions. The customer's action in the aquarium keeping, typically, starts with plan to buy with a reason from their perspective as companion (recreation hobby), design (aquascape), aesthetic vastu (sentiment), exotic collection (marine colour fishes), status etc. Next, the customer arrives at aquarium shop, and after enquiring with the service provider about the availability of tanks, fish verities, accessories, details of price and maintenance depending on their choice. The customer has been visiting shop and selecting suitable aquarium fish to set up in a suitable place and the shopkeeper provides an invoice for rendering setup services. The customer makes payment and the process comes to an end. The follow up on the purchase of aquarium is considered as a separate service function. Finally, the aquarium keeping parents and children play, enjoy, relax, feel and continue as recreation/hobby. The second steps that appear in the onstage visible contact level are all perceived by the customers he/she is integrated in the process such as customer's expectation, existing service, aquarium setup and maintenance. The third steps is a backstage processes such as fish breeding and ordering, maintaining customer's details, providing service instruction to service man, pricing, service travel, service delivery and invoice preparation etc., are not perceivable by the customers. The

fourth step is the support process at the backstage operations which needed for performing service function. These processes usually take the form of a data bases, purchase order, knowledge, service delivery, manufacturing and service quality system. In order to complete the service request. The fifth steps of blueprint evidence are the component of the service that can readily receive design input. The service provider introduces local TV advertisement, personal communication, sign board, family friends and compare another shop quality. The design concepts of aquarium business service where the failing point and waiting are parking facility, sitting chair, employee uniform, discount, door delivery and good environment. At times, additional service evidence needs to be created in order to complete the design for a positive service experience.

**Aquarium service offering variants:** The Model of Aquarium Business Service Mix describes four P's of marketing mix (Service Product, Price, Place and Promotion, Philip Kotler et al., 2005). Service Product consists of six qualities as size, model and shape of tank, equipments, and tank type and fish size. Each quality has three varieties as variant 1, variant 2 and variant 3. The Product variant 1 consists of small, round and bound tank shape with water filter and re-use glass type and containing small fishes. The Product variant 2 consists of medium, imported and square tank with aquatic tree and glass tank containing medium size fishes. The Product variant 3 consists of large, furniture type and landscape tank with air motor and molding tank containing large size fishes.

Price consists of six dimensions as discount, geographic area, rural area, urban area, metropolitan city and transportation service cost. Each dimension of price consists of three varieties as variant 1, variant 2 and variant 3. Price variant 1 consists of discounted fishes in rural area having price range <₹500 in rural area, ₹1500- ₹2500 in urban area and ₹5000- ₹10000 in metropolitan city. The cost of service for price variant 1 was cleaning cost. Price variant 2 consists of discounted tanks in urban area having price range of ₹500-₹1000 in rural area, ₹2500- ₹3500 in urban and₹10000- ₹15000 in metro city. The service cost for price variant 2 is maintenance cost. Price variant3 consists of discount on maintenance costs in metropolitan cities having price range of ₹1000-₹1500 in rural area, ₹ 3500- ₹ 5000 in urban area and ₹ 15000- ₹ 20000 in metropolitan city. The service cost for variant3 was tank setting up cost.

Place consists of geographic area, rural area, urban area, metropolitan city, export market and import country. Each variable of place has three varieties as variant 1, variant 2 and variant 3. Place variant 1 was in rural area, having a petty shop in super market and promotion through exhibition. The export market for this product was Singapore and importing from China. Place variant 2 is in urban area, having aquarium shop in rural and urban markets while as malls in metropolitan cities. The export market for this product was Japan and imported from India. The Place variant 3 is in metropolitan city with school area, hotels and theater in rural, urban and metro cities respectively. The export market for this product was Thailand and imported from Sri Lanka.

