Research Statement

Arcot Desai Narasimhalu
School of Information Systems, Singapore Management University
Tel: (65) 6828-0914; Email: desai@smu.edu.sg
8 January 2015

Background

A continuous stream of innovations derived through a robust and agile innovation management process provides the only sustainable competitive advantage for either a mature market leader or a fledgling start up.

This world is full of engineers and developers who can translate an innovative idea into a product. However, there are few people who are able to identify winning innovations with any degree of certainty. It is therefore important to understand the different methods of identifying innovation opportunities.

It is equally important to articulate the components of an agile and robust innovation management process.

Such studies will contribute significantly towards the growth of individual companies which will collectively contribute to a nation’s economy. Growth of individual firms resulting in growth of national economies is the motivation for my practice oriented research in the field innovation methodologies and innovation management.

Research Areas

I conduct practice oriented research in the following two main areas - Innovation and Innovation Management and Information Systems Management. I have developed original (non-incremental) innovation related frameworks that have been published as refereed papers in practice relevant conferences, created three intellectual property related methodologies, written ten case studies, published four chapters in books and have written four preprint book drafts. Three of the preprints are used in the innovation related courses that I teach both at the undergraduate and graduate levels.

My practice oriented research output includes a mix of frameworks, heuristic algorithms, methodologies, cases, preprints of books and workbook.
Innovation and Innovation Management

My innovation related research can be grouped into three major categories:

1. Innovation Opportunity Identification and Design.
2. Innovation Management
3. Commercialization of Innovations

Innovation Opportunity Identification and Design

A. I have developed methods for innovation opportunity identification or what is known as the fuzzy front end.

Innovation Cube

This paper reports a framework explaining why certain innovations succeeded while the others failed. This paper was the basis for some of my later works such as the Innovation Engine and Innovation Stack. The paper codifies my thirty five years of innovation practice experience into three dimensions (Innovation Drivers, Triggers and Enablers) to generate a quick litmus test that can be used by innovators to determine whether their innovative idea has a chance to succeed.

Innovation Rules

Innovation Rules offer a disruptive thinking in innovation opportunity identification methodologies. Innovations Rules offer, for the very first time, the possibility of moving the “innovation opportunity identification” process from an art closer to a “science”. Each Innovation Rule offers an opportunity for an innovator to assess the current state of evolution of an innovation and to assess whether the market and technology conditions are appropriate to create the next innovation in the specific innovation evolution path. The method provides a balance between the technology push and market pull paradigms understood by the innovation communities. Innovation Rules could be used as a means of identifying disruptive innovation opportunities.

Innovation Stack

Innovation Stack offers a methodology for identifying the innovation that is most attractive for commercialization from among a set of promising innovations.
QaDIM: Quick and Dirty Innovation Method

The Quick and Dirty Innovation Management method was developed to allow for customization and extensibility of innovation operators. This method has been used by many students and SMEs to identify successful innovation opportunities.

Identifying Disruptive Innovation Opportunities

I have utilized the Innovation Rules or Innovation Evolution Paths to identify disruptive innovation opportunities. This is perhaps the first attempt in the world to formulate a method for identifying disruptive innovations. This approach identifies some of the disruptive innovation opportunities and not all of them.

Consumer Inspired Innovation

I have co-authored a process for involving consumers in identifying the innovations that are of value to them. My co-author was the then Senior Vice President for Proctor and Gamble. This method has been published as a chapter in an electronic book.

B. I have developed two methods relating to service innovation.

A Method for Identifying Service Innovation Opportunities

This method defines an approach for identifying service innovation opportunities. A key element of the method is its ability to consider service innovation from a customer’s perspective before, during and after a service is rendered. The longitudinal aspect of service innovation design is considered an important step in furthering our understanding of service innovations.

Designing the Dynamics of Service Innovations

The proposed method allows a service innovation design professional to capture the dependencies between customer preferences and supplier / vendor’s ability to meet the preferences. The method is an integration of the strategy canvas and value curve described by Blue Ocean Strategy and Value Gap Analysis.
C. Innovation Metrics

I have developed two methods for evaluating the quality of an innovation.

An Innovation Quality Metric for Sustainability

This heuristic method determines the overall value of a proposed innovation taking into consideration the components of the triple bottom line - social, economic and sustainability dimensions.

Managing Innovation Efficiencies

Companies are looking for an effective means of managing their innovation projects using robust metrics. I proposed a method using Stage Gate model for representing an innovation process, measuring the resources consumed at each stage and gate towards developing benchmarks within the organization. I hope that organizations can come together to translate company level benchmarks into industry level benchmarks.

D. Others

A tool for Designing Business Model Innovations

In this paper I have analyzed 48 business model innovations and mapped them against the nine components of business model canvas. I then defined Business Model Innovation Canvas and Business Model Innovation Value curve and showed how a company can use these as a tool to design their next business model.

Innovation Management

I have developed the following methods for Innovation Management.

Agile Innovation Management

Increased competition for products and services and the ever shrinking innovation development cycles require companies to institute agility in their innovation management process. This method allows companies to evaluate their agility in innovation management.
Designing Optimal Innovation Portfolios

This method allows companies to architect innovation portfolios that are aligned with its mission and vision.

Designing the value curve for your next innovation

This method allows the designing of a new value curve for an innovation taking into consideration the investment required for new features and the savings from eliminating some of the existing features. It brings in a cost management dimension to the strategy canvas and value curve prescribed by the Blue Ocean Strategy.

A Research Capability Maturity Model for Managing Technology Innovations

This framework consists of different levels of maturity that an organization can aspire to attain in managing its ability to generate technology innovation.

Management of Technology Deployed in Service Innovations

The lifespan of service innovations are generally shorter than their product counterparts. The shorter life requires a different approach in managing the technologies deployed in service innovations. This method could be used to manage technologies used in service innovations.

A Maturity Model for Innovation Management

This model offers five layers at which an enterprise can operate to manage its innovations. The model captures the trend in open innovation and describes the multiple types of open innovations that an enterprise could practice. The paper also clearly emphasizes that not every enterprise needs to be operating at the highest level of maturity for managing its innovations.

Crossing the Chasm: The XID Story

This practice paper reports how a Singapore company built around a face recognition technology managed to climb out of the pits by embracing the “bowling alley” strategy.

Re-engineering XID Technologies

This is a paper shows how XID technologies reengineered itself from an enterprise solution company to a consumer oriented company when it found out that the markets for its enterprise solutions had challenges that it could not cope in the near term.
Commercialization of innovations

I have published practice papers related to commercialization of innovations. I have also developed three Intellectual property related methodologies that are used by the Institute of Innovation and Innovation in its approach towards managing commercialization of innovations.

A Framework for technology transfer

This framework lists several types of technology transfer and highlights the strengths and weaknesses of each of the approaches. It argues that the best means of transferring a technology is to transfer the inventors / innovators of the technology in order to facilitate the development of future product / service innovations.

A Method for Monetizing Technology Innovations

This method determines the best go to market strategy for a technology innovation by matching its features to the features of market needs or wants.

IP Audit Methodology

I have developed a method that can examine whether an intellectual property (IP) should be spun off into a company, licensed or abandoned.

IP Valