

Studies on Major Factors of Innovation Systems for Telecommunication Company in Indonesia

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Abstract

Telecommunications in Indonesia has grown extraordinarily, especially from beginning of the year 2010. This condition has made telecommunications becoming the promised business and ready facing the tight market. The competition is high due to the large mobile phone operators, which made the quality of services becoming less noticeable, severely operators are focusing on offering cost. Every year revenue per users are found to be decline, resulting innovation and improve quality of services which can increase income and sustain customers loyalty. This research used Soft Systems Methodology approach (SSM) and has implemented philosophy of Critical Systems Thinking (CST), Strategic Assumption Surfacing and Testing (SAST) and used tools of Analytical Hierarchy Process (AHP) to rank the most influential innovation factors in telecommunications company strategy, through a series of in-depth interviews with experts. The analysis of the results providing incentives to innovators which is the most important in telecommunication company's strategy in producing the best quality of services and win the competition.

Keywords: quality service, innovation management, analytical hierarchy process, telecommunication

1. Introduction

From the year of 2007 to 2011 the growth of mobile telecommunications users in many parts of the countries has descended, because the existing users have reached to 120 out of 100 inhabitants. On the contrary in developing countries like Indonesia the user is about 80 out of 100 inhabitants.

Mobile telecommunications industry in Indonesia has grew rapidly due to low penetration of fixed line users and lack of supporting infrastructure. Each operator stands in tight competition offering products varieties and innovations. Based on survey, the development of mobile telecommunication Indonesia is in ranked 10 in Asia from 18 countries (BMI, 2012). This is a promising for the future. The existence of 11 telecom operators in Indonesia, which there are three big operators recorded in 2011; Telkomsel; more than 110 million customers, Indosat; 51.7 million customers, and XL; 46.3 million customers. The three operators had a total market shares greater than 75%. High competition among telecommunication companies had formed high levels of customer switching from one telecommunication carrier to another carrier (churn rate), which causing a decrease of the average amount of revenue for each customer (ARPU-Average Revenue Per Unit) received by operators (BMI, 2012). Innovation is necessary in order to served values to customers. Operators need strategies which visibly superior among others, which can be impacted to number of customers and income.

The research objective is: Identify major factor of innovation system in telecommunications companies, and determined factors which can encourage innovation of telecommunication companies in Indonesia.

Telecommunications companies which carrying good competitive mindset has to focus on quality of services and innovations. According to Garvin (1987), quality in service industry is related to customers' satisfaction (Chen & Ting 2002), (Aga & Safakli, 2007). Quality is defined as free of doing rework or failures, customer dissatisfaction, customer claims, etc. (Juran, 1999). Quality can be measured by willingness of customers to pay products or services (Drucker, 1985), quality is to fulfill customer needs (Crosby, 1979), or quality according to Juran, is something that is appropriate and can be used by customer ([ASQ], 2011). Dimensions of quality for manufacturing industry (Garvin 1996), include: Performance, Feature, Reliability, Conformance, Durability, Serviceability, Aesthetic, and Perception. Dimensions quality in service industries; Communication, Credibility,

Security, Knowing the customer, Tangibles, Reliability, Responsiveness, Competence, Access, and Courtesy.

According to (Liu, 2010) there are differences in the quality of technical and functions to the perceived users of telecommunications. The quality and cost which served by each operator are differ, this can be impacted to customers satisfaction (Dutta, 2001). The existing loyalty customers according to Zhu (2011) have to receive some value-added products and services.

Innovation in service industries have contributed to the greatest income levels of economic growth over recent years according to Brentani, 2001 in (Oke, 2007). Innovation refers to the discovery or acceptance of new ideas, processes, products, or services (Garcia & Calantone 2002). Innovations that meet customer needs can improve the assessment of service quality (Parasuraman, 2010). Innovation pays more attention to what the customer wants (Leavengood, 2011).

2. Literature Review

Innovation can be a new innovation process, new innovation strategy, technology innovation, product innovation, organizational innovation, and marketing innovation. Product innovation aimed on developing new products, improving product properties, improving product quality. Innovation in writing (Armbruster, Bikfalvi, Kinkela, & Lay, 2008) is product innovations and service innovations which also has been mentioned by previous researchers (Anderson and King, 1993; Daman-pour and Evan, 1984; Totter dell *et al.*, 2002). There are five kinds of innovation (Schumpeter, 1934), which resulted in new products, new production methods, new markets, new sources of supply and new forms of organization. Strategic innovation is a new concept which can achieve improved value for customers and generate high growth for the company (Liang, 2009). In the (Cors, 2003), organizational learning can support innovation and creativity of employees (Ramus & Steger, 2000). Research (Parvaneh, 2010) there is a relationship between learning capability with innovations in an organization. Research (Mudrak, Wagenberg, & Wubben, 2005) developed models based on the theory of innovation management (Tidd, 2001), (Kemp, 2003) and (Teece, 1996) a consistency with models that has been developed (Rothwell, 2003) which uses systems theory. The decision to implement innovation by organizations, continued on implementing plans and strategic innovation processes in order to attain improvement of company performance. Innovation industry in Indonesia is urgently needed, by improving the functioning of R & D, so the competitiveness of national industry will grown from the bottom and eventually led to a competitiveness of science and technology-based industries (Zuhal, 2010).

From previous studies (Lee, 2008) have noticed that the quality and innovation turned out to a direct impact to improving customer satisfaction.

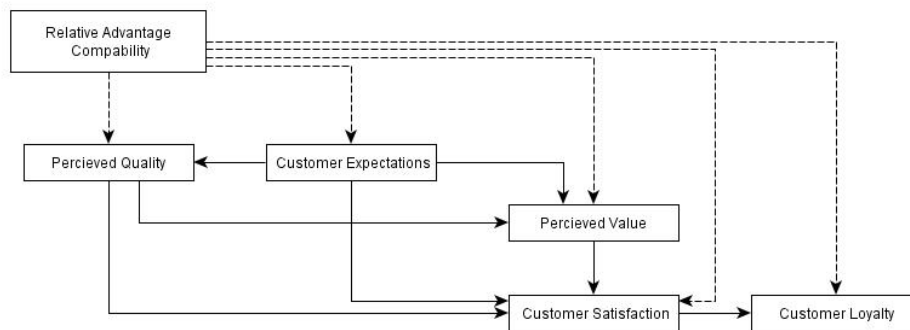


Figure 1. The influence of quality to telecommunication customers loyalty

Source: (Lee, 2008).

Innovation can be part of innovation strategy that runs by an organization, and the activity can also be said as part of the overall management strategy (Najamaei, 2010). By using strategic management, organizations can finally be understood that the competing forces developed a sustainable competitive advantage in a systematic and consistent. Competitive advantage is a main idea to most of the strategic management literatures (Porter and Kramer, 2006; Liao & Hu, 2007). Strategic management deals with characters and company's direction, they are related to basic decisions of company today, and what it means in the future (Morden, 2007). Operational effectiveness is not limited to the issue of efficiency. The company can do other activities which can rise product quality and perform quick floating product with the better results (Porter, 1996). Furthermore Porter had stated, companies which rely only for quality without making it as part of the strategy, sooner or later the

competitor would do the same thing. Quality also referred as activities strategy at operational level, or at the micro level of a company's operations (Parast, 2005).

3. Method

This research used Soft Systems Methodology approach (SSM) using the philosophy of Critical Systems Thinking (CST), and Strategic Assumption Surfacing and Testing (SAST) and used the tools of Analytical Hierarchy Process (AHP) to rank the most influential's factor to strategy telecommunications companies. Jackson Concept of Critical Systems Thinking (CST) has been summarized by Midgley in 1996, which consist of three interrelated principles; critical awareness, emancipation, and plural methodologies (Luckett, 2003). Critical thinking is a way approaching problems and make decisions. SAST is a process which uses assumptions in policy making or planning that helped decision makers made better decisions map. SAST is a method of problem-solving systems in the soft systems thinking, which uses assumptions in policy making.

Analytic Hierarchy Process (AHP) was developed by Thomas L Saaty in 1970, is a structured technique which organized information and expert judgments, analyzing complex decisions based on selecting the preferred alternatives (Marimin, 2010). Organizations had loosen much time in making decisions (Saaty & Peniwati, 2008). AHP consists of three basic phases, namely 1) make existing problems arranged in the correct hierarchy, 2) make a priority element in the model by doing a comparison at all levels in accordance with specific criteria on a scale of existing AHP, 3) calculation results (Partovi, 1994). Creating a hierarchy of decision making problem is a creative activity and challenges; a critical point that can gives good results (Saaty, 2008). AHP is a fairly accurate result, regarding assessment and human perceptions with long-term outcomes (Bhushan & Kanwal, 2004). Application of AHP can take complex decisions with number in thousands, (Steiguer, Duberstein, & Lopes, 2003) and produced many research including issues of Forecasting, Total Quality Management, Business Process Re-engineering, Quality Function Deployment, and Balanced Scorecard (Forman & Gass, 2001).

Managerial model of the system was developed initial model which urged to be verified to experts in the field of telecommunications. The model shows innovation and quality of services to be part of the telecommunication company's strategy and succeed competitions. Research and Development (R & D) has been reinforced learning organization and organization capability which contribute to the development of business and unit operations becoming the parent of the development of innovation activities and the quality of services, which can support strategies and gain advantages to the company.

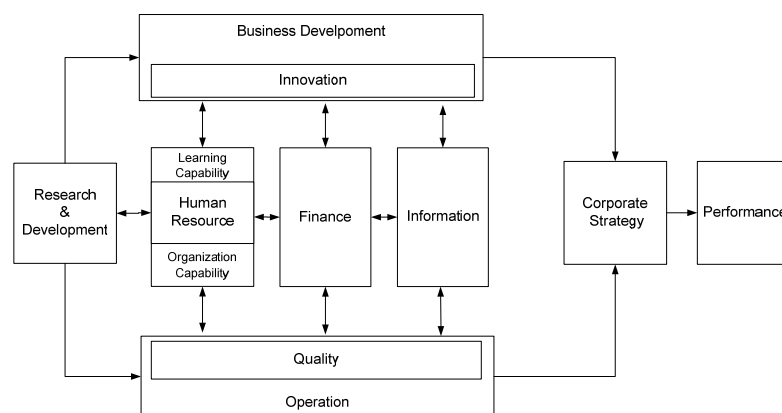


Figure 2. Research model: managerial strategy telecommunication enterprise for innovation and quality of services

Primary data were collected throughout the research which received from Individual depth interviews (IDI) conducted from surveys using questionnaire to experts. Secondary data were collected from annual report from telecom operators. By using AHP there are 3 activity stages, namely:

- 1) Make an existing problem which arranged in the correct hierarchy.
- 2) Make a priority element in the model.
- 3) Doing the calculation results.

Clear criteria required for an expert, namely:

- 1) A person who had experienced of working in minimum of 10 years.
- 2) An academician who always discusses particular field and have minimum of educational background doctorates and professors.
- 3) An official with the General Manager or the structural equivalent to the Vice President, who can be called as an expert which work every day for the company.

4. Result

Critical Systems Thinking is related to critical thinking and innovation strategy towards quality of services. General thoughts on Telecommunication Company are continuous innovation which is not harmful to society and moral. Provided added value to community, innovations, and services that pay attention to all aspects of technicals; human aspect/human resources, financial, social, innovation not damaging the environment. In-depth interviews to 9 telecommunication expert General Managers and Director levels using method of SAST, through varieties of assumptions and compromises of thought which found factors to be considered there are: a) Telecommunication is a necessity for the people of Indonesia which spread throughout the country, b) Best services must be provided to customers c) Reasonable costs expected by the public, d) Continuous of improvement services e) Enhancing of quality of ser f) Attention of service for remote areas. From the discussions, it can be seen the main factors that influence innovations: Technology, Market, Human Resource, Capital, and Information, which then filtered several criteria of innovations; innovation technology, innovation process, and innovation organization. Through FGD had discussed above factors and experts agreed with some of these factors and suggested one additional factor; finance innovation.

Having conducted in-depth interviews to telecommunications experts and through the focus group discussion, followed by filling questionnaires, then obtained acquired main criteria, and important factors set forth in the AHP method as shown in figure 3. The aim of using AHP method is to get the best quality of services in telecommunication. Lastly the are 4 optional innovation strategy which has to be chosen, there are Incentive to Innovator, Increasing R&D Budget, Remuneration & Recruit best worker, and Outsourcing Technology & Worker.

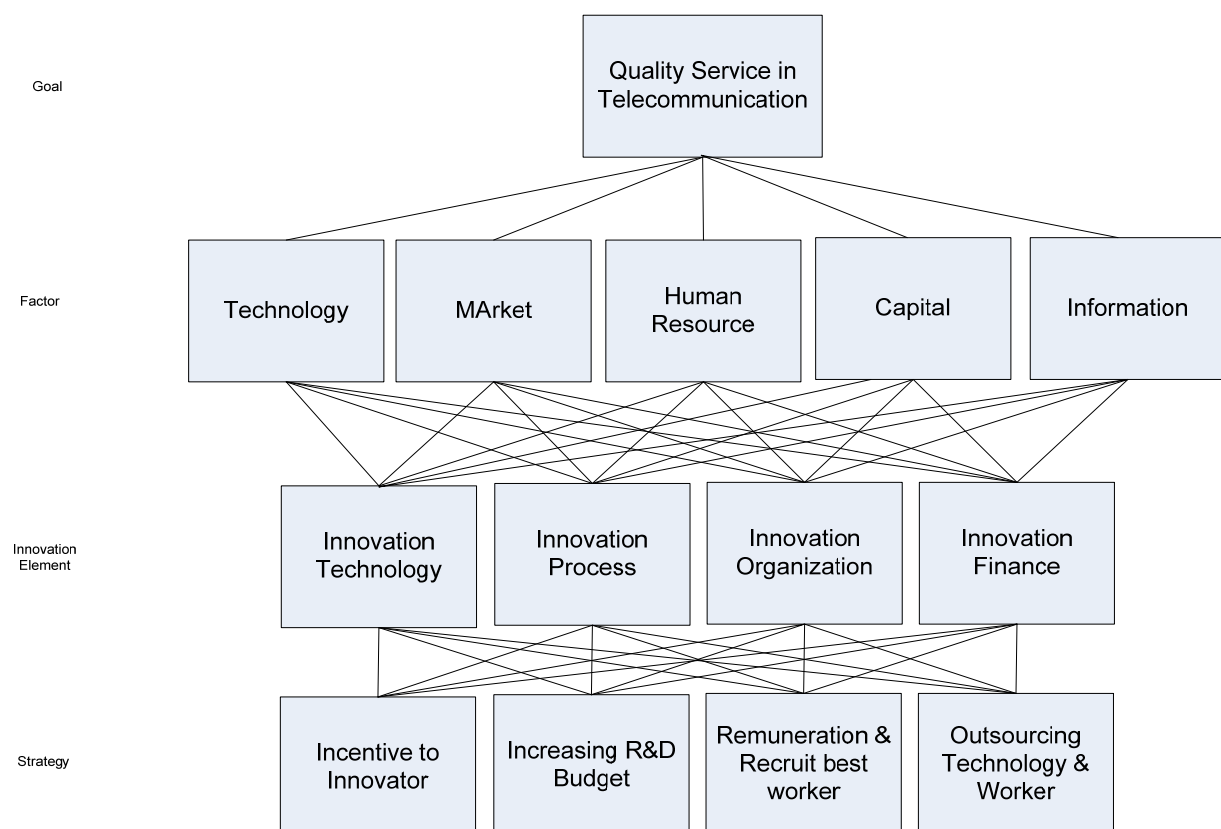


Figure 3. Strategy of innovation hierarchy with AHP method

Factors earned the highest score is the choice of experts provides intensive activity to the innovator (38.60%) is a preferred factor among others that can ultimate goals of companies through innovation and served best quality of services to mobile telecommunication users. Providing remuneration and recruitment of the best people (31%) is the second important factor; Increasing R&D budget (21.70%) is the third important factor and Outsourcing Technology & Worker (8.70%).

Telecommunications development are quite drastic has happened in all over the world. The main factor are; communication, communication technology, and privatization (Welch, 1999). Telecommunications companies are moving fast. New services are created every day with the help of the latest technology which then became competitive (Hwang, 2000).

Prepaid phone users is much higher than post-paid phone users in Indonesia, mobile phone users are about 97.70% of prepaid using Telkomsel, Indosat 99.30%, and XL Axiata 97.70% which resulted a low level of operator revenues due to a fairly low price offers among operators. The operators began to looking for the latest technology that is reliable and inexpensive, which then can be sold quite cheaply, replacing old technology. Integrating a new technology called modular, whereas new technology is easily replaced at any time if there is technological change (Vaishnav, 2010). Selection of the best creations is resulted from qualified human resources where can gain operational performances. Limited qualifications of human resources like operators can make them much depends on to a third party in terms of technology, operations, and business development for the future. The innovation expected is within the organization, which will increasingly less likely, since most innovations come from the third party. The existence incentives to innovators will make research & development activity becoming better in order to achieve sustain innovations which can gain income to telecommunication company.

