

Innovation Strategy: A Realistic Example in Bangladesh Mobile Telecommunication Service Marketing

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Abstract: *Innovation is a widely used strategy across industries in many countries. It is now at the top of the agenda of the mobile telecommunication industry in Bangladesh. A great deal of experiment is going on right this moment in this industry. This paper will show how innovation strategy has been pursued by two major players, which has changed the competitive strategy of the competitors. We are familiar with the term 'tangible goods with accompanying services', and 'major service with accompanying minor goods and services' where the main focus goes on physical product and service respectively. In this study we shall see that how these concepts changes due to the innovative marketing strategy of the market players. We shall also see how the market status of the players changes as the strategy is implemented. Furthermore, from this study we shall learn how we can manipulate innovation strategy more effectively. The context of this study is the developing country. The role of the economy of developing countries is becoming increasingly important for the world economy. It is assumed that the findings and understanding of this research will help the organizations in developing countries to develop their effective business strategy in order to achieve sustainable competitive advantage.*

Keywords: *Innovation strategy, competitive advantage, vertical integration, sustainability, and SMS culture.*

Introduction

Nowadays service is contributing to society and economy than ever before. It is not exception in Bangladesh, too. The contribution of service sector towards the economic activities is increasing gradually. In recent times, mobile telecommunication sector is one of the major contributors in terms of revenues, employments and infrastructure development. By nature service is a complex composition, which is very difficult to abstract, articulate and standardize. Therefore, service organizations are trying to provide more value to the customers in innovative ways to maintain their competitive advantage. It is often found that the service providers in many developing countries do not serve their customers properly. There are several reasons

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behind that behavior, such as consumers are not educated and aware about their right and privilege, lack of professionalism from the firms' side, lack of competitiveness and so on. This scenario is equally true in case of Bangladesh mobile telecommunication industry.

Objective and Scope

The objective of this paper is to highlight the practice of innovation strategy in mobile telecommunication industry in Bangladesh. At the same time, to identify the challenges and shortcomings in the implementation of innovation strategy in this sector. From the findings of this study, organizations in this sector will be able to find some effective guidelines in configuring their innovation scheme for their competitive advantage.

Methodology

For this study mainly secondary data and information have been used. In some cases primary information has been used to clarify the decision of innovative side. Secondary data and information have been collected from internet, newspaper, existing literature, magazines etc. Personal observation has been a key source for data validity and reliability. Sometimes personal interview has been conducted with various employees of different mobile phone companies. Various mass media advertising are closely observed and taking the reaction of viewers for creative advertising.

Goods and Services: Our Perceptions

The difference between goods and services is not always precisely clear. Often it is very difficult to make a proper distinction between these concepts. For our convenience it is required to foster a firm view so that the interpretation and comment can be made from a particular point of view. In spite of the confusion, the following definitions may provide a sound starting point to understand the concept of goods and services. In general, goods can be defined as objects, devices, or things, whereas services can be defined as deeds, efforts, or performances (Berry, 1980:24-29). If we are clear enough to differentiate the service then we shall see that service imperative (Hoffman and Bateson, 2004) in which the intangible aspects of the product are becoming the key features, differentiate products very successfully in the marketplace. Through out this paper, the term product will refer to both the goods and services.

Mobile Telecommunication Industry in Bangladesh

Bangladesh has currently six mobile phone operators in Mobile Telecommunication Industry, of which five are in operation and the sixth, Warid Telecom, is expected to begin operation in April, 2007 (Rahman, 2007). Though the industry is relatively new yet the growth is much faster in comparison to other industries due to aggressive market oriented business strategy (Yousuf et al., 2006). Bangladesh's phone sectors witnessed a 120 percent growth from January 2006 till now, with the numbers of users rising to 22 million from 10.8 million in 13 months.

GrameenPhone, the largest mobile operator in the country, reached 10.76 million at the end of 2006 with the addition of nearly 5.22 million customers in a year, while the second largest operator, Aktel, acquired 6 million subscribers, adding some 3.93 million to its total at the same time.

The third largest operator, Banglalink, acquired 3.64 million subscribers, adding 2.61 million customers in the same period, while the only CDMA operator, CityCell, acquired nearly one million customers at the end of the year, more than double its 4.4 lakh customers in 2005. The government-owned Teletalk acquired nearly 4 lakh customers in 2006.

Bangladesh is presently one of the top 10 mobile phone markets in the Asia-pacific region in terms of the number of subscribers.

Industry people said the number of mobile phone subscribers will top 50 million in the next three years as the start-up cost as well as call tariff will be constantly shrinking because of cut-throat competition among the operators to woo new customers (Rahman, 2007).

Table - 1: Major Mobile Phone Networks in Bangladesh According to their Market Share

Name of the Companies	Technology Used	Subscribers (Approx.) at the end of 2006
GrameenPhone (GP)	GSM	10.76 million
Aktel (Telekom Malaysia)	GSM	6 million
Banglalink (formerly Shebatel)	GSM	3.64 million
Pacific Bangladesh Telecom (CityCell)	CDMA	1 million
Teletalk Bangladesh	GSM	4 lakh
Warid Telecom*	—	—

Source: <http://groups.google.com/group/banglaict/topics> . Accessed on 17-03-07

* Warid Telecom of the United Arab Emirates is expected to launch its service in Bangladesh in April, 2007.

Competition in Mobile Telecommunication Industry in Bangladesh

As mentioned it earlier that GrameenPhone is the market leader with approximately 63% market share (<http://press.telenor.com>). From the market share and technical capability point of view, GP is clearly ahead of other competitors. Although Aktel was the challenger but its activities was not so much threat for GP. Since the market payers designed their strategy with traditional armors therefore, the culture and practice of innovation was not appropriately nurtured in this industry. Aktel tried to be innovative and to provide unique value to the customers but it could not be effectively successful as GP responded immediately in unconstructive ways. Even sometimes in a very negative way (e.g. network jamming, price cut and so on), which was to some extent unethical, too. For example, when Aktel planned to provide augmented service to customers, GP would create an unannounced barrier in case of calling and messaging from Aktel to GP subscribers to create an impression that Aktel's network is not as efficient as GP. Ultimately, the innovative efforts of Aktel were not fully successful. The company (GP) used to enjoy almost a monopoly until and unless the threat was created by other competitors.

Consequences of this Uneven Competition

The influence of mobile telecommunication is multi faceted. It has become an indispensable part of urban life. Certainly nowadays mobile telecommunication services serve not only for traditional communication purposes but also as a new channel for existing entertainment and new types of entertainment (Kornak, et al., 2004). The uneven competition in the telecommunication service industry of Bangladesh is working as barrier in providing this type of value adding services to the customers. The adverse consequences, in addition to network jamming and sudden price cut, are various call rates for similar service, problem in internet connectivity, failure to make mobile phone as a means for entertainment whereas these are very common and familiar all over the world. Mobile phone network is not appearing with dynamic features as per demand of the situation rather they are trying to be more traditional with modern technology. The service providers of this industry are now fighting for the existing customers in the same market instead of developing new market and new innovative products. The overall competency and capability of this industry is not enhancing due to the lack of adequate research and development for innovativeness. No company is growing with a proper potential to challenge the market leader. Ultimately, customers are being deprived. Here the point to be noted that the mobile call charge in Bangladesh is one of the highest in the world. This is because of the monopolistic competition in this industry.

Stepping Forward of an Emerging Company – Banglalink

There is a saying, if you want to stay where you are then run faster. For a while the leader of the mobile telecommunication in Bangladesh might have forgotten this saying. In this circumstance, a company – Banglalink, came forward and challenge the leader. The challenging company neither was the market challenger nor was a very significant market occupier.

The company Banglalink was previously known as Sheba Telecom. It not only changed its name but also restructured its system. The company designed an integrated business strategy by incorporating internal management system with a focus to the external environment. For their expansion strategy, they followed vertical integration i.e. using HR (human resource) policy as a base of their business strategy. They enhanced their HR inventory by recruiting a good number of intelligent and promising youngsters from various academic institutions and as well as from their competitors. They provided very lucrative compensation package together with a clear career path. Basically, these were the ground work for their promotional activities. Side by side they developed new products to attract the customers.

Their service package was quite different and new. They offered new SIM card with a mobile phone set. They only charged for the SIM card not for the set. Additionally, free six calling cards that added an extra attraction to the offer. It was really alluring to the customers.

Simultaneously, Banglalink also offered some other new value adding services. For example, it decided to carving out a niche in the market, targeting the female subscribers. 'Ladies First'

is the only package available in the market offering a special reduced rate and special talk time exclusively for women. Banglalink does not consider this just a product offer, but more of an acknowledgment of the contribution that women of Bangladesh make to the society and the nation. This service includes horoscope, tips on beauty, cooking, health, home management, child care, first aid, and cinema and drama schedule. The offer also includes discounts in selected beauty parlors, boutiques, handicrafts stores, department stores and cosmetic shops, etc.(www.banglalinkgsm.com).

'Upper Class' is the Banglalink experience that is targeting a slightly upscale clientele, offering a range of services at a competitive price. Specifically, Upper Class offers Purple Carpet treatment, giving special attention with separate counters at sales and customer care centers and a dedicated hotline. A 'big SIM' (1000% more storage), customized numbers, international roaming, easy bill inquiry, call back customer service, and start-up assistance are the privileges of this package. A Web log (blog) updates the customer on new services, initiatives, useful tips, and entertaining ideas. 'Call and Control' is a recent addition to the 'Upper Class' package allowing subscribers control and flexibility in their usage and expense.

Yellow Pages service is unique to Banglalink, allowing access to varied information about airlines, banks, hospitals, embassies, etc. through a dedicated number. Additionally, it offered cheap and convenient e-mail through their network to friends and family all over the world. Banglalink was the first to make the net virtually familiar in cell phone in Bangladesh. With the free SMS and low-cost e-mail it covered both the need of synchronous and asynchronous communication. It also gave an opportunity to its customers to download music, play online game through mobile phone. Though it is not still very popular due to relatively high cost, it was an added value that is open to all customers and it has an opportunity to be popular in future.

Initially, GP did not take these kinds of activities as severe challenge since these were not from the challenger rather from a follower. Moreover, GP was quite confident upon their competitive advantage—uninterrupted network service, huge customer base, which made them to some extent reactive instead of proactive as they were before.

Overall, Banglalink's business strategy could attract customers. Within a few months their subscribers increased from 300,000 to 1.5 million. While conducting this research it was revealed that Banglalink could attract clientele from all existing service providers and raised its market position from fifth to third. Leader could realize that a potential threat is emerging from Banglalink when they lost a considerable chunk of their clientele. Even though Banglalink was far behind yet they took this phenomenon pretty seriously. In order to tackle rising threat from Banglalink, GrameenPhone introduced several new products targeting similar products of Ban glalink.

Innovation Warfare– A Brief Analysis of the Situation

Bangladesh mobile telecommunication was an intangible dominant pure service industry which deals with the network system only. The traditional thought totally ignored consumer day to

day life aspect and did not try to explore how mobile phone service can be an indispensable part of our daily life to be specific how it can make life easy and dynamic. The consumers were being deprived of getting the optimum value from the mobile telecommunication service. Banglalink could identify the gap between the product concept and its ultimate utility of the product. Usually a winning product has multi dimensions so that it can serve customers from various spectrums. A product must possess three levels of identities. The first level is the essence of a product—how well it satisfies the customer's needs. The second level is the physical product, should it be a good or a service. The third level is the product's shell. It includes all the additional products and services offered with the product to exceed customer expectations (Viardot, 2004: 155). If customer satisfaction exceeds the expectation level then the customer is delighted and only then it is possible to retain that customer. Otherwise, there is a probability of switching. As GP almost overlooked the third product level, Banglalink concentrated on this gap and tried to fill this gap. Banglalink wanted to accelerate customer attraction faster. To do this they decided to offer '*major service with accompanying major goods*'.

The success of their product designing was the precise articulation of the latent demand of customers. Their major offer was free phone set with mobile phone network connectivity. Their offers were neither the familiar tangible goods with accompanying service nor major service with accompanying minor goods and services. It was major service with accompanying major goods. It could be called as 'hybrid'. Actually it was more than hybrid. Hybrid offer consists of equal parts of goods and services, for example, people patronize restaurant for both food and services (Kotler, 2003:447). Here without one part another part can be consumed. However, Banglalink's offer was major service (network) with accompanying major goods (mobile phone) and minor services (free calling option) also. Previously, any company of this industry did not offer hybrid services or aforesaid services rather offered pure service. Banglalink was the first to introduce this type of offer in Bangladesh. As it offered major services along with major good and also minor services like warranty of the mobile phone, free calling card and some charged units in the phone that can be used for calling or messaging before charging anything, so we can call this innovative package as major service with accompanying major goods and minor services, or pure service with forward integration with major goods and minor services.

GP- the market leader reacted before any severe damage. They decided to neutralize each Banglalink offer, product to product basis. They came up with more augmented offers. They provided exclusive emphasis on information service through their existing mobile network.

GP's information service includes news, events of the day, transportation schedule, horoscope, etc. Also available are news service, channel program schedule, event-based sports update. The subscriber has to simply dial a specified four-digit number to listen to the information. 'Cell E-mail' offers the e-mail service through SMS. It possesses almost all aspects of the standard web mail and is compatible with almost all GSM handset. GP's business solution has a unique option called 'EDGE' (Enhanced Data Rates for Global Evolution), which enables high-speed mobile Internet and data services. This is up to eight times faster than GPRS (General Packet

Radio Service). Another of GP's unusual service is its 'Insta-Care', an automated service with IVR (Integrated Voice Response) system for all kinds of GP service-related queries. This service is open 24 hours a day, all the year round. In addition, Insta-Care has a general information aspect where travel, hotels and restaurants, emergency numbers, hospitals and clinics, legal aid, taxicabs information, and district and country dialing codes are available.

The 'Village Phone Program' of GrameenPhone is a unique initiative that provides access to telecommunications facilities in remote rural areas, where no such service was available before. The program allows poor village women to own a Village Phone subscription and retail the phone service to her fellow villagers while providing them with a good income-earning opportunity. It is administered by GrameenPhone, in cooperation with Grameen Bank, the internationally renowned micro-credit lending institution.

GP's this strategy made a quick impact over the consumers. Previous GP consumers who switched to Banglalink some of them stopped using Banglalink SIM and started using the GP SIM with the mobile phone that they got as free with the Banglalink SIM. It really shocked Banglalink. In order to retain their new customers Banglalink introduced some new more offers, free text messaging for six months even they extended this free messaging outside the country at local charge.

From the data and information, it was revealed that the innovation strategy of Banglalink was based on the major physical product together with major service package and SMS service. Now SMS facility is quite important to many consumers. Because of that "all forms of text communication share the ability to capture, store and easily retrieve the content of the communication both synchronously and asynchronously. This proves to be crucial in many social settings where the point of the communication is to convey a phone number to call or an address at which to meet. While this is also possible with voice messages, reviewing is much more difficult due to the ephemeral nature of sound" (Harper and Taylor, 2005: 289). SMS culture is becoming very popular. Not surprisingly, SMS is heavily used for establishing and maintaining both friendships and romantic relationships (Berg, et al., 2003:433-440). Mobile phones and SMS foster a particularly strong sense of intimacy for teenagers because it allows a continuous connection to friends outside of parental control (Farnham and Swarm, 2006:2). Despite the short message length of SMS and impoverished text input mechanisms of most cell phones, text messaging is the dominant form of mobile communication for young adults in much of Europe and Asia (Grinter and Margery, 2003: 441-448). As Banglalink operates in Bangladesh market that belongs to Asian market, it wanted to take this advantage to regain its customers. After that it provided opportunity for its customers to e-mail through mobile phone all over the world with minimal cost. It is also mentionable that "Email enables asynchronous communication. *Asynchronous* communication is time independent, such that the people communicating are not required to respond immediately to each other (Harper and Taylor, 2005:289).

Though almost everything was going smoothly for Banglalink, gradually it faced some problems. Its main problem was interrupted network. On the contrary, the main competitive advantage of GP was its uninterrupted network system. However, Banglalink could sustain many of its customers with its innovative strategy and managing that tactfully. And in the mean time they are also trying to improve their network connection by importing some devices that can improve network connectivity.

But one blow came when dual SIM system that enables using two SIM in one mobile phone was introduced. Before this some customers who wanted to use GP and Banglalink simultaneously continued using Banglalink as keeping two mobile set was not convenient. So, Banglalink got some preferences. But after the introduction of Dual SIM, a thin electronics device that can be set inside the mobile set, many mobile users started to use that. Mostly they were on line with GP and when they needed to send SMS they switched to Banglalink as SMS through it was free at that time. Though dual SIM mostly was used in the urban area, it may be reached at the rural area due to marketing activities. So, Banglalink faced a big threat from the electronics industry not from the GP or other telecommunication companies and it was unexpected for the Banglalink. Only time will say what strategy it takes to overcome this obstacles.

For all these kind of telecommunication services, service providers need strong mobile network. Initially Banglalink could not realize the importance of technical capability for any strategic move. On the other hand, GP had a very strong and updated mobile telecommunication network. Therefore, GP could counter Banglalink successfully. Ultimately, Banglalink's product and price based innovation strategy could not influence consumers as they expected. They could understand the necessity of a capable network and expanded their range all over the Bangladesh, yet it was bit late. GP in the mean time, capitalize on their core competency (mobile telecommunication strategy). A competency cannot be a sustainable competitive advantage if the competitors can copy it easily. Competitive advantage is a company's ability to perform in one or more ways that competitors cannot or will not match. Michael Porter urged companies to build a sustainable competitive advantage (Porter, 1980). But in real world few competitive advantages are sustainable. At best they may be leverageable. A leverageable advantage is one that a company can use as a springboard to new advantages, such as Microsoft has leveraged its operating system to Microsoft Office and so on. In general, a company that hopes to endure must be in the business of continuously inventing new advantages by strategy innovation. Strategy innovation is shifting a corporation's business strategy in order to create new value for both the customer and the corporation (Jhonston and Bate, 1980: 4, 11, 278). As no strategy lasts forever so company must keep going on initiating strategy innovation and thus gain a competitive advantage.

Of course, GP had strategic planning but it was not interested in strategy innovation. Banglalink took that advantage by initiating strategy innovation and thus gained a competitive advantage over GP for the time being. Again Banglalink could not achieve as they expected due to the lack of adequate technological capability, lack of ability to manipulate existing capacity and not to be careful about the loopholes of their business strategy. The offer made by Banglalink

was easy to copy. Similar products were also offered by other competitors like Aktel, Citycell etc. In fact, GrameenPhone moved further by learning from the mistakes of Banglalink.

Creative warfare: In an advertising sector

Advertising sector of an industry is a very important sector. Creative mind and result of creativity is the main weapon of this sector. Nowadays we are closely observing the severe competition among the mobile companies. In this race promising company Banglalink is clearly ahead. Their various mass media advertisements are well accepted and have become popular. They try to offer a very clear message to the people. How technology act as a catalyst of changing people's lives are ensured by this company. '*Din Badaler pala*' (phases of changing life), '*Bhashar janna Bhalobsa*' (love for language) of Banglalink are well accepted and people are able to understand the clear message of this ad. On the other hand GP tries to relate their ad with people's problems. As example, just a call then you will get a medical help. Business solution, pacer hunt are another well accepted ad of Grameen Phone Company. Aktel is little bit lag behind than other companies, especially in advertising sector. Besides these their one ad on television channels (*call whole month and save some portion of money for the next month*) is able to cut a position of people's mind. The pacific Bangladesh telecom (city cell) also concentrates on effective advertising methods. Their '*Hello tunes*' (a package offer of tunes which creates a psychological emphasis on mind) is accepted by the subscribers. Another package offer of City cell like 'tk.1399/-' (named –'*sab pai*' i.e. all in one package) is able to capture the market.

All warfare in creative side are blessing to the subscribers. Subscribers have the right to know. By exerting creative efforts Telecommunication Companies try to keep subscribers up to date.

Conclusion

From the abovementioned discussion we can see that strategy innovation is a tool of competitive advantage for the organization that can contribute to the industry growth and ultimately satisfy the customers. It contributes not only to the growth of that industry but also that of other related industries. However, the most vital aspect of the scenario is the increased competition and growing expectations of the consumers. Rivalry among the companies of this industry has created a lot of facilities for the customers. It has opened the door of providing greater value through innovation that will help to increase the satisfaction level of the customers in future.

The illustrations of this study makes us familiar with the telecommunication service industry of Bangladesh and the picture how it became highly competitive industry from a less competitive sector. With the growing competition, the overall customer satisfaction level is also increasing. The depiction reveals how strategy innovation in a developing country can also be successfully applied. It is mentionable that what is innovation here may not be innovation at other places as it varies from time to time and place to place. And also innovation is a continuous process. As there is a fear of becoming today's innovation obsolete tomorrow so to be in the process of

strategy innovation you have to nurture imagination to foster creativity in your organization. More than seventy-five years ago, Carl Jung wrote:

“The dynamic principle of fantasy is play, which also belongs to the child, and as such appears to be inconsistent with the principle of serious work. But without this playing with fantasy, no creative work has ever yet come to birth. The debt we owe to the play of imagination is incalculable” (Jung, 1921). The process of nurturing imagination involves the adoption of a philosophy that incorporates aspects of play—the people in our organizations must have the opportunity to extend and exercise themselves, to explore and learn. The challenge for us is in providing direction to this exploration (AIM, Australia, 2004). As Bangladesh is a populous country, so if a company goes through this process it can gain a lot from resulting strategy innovation and the profit will not certainly be small. □

References

- Berry, L. L. (1980), “Services Marketing is Different”, *Business*, Vol. 30 (May-June): 24-29.
- Berg, S., A. S. Tayler, R. Harper (2003), “Mobile Phones for the Next Generation: Device Design for Teenagers” (in Proceedings of ACM SIGCHI): 433-440.
- Farnham, S. and K.P. Swarm (2006), “Hyper Awareness, Micro Coordination, and Smart Convergence through Mobile Group Text Messaging,” Proceedings of the 39th Hawaii International Conference on System Sciences (Track 3, p. 59a).
- Giugni, S. (2004), “Nurturing Imagination: Fostering Creativity in Your Organization,” in Australian Institute of Management, *Innovation and Imagination at Work* (Sydney: McGraw Hill; 2nd ed.)
- Grinter, R.E. and M. Eldridge (2001), “y do ngrs luv 2 txt msg?” (in proceedings of Seventh European Conference on Computer-Supported Cooperative Work ECSCW): 219-238.
- Grinter, R.E. and E. Margery (2003), “Wan2ilk? : Everyday Text Messaging,” (in Proceedings of ACM SIGCHI): 441-448.
- Harper, R. L. and P. A. Taylor (2005), “The Inside Text: Social, Cultural and Design Perspectives on SMS” (Springer): 289.
- Hoffman, K. D. and J. E. G. Bateson (2004), *Essentials of Service Marketing* (New York: Thompson; 2nd ed.).
http://press.telenor.com/PR/200607/1065034_5.htm. Accessed on 21-03-07.
- Johnston, R.E., Jr. and J. Douglas Bate (1980), “The Power of Strategy Innovation” (AMACOM -- American Management Association), X: 4, 11, 278.
- Jung, C. (1921), *Psychological Types*, [New Jersey: Princeton University Press (Translated by H Goldwyn Baynes, 1923)].
- Kornak, A., J. Teutloff and M. Welin-Berger (2004), *Enterprise Guide to Gaining Business Value from Mobile Technologies*, (Hoboken, New Jersey: Wiley Publishing, Inc).
- Kotler, P. (2003), *Marketing Management* (New Jersey: Prentice Hall; 11th ed.).
- Porter, M.E. (1980), *Competitive strategy: Techniques for Analyzing Industries and Competitors* (New York: Free Press).
- Rahman, S. (2007), “Bangladesh has currently 22 million mobile subscribers in 2006,” *Google Groups: Bangladesh Information & Tech (IT) Group*, available at <http://groups.google.com/group/banglaict/topics>. Topic No. 97. Accessed on 17-03-07.
- Viardot, E. (2004), *Successful Marketing Strategy for High-Tech Firms* (Boston: Artech House; 3rd ed.).
www.banglalinkgsm.com. accessed on 05/03/2007.
- Yousuf, R.L., U. Anjalina, A.S. M. Sohel-Uz-Zaman and S. Anam (2006), “Innovative CRM in Bangladesh,” The Fifth Wuhan International Conference on E-Business, Integration And Innovation Through Measurement and Management, Vol. II: 1103-1109.