Promotion consists of door delivery, installments, advertising, aquarium club, client campaign and brand name. Each variable of promotion consists of three varieties as variant 1, variant 2 and variant 3. Promotion variant 1 does not provide home delivery and advertising is done through notices. Forum and students campaign are conducted in order to promote brand like '**LoBPaQua**'. Promotion variant 2 delivers fishes at door step with an option of weekly payment. Advertising was done through newspapers. Aquarium promoters and hobbyists were used for promotion of brand like '**aQuVastu**'. Promotion variant 3 delivers aquarium tank at door step with an option of monthly payment. Advertising was done through TV ads. Hobbyist and households were used for promotion ofbrand like '**DeSignaQuaBeauty**'.

## Observations from real-time 2-in-1 aquarium study

There were three different aquariums setup by the researcher one small and two medium size of 5 gallons (19 Litters), 25 gallons (95 Litters) and 40 gallons (150 Litters) of water. The first tank with eight gold fish and one tank cleaner fish (8+1), the second tank with eight planted-tank fish and one tank cleaner and third tank with one anemone and eight clown marine fishes (8+1). There two types of aesthetic fish like Arowana and Flowerhorn fishes were observed at the shop level. The experience of setting up for planted-design, aesthetic and marine aquarium has been considered as little complex and we were forced to seek the support of technician. The other normal tank and up-gradation of tanks is considerably easy as we gain experience in doing the maintenance of aquarium at our level in terms of cleaning, water-replacement, feeding on regular days and on holidays (Holiday Food). The observation has been done in terms of introducing water plants from our University Pond. It gave an impression that the behavior of fishes has become very active and we cherished the movement of fish. The identification of fish behaviour is interesting that each one of the fish has its behaviour as mild and wild. We were forced to replace the mild fishes due to its high mortality rate whereas the shark fish of wild character sustained for long over the two and half years. The plant-design aquarium gave us an understanding that we need to feed the plant and fish as well. The fish habitation with planted aquarium varies and it exhibit very mild behaviour but gives very good looking. The marine aquarium has called for support service of log book maintenance on parameters like temperature, pH,

Nitrate, Nitrate, Carbonate, fish movements etc. The experience of research has driven us to innovation of three alternative forms of 2-in-1 aquarium as Marine-in-Fresh, Fresh-in-Marine and Brackish-in-Fresh. Researcher has taken efforts to patent the innovation in three different forms. The real-time research is very useful and it leads to innovation in new aquarium.

**Interfaces of Aquarium service provider:** The most significant aspects of the service design category are the interface. These are points of contact with the customers that required interaction between users and service providers in some aspects of service design operations. Again, we present the complete coding tree, tag cloud, word frequency matrix and map for aquarium keeping Customer's Activity- Interface. We created the activity interface map. However, while collecting data, the entire interface was not particularly easy with the methodology followed. This was because there were many customers experience with several interfaces for aquarium business service.

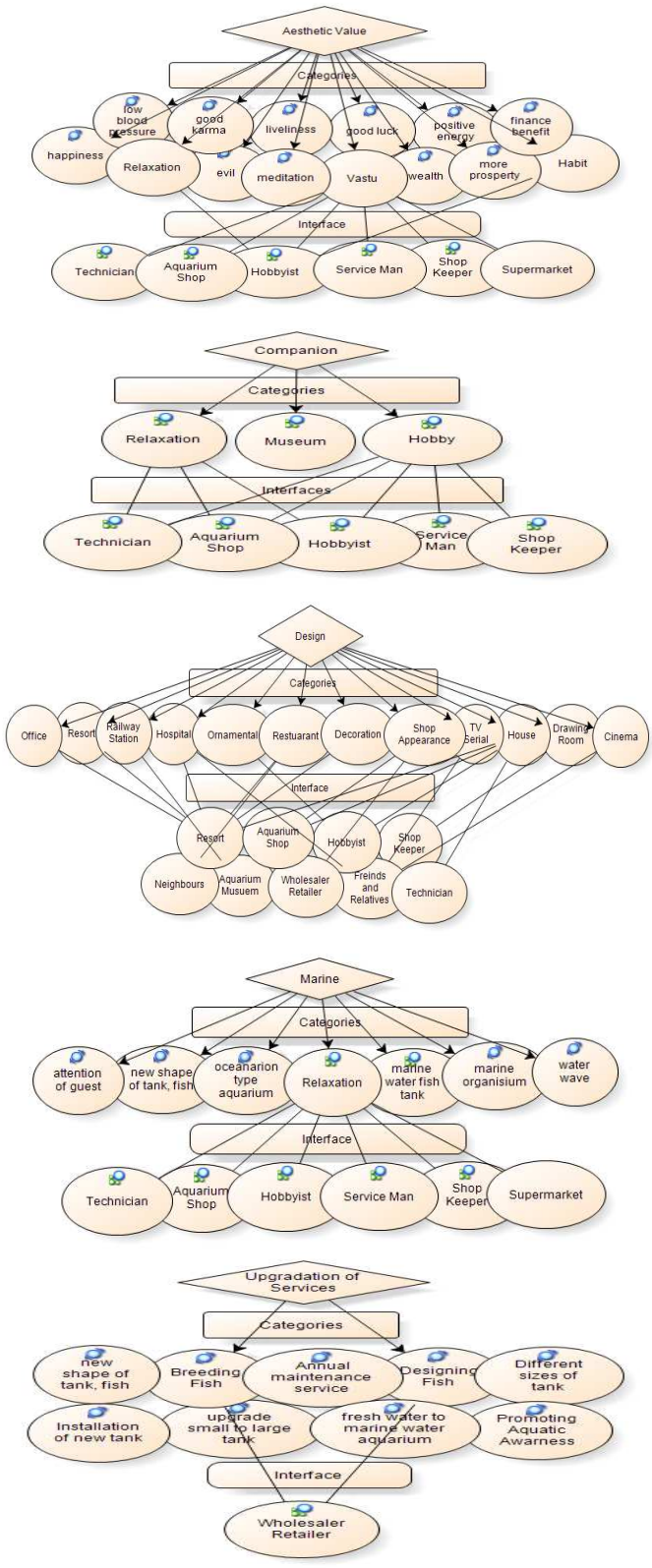
Upon analyzing these interface codes matrix, service contact point of interface categories was divided into two concepts such as external interface (aquarium shop visible in the front office) and internal interface (invisible on back office). These were several basic concepts of visitors in fish exhibition around which every other response was axially coded. It was found that most of respondents were of the view that majority of aquarium keeping for hobbyist (Neighbouring street) 85% and aquarium shop/office (36%), and shopkeeper (26%), and internal aquarium shop serviceman (28%), aquarium technician (20%). Some other interface codes to the level of giving opinion below 16% have referred in sources.

## Framework Matrix of Customer segment based activity-interface-artifact

It has been reported that Design consists of three sub groups i.e. Residential, Commercial and Outdoor. House Foot Path (48%), Dining Hall (13%), Drawing Room (11%), TV Stand (10%), Bed Room (8%) and Reading Room (8%) come under Residential designs. Shop appearance (21%), Ornamentation (21%), Decorate (18%), Pleasing guest (11%), Cinema (4%), TV Serials (4%), corporate events (4%) and Stages of Public meeting (11%) comes under the category of commercial designs values. And Office Reception (21%), Hospital (15%), Resorts (11%), Airport (4%), Railway Station (1%), Pubs (3%) and Visitors (10%) come under the main group of outdoor designs. The interface of the design value is friends and relatives, tourist resorts, museum, neighbors and wholesaler in addition to four interfaces similar to companion value.

It has been observed that aquarium services are associated by aesthetic value. The aesthetic value services

Figure1-5: *Customer Value Constellation Map*




have been grouped into three categories as peacefulness & positive energy, preventing evil and good luck. Believing Vastu Shastra (21%), Meditating (5%), Wealth (6%), Treatment (6%), Positive Energy (5%) and Happiness (4%) comes under the category of peacefulness and positive energy. Avoiding evil (4%) comes under evil group. Doing Karma (5%), Prosperity (5%), good luck

(12%), financial benefits (3%) and Liveliness (1%) comes under the category of good luck. The interface of life style aesthetic value has service experiences of aquarium shop, technician, hobbyist (6), serviceman, shopkeeper and super market

Figure 2 word cloud for customer value constellation


It has been found that marine aquarium services consist of two groups i.e. exotic collections and colour& pattern. Setting water wave (Source Evidence of 10%), Aquatic plant awareness (Source Evidence of 6%) and Miniaturizing Oceanaration (Source Evidence of 10%) comes under exotic collections. New fish and tank sizes (Source Evidence of 8%), Marine Organism (Source Evidence of 9%), Hi-fi guest (Source Evidence of 7%) and pattern attraction comes under colour and pattern. The interfaces of exotic-marine customer value have been encountered with hobbyist, aquarium shopkeeper, service man, technician, and super market.

It is revealed that aquarium services need to be upgraded. Up-gradation services include tanks, fishes and design and maintenance. Breeding (12%), Marine fish (10%), Annual maintenance (7%) and new tanks (6%) come under the category of tanks. Fresh water (4%) and different tank and fish sizes (10%) come under category of fish. Aquascaping (5%) and large tank (11%) come under design and maintenance group. The interfaces of up-gradation and maintenance service value have been encountered with mostly retailers and at times with wholesaler. The word cloud of customer values constellation shows all the subcategories of five different aquarium business service values.

## Service Design based on waiting time and failing points

The waiting time for activity of the service encounter varies from hobbyist, technician, serviceman, wholesaler, friends-relatives, salesperson, shopkeeper and supermarket in descending order. The failing point in the case of companion has been experienced with changing colour fishes and tanks flakes. Similarly, plant design aquariums users fail to get the support of technician on demand and the wrong choice of fishes and plant for setting up tank including maintenance issues. The fail point in aesthetic is considered very much with customer's belief and lifestyle. The success and failure of users' professions have been deeply connected with the life of the fish. Therefore, utmost care for aquarium results in sensitivity. The failure in marine aquarium service like with periodic monitoring of parameters (pH, salinity temperature, light, ammonia etc.) and feeding practices of live food. In the case of up-gradation service, the failure of ready-to- use molded aquarium tank in place of glass tank and vice-versa. Promotion of aquarium business service of natural cleaning salutation with vinegar and Caustic soda for companion value, university certified and licensed technician- designer for planted aquarium design value, collaborative service of astrologist for aesthetic value, ready- to- use test kit and logbook maintain service for marine aquarium and flexi recycle for reuse service for up-gradation value have been identified as new service designs.

## Identification of hypothesis

The above proposed hypothesis have been proved with a chi-square test value of 24.44 (df 4) for waiting time & failure points and test value of 202.62 (df=12) for interface, artifacts. Both hypotheses can be taken forward for further study.

## Conclusion

The theory of customer value though prescribes eight different values (efficiency, excellence, status, aesthetic, esteem, play, ethics and spirituality) the study has brought out five different values such as play (companion), excellence (design), aesthetic (aesthetic), esteem (marine) and status (up-gradation). The consumer segment has been characterized as male, under the age group of "below 35 years", working in private companies having less than 5 years of experience of aquarium keeping and having average income of 6 lacs per annum. The second consumer segment has been identified as female, above the age group of 35 years, doing business, having experience of above 5 years in aquarium keeping with income of above 12 lacs per annum. The other segments like scholars for exotic marine aquarium and government employees for up-gradation and maintained of aquarium business service. The study has unique methodology of real time observation of setting up of five different aquariums. The study can be expanded for descriptive customer value proposition.

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