Churn rate occurred in Indonesia has valued ranging from 15% to 20% on some carriers. The high churn rate existence over 90% of users of telecommunication is because of the prepaid users, which switch to another operator can depend on the promotion that is currently running and profitable. Value Added Services (VAS), are other services that can be provided by a telecommunications company to customers which is one way to increase the revenues, such as Short Messages Service (SMS) for electricity payment, telephone banking, mobile broadband, mobile TV, etc. that can support infrastructures and human resources capacity.

5. Recommendation

The telecommunications company has increased the number of customers in the last 10 years, but on the other hand, there are decline in Average Revenue Per User (ARPU), which can result lower profits. Due to the intense competitions, the cost of SMS talk is down to a low point, enabling customers to move whenever they want, which can increased Churn Rate. Telecommunications company have tried making innovation of services quality in order to maintain number of customers, because number of prepaid subscribers are still above 95% of total customers, who no ties whatsoever with any of the operators. Innovations result high customers satisfaction and customers loyalty, good innovators better to receive incentives from the company. The support of policy from the government of Indonesia to the telecommunication company generally becoming important because it will result the best innovations which can increase income to the company and continuously impacted to research & development activities.

References

- ASQ. (2011). *American Society for Quality, Quality Glossary*. Retrieved from <http://asq.org/glossary/q.htm>
- BMI. (2012). Business Monitor International, Indonesia Telecommunications Report Q2.
- Dutta, A. (2001). Business planning for network services: A systems thinking approach. *Information Systems Research*, 12(3), 260-283. <http://dx.doi.org/10.1287/isre.12.3.260.9713>
- Forman. (2001). The analytical hierarchy process-an exposition. *Operations Research*, 49(4), 469-487.
- Hwang, G. (2000). The process innovation in a competitive telecommunications market: A case study. *Total Quality Management*, 11(4-6), 726-733. <http://dx.doi.org/10.1080/09544120050008138>
- Leavengood, S. A. (2011). *Identifying Best Quality Management Practices for Achieving Quality and Innovation Performance in the Forest Products Industry*. Portland State University .
- Lee, Y. k. (2008). The Effects of Innovation Diffusion on Customer Loyalty. *The Business Review, Cambridge*, 10(1), 254-262.
- Marimin. (2010). *Aplikasi Teknik Pengambilan Keputusan*. Bogor: IPB Press.

- Morden, T. (2007). *Principles of Strategic Management*. Hampshire: Ashgate.
- Najamaei, A. (2010). *Strategic Management Of Strategic Innovation*. Sydney: Macquarie Graduate School of Management.
- Oke, A. (2007). Innovation Types and Innovation Management Practices in Service Companies. *International Journal of Operations & Production Management*, 27(6), 564-587. <http://dx.doi.org/10.1108/01443570710750268>
- Parast, M. M. (2005). A Relational View of Quality Management in Strategic Alliances: A Learning Perspective. *ASQ World Conference on Quality and Improvement Proceedings*, 59, 527-555.
- Parasuraman, A. (2010). Service Productivity, Quality and Innovation. *International Journal of Quality and Service Sciences*, 2(3), 277-286. <http://dx.doi.org/10.1108/17566691011090026>
- Saaty, T. L. (2008). Decision making with the analytic hierarchy process. *Int. J. Services Sciences*, 1(1), 83-98. <http://dx.doi.org/10.1504/IJSSCI.2008.017590>
- Saaty, T. L., & Peniwati, K. (2008). *Group Decision Making-Darwing Out and Reconciling Differences*. Pittsburgh: RWS Publications.
- Vaishnav, C. (2010). *The End of Core: Should Disruptive Innovation in Telecommunication Invoke Discontinuous Regulation?* Massachusetts Institute of Technology.
- Welch, T. (1999). Privatization Governance and Strategic Investors: Evidence from the Telecommunications Industry. *Management International*, 4(1), 31-43.
- Zhu, G. (2011). Estimating the switching costs in wireless telecommunication market. *Nankai Business Review International*, 2(2), 213-236. <http://dx.doi.org/10.1108/20408741111139954>
- Zuhal. (2010). *Knowledge & Innovation Platform kekuatan daya saing*. Jakarta: Gramedia Pustaka Utama.