Heuristics of Frugal Service Innovations

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Abstract--**Frugal innovations in products are vital in developing countries to reach price sensitive customers that seek robust products at low prices. Similarly frugal service innovations can create larger markets among customers that cannot afford expensive conventional services. While frugal innovations in products are easily identified by expert examination, frugal innovations in services cannot be identified without comprehensive mapping of all service processes.**

We identify three broad innovation heuristics used to achieve frugality in services: (a) innovatively combining existing materials, processes and resources at hand through bricolage, (b) innovatively reducing wastage of time, materials and human resources and (c) innovating on creating self-service options for users. We use a diverse set of Indian cases of service frugality to identify and analyse the specific techniques used to achieve frugality within these three heuristics.

We then synthesize a conceptual frame of innovation heuristics for frugal services. Our framework is of value to service firms attempting to achieve frugality without conceding service quality and reliability. It is also relevant to product firms that can add frugal services to reduce commoditization and enhance value of their products. Finally, the heuristics we identify in creating frugal services can be adapted to achieve frugality in physical products.

I. INTRODUCTION

Developing country markets are characterised by the dominance of low income consumers who are typically more price sensitive, more risk averse and who seek robust products and services at lower prices [1]. Frugal innovations in products are vital in developing country markets to serve such price sensitive customers who seek robust products at low prices. While richer customers do exist in developing country markets they are fewer in number and typically more difficult to reach. Even richer customers in developing countries tend to be price sensitive for non-luxury product categories while preferring to spend more on luxury products that have better display value.

Similar to frugal innovations in products, frugal service innovations can also create a larger market among customers in developing countries who cannot afford more expensive services that are conventionally designed [1] [8] [13] . Given the lower human resource costs in developing countries, most services are typically cheaper than in developed countries and frugal innovations in services can further reduce service delivery costs and therefore prices.

Similar to products, frugal innovations in services must also ensure robustness (no errors) in service delivery. This is not easy to achieve in developing countries as service delivery persons may typically be less educated and require additional training in error free service delivery processes. Many firms therefore build detailed templates and robust processes that reduce human error as well as reduce the cost of delivered services over time. While frugal innovations in products are easily identified by expert examination [1] [6] [7], frugal innovations in services cannot be identified without a comprehensive mapping of all the service processes and also examining its robustness (lack of errors) over time [10].

We identify three broad innovation heuristics used to achieve frugality in services: (a) innovatively combining existing materials, processes and resources at hand through bricolage [2], (b) innovatively reducing wastage of time, materials and human resources and (c) innovating on creating self-service options for users. We use a diverse set of Indian cases of service frugality to identify and analyse the specific techniques used to achieve frugality within these three heuristics.

We then synthesize a conceptual frame of innovation heuristics for developing frugal services. Our framework is of value to service firms attempting to achieve frugality without conceding service quality and reliability. It is also relevant to product firms that can add frugal services to reduce commoditization and enhance value of their products. Finally, the heuristics we identify in creating frugal services can be adapted to achieve frugality in physical products.

II. HEURISTIC 1: COMBINING MATERIALS, PROCESSES AND RESOURCES THROUGH BRICOLAGE

Bricolage is a process by which materials at hand are combined in innovative ways to build new or better products [2]. The typical example is the innovative use of discarded junkyard materials in renovating or creating new products. The concept of bricolage can also be applied to services to describe innovative ways of combining existing materials at hand, leveraging existing service processes and using existing resources to reduce the delivered cost of services. Use of service bricolage can also improve the robustness and effectiveness of service delivery as it leverages on existing resources and processes that may be variation tested and found proven to work.

For example, Superseva [11], a concierge service based in India has built a range of over eighty services that it offers to its corporate customers through a dedicated desk located on site that provides services to client employees. Most concierge services at Superseva cost less than fifty US cents per service and some of its services are even free. Such low prices give Superseva an unassailable position in all the urban

markets it enters. It is able to deliver concierge services at such low cost as it has built a robust and largely error free service platform that leverages on existing services offered by the government and other service agencies that are ratified by Superseva. Its service platform is versatile and therefore it is easier for Superseva to add a new service compared to smaller service providers. Some of the services that it offers for free are those that give it a high cash flow which enables it to operate without borrowing working capital at high interest rates prevalent in India. While the error free nature of services builds larger client flow, the high volume and saving in interest costs compensates the firm for offering these services for free. Moreover the free services are the basis for customer to test their reliability and many customers who start with free services move to availing their paid services later.

Another example of a bricolage frugal service is the "Dabbawalas" – daily lunch delivery carriers of Mumbai, India. They leverage the efficient rail system in Mumbai during forenoon off peak hours to carry home cooked lunch boxes from client homes to their offices and to deliver the empty lunch boxes back during afternoon off peak hours. They also use bicycles to move from home to rail station and hand carts from rail station to office thus lowering transport costs. Even though most delivery persons are illiterate, they have developed an innovative transhipment process that is free of errors even when persons change temporarily. Yet clients pay charges as low as $15 a month [4].

Both examples show the value of bricolage in combining existing materials at hand, leveraging existing service processes and using existing resources to reduce the delivered cost of services. This heuristic is often the consequence of the high pressure of operating in a market where there is low ability to pay. Innovative ways of leveraging existing systems and processes results in lowering of costs and higher reliability.

III. HEURISTIC 2: INNOVATIVE REDUCTION OF TIME, MATERIALS AND HUMAN EFFORT IN SERVICES

The innovative reduction of time, materials and human effort in services is another frugal heuristic that can reduce costs and increase effectiveness. Time taken can be reduced dramatically by improving service processes and making them robust such that people with lower skills and education who are paid lesser can perform them. By building better processes, more persons of lower skills and education can be trained and employed to do the task in parallel and deliver on it faster. Material costs in services can be lowered by using materials longer and in twenty-four hour work cycles. Such frugality is easier to implement in developing countries where labour is cheaper.

For example, many software services firms in India have pioneered in reducing the cost of customised software development and increasing software reliability by improving their service processes and making them more robust. These firms now employ many software workers without engineering degrees who can be trained to write software under the guidance of software engineers. These software workers are paid less initially till they show adequate competence to manage projects, thus lowering software development costs without lowering reliability. Moreover software firms in India work on a twenty-four hour cycle with Indian team members often handing over partially completed work to their US based counterparts to work overnight and both teams often work on the same cloud based large scale computing infrastructure.

Another example is local production and delivery services as an alternative to factory production and large scale distribution. Arunachalam Muruganantham, an Indian innovator [12] experimentally developed a small low cost portable machine to manufacture good quality sanitary napkins at a manufactured cost of US two cents to three cents per napkin. The portable machine has simple processes making it possible for even uneducated woman villagers to operate it with minimal training and even carry out simple repairs. Muruganatham's firm Jayashree Industries sells the low cost machines that can make 120 sanitary napkins an hour at a minimal margin to village based self-help groups in India who manufacture and sell the sanitary napkins in local markets at low prices to those who cannot afford multinational brand sanitary napkins. Usually the plant capacity is fully utilized by local sales, thus avoiding expensive marketing and distribution costs and commissions. The napkins are also cheaper as fancy secondary packaging and finished goods transportation costs are avoided – these costs are significant as sanitary napkins are bulky products in their finished form.

Both examples show the value of innovative reduction of time, materials and human effort in services to reduce costs and increase effectiveness. This heuristic is often the consequence of operating in a market where existing service and distribution costs are so high that services do not have enough buyers with ability to pay. Innovative ways of reducing costs in every minute area of the production and delivery system can translate into dramatically lower prices and a far larger market in developing countries.

IV. HEURISTIC 3: INNOVATING ON CREATING SELF SERVICE OPTIONS

Commonly used self-service options in developed countries are less commonly used in developing country markets as upper income users in these countries typically prefer personal service while lower income groups may typically not be educated adequately to use such options effectively. However there is potential to create frugal innovations that are based on self-service as it decentralises the physical labour involved and thus reduces costs. It is also possible to use self-service to reduce the service charges required from those who cannot pay while reaching them with services that have greater collective value due to more

such users in developing countries.

For example, the "missed call" service has been used in innovative ways in India. Since Indian cellular phone rates are the lowest in the world and low priced phones are available in the second hand market, a large and growing number of the poor in India have cellular phones. This provides an effective medium for Indian firms to reach those interested in their product through a "missed call" service – a service that is promoted by Indian firms like ZipDial. The potential customer calls a designated number given in the marketing communication but the call will not be answered (missed) and therefore the caller will not be charged for the call, eliminating any hesitation in the caller to dial. Instead the caller will receive information by an automated message. Banks use missed calls to answer account balance and mini-statement queries of customers, thus eliminating bankers spending time for simple queries on their phone. They are also used as verification tools to substitute for physical signatures from bank customers in remote locations. Missed calls are also used to renew newspaper subscriptions, learn about new movie releases in town, new jobs in the vicinity and even vote or register support in political protests, using simple software developed by firms like ZipDial [5].

Another example of self service in remote areas is that of Vortex-Gramateller India Rural Automatic Teller Machines [3]. Vortex has developed a solar powered teller machine that can be installed in remote places in India where conventional machines are too expensive to set up and power lines are not available. The rugged automatic teller machines use low power due to innovative design and require only five hours of sunshine on their solar panels to charge the backup batteries for a day. They are robust enough to survive power fluctuations if any. Since the client base in a village is the usually unchanging, it uses biometric identification (using preloaded data matching) rather than a card and keypad mode as in common automatic tellers. This enables illiterates (who just know how to count numbers) to access their bank which is not possible in other automatic teller machines. The low cost of the machine and elimination of the need for air-conditioning the room it is installed in makes it more viable for the bank to install in remote locations even with a lower transaction volume.

Both examples show the value of innovating on creating self-service options that have greater reach and yet lower costs. This heuristic is often the consequence of operating in a market where the willingness to pay is low but the demand for service is high. Innovative self-service options provide ways for customers to eliminate the need for expensive personal service without forgoing the value of the service thus creating a way to access a far larger market in developing countries.

V. CONCEPTUAL FRAME OF INNOVATION HEURISTICS FOR FRUGAL SERVICES

The three innovation heuristics for frugal services provide a basic framework for developing and examining potential ways to reduce cost without reducing reliability in developing services for developing country markets that are characterised by price sensitive customers that seek robust services at low prices. We further propose that the three heuristics are also hierarchical in nature and that they should be used in sequence.

Therefore the first effort should be directed at innovatively combining existing materials, existing processes and existing resources at hand through a process of bricolage. This enables the firm to build the service using robust and proven existing components that are already frugal rather than developing new service processes at a higher cost that may have inherent flaws that are discovered in practice over time. The next effort should be on innovatively reducing wastage of time, use of materials and reduction of human efforts. This enables the firm to further reduce costs on a service that has is built using robust and proven existing frugal components. Finally, the effort should be on innovating on creating self-service options for users. This may involve leveraging on the simplest of processes (such as dialling on their phone) that are already familiar to customers or in developing bespoke innovative processes that are easy to get customers to adopt. The three heuristics followed in a sequence can result in frugal services that are low in cost to deliver, error free in performance over time even when faced with variations in demand and easy to adopt by clients who are less adept. Such frugal services can be the basis for competitive advantage in developing countries.

A simple but excellent example of how this can work is shown in the case of movable road dividers in India, an award winning suggestion that came independently from two school children [9]. Usually the traffic on one side of the road is higher than on the other side of the road. This difference in traffic is even higher during peak hours – the traffic moving towards a city from suburbs will typically be higher in the morning while the traffic going out will be lower while the situation reverses during the evening. Excess traffic results in motorists seeking alternate routes that are typically narrower and thereby choking those narrower roads also. The normal solution to this issue is to: (a) create one ways wherever feasible, (b) widen the existing road at high cost combined with the effort required to acquire adjoining land at high prices or (c) to build a secondary road such as a ring road that reduces traffic moving through the city. None of these three solutions are effective and moreover they add to the pollution problem by making motorists take longer routes. An innovative solution to this problem is to have movable road dividers that are moved physically by workers at specified times that effectively widens the road in the direction with higher traffic and narrows the road in the lean traffic direction. While this solution involves labour and a momentary stoppage of traffic, such divider movements are done rapidly only during the non-peak hours. However the benefit is significant as it eases traffic movement during peak hours in the most important roads, thus eliminating the need

for motorists to take circuitous routes.

This example illustrates how all three heuristics for frugal innovations in services have been used. The solution first innovatively combines existing materials, processes and resources at hand through bricolage. Existing roads are used and no new roads are built, no roads are designated one-ways and no ring roads are built. Second, the solution innovatively reduces wastage of time, materials and human efforts – the solution reduces the loss of time of motorists waiting and moving slowly in peak traffic; it reduces the high use of fuel caused by slow moving traffic and idling of the vehicle; it also eliminates or reduces the need to widen existing roads or build new roads. Thirdly the solution can innovate further on creating self-service options. The task of moving the dividers (typically designed to be very light or on wheels) can be decentralised and taken up as a volunteer activity by the local shops along the road who depute their staff to carry out the task for a few minutes every day supervised by the traffic police on location. This eliminates the need to move workers to the location and better movement of traffic along their road is in the interest of the shops along the road.

VI. CONCLUSIONS

Our proposed framework of frugal heuristics is of value to service firms attempting to achieve frugality in their services without conceding on service quality and reliability. We have shown examples of how these heuristics have been implemented in practice.

It is also relevant to product firms that can add frugal services to reduce commoditization and enhance the value of their products. This is a relatively unexplored option as product firms that spend a lot on research and development to innovate on creating better products seem to follow the industry norms when adding customization services, repair services, maintenance services and replacement services. However each one of these four areas is also amenable to service innovations and firms that develop frugal service innovations can add value to their products at lower costs and therefore build a market that is difficult to build in conventional ways.

Finally, the heuristics we have identified in the creation of frugal services can be adapted to achieve frugality in physical products. Though many of these heuristics are derived from their physical products counterparts it is likely that service innovations can provide underlying ideas for achieving effective frugality and lower costs without compromising on essential safety and required robustness in physical products.

REFERENCES

[1] Bound, K and I. Thornton (2012) “Our frugal future: Lessons from India’s innovation system” National Endowment for Science, Technology and the Arts UK. http://www.nesta.org.uk/sites/default/files/our_frugal_future.pdf

[2] Boyd, D. and J. Goldenberg (2013) “Inside the box: Why the best business innovations are right in front of you” Hachette, India.

[3] Collinson J. (2012) “Solar ATMs for rural India” MicroDinero: Global News on Social Business, Social Entrepreneurship and Inclusive Finance. http://www.microdinero.com/index.php/english/nota/5197/solar-atms-for-rural-india

[4] Dabbawala: On time, everytime. Website: http://www.dabbawala.in/

[5] Kulkarni, S. (2013) “ZipDial gives brands marketing opportunities via 'missed calls' http://www.zdnet.com/in/zipdial-gives-brands-marketing-opportunities-via-missed-calls-7000023564/

[6] McNicoll, A. (2013) “Enter India's amazing world of frugal innovation” CNN, http://edition.cnn.com/2013/06/25/tech/innovation/frugal-innovation-india-inventors/

[7] Mukerjee K. (2012) “Frugal innovation: The key to penetrating emerging markets” Ivey Business Journal, July/August. http://iveybusinessjournal.com/uncategorized/ frugal-innovation-the-key-to-penetrating-emerging-markets

[8] Rao, B.C. (2013) “How disruptive is frugal?” Technology in Society, 35: 1: 65–73

[9] Siddharth Pal (Class 11, Sai Grace Academy, Dehradun, India) and S Charishma (Class 8, Bhartiya Vidya Bhavan, Hyderabad, India). “Movable road dividers” http://natarajank.com/2012/11/28/think-big-and-differently-yes-our-children-do-it/

[10] Singh S.K., A. Gambhir, A. Sotiropoulos and S. Duckworth (2012) “Frugal innovation: Learning from social entrepreneurs in India” Serco Institute, http://www.serco.com/Images/FrugalInnovation_tcm3-39462.pdf

[11] Superseva: Enterprise support services delivered professionally. Website: http://www.superseva.com/

[12] Venama V. (2014) “The Indian sanitary pad revolutionary” BBC News Magazine. http://www.bbc.com/news/magazine-26260978

[13] Zeschky, M., B. Widenmayer and O. Gassmann (2011) ”Frugal innovation in emerging markets” Research-Technology Management, 54: 4: 38-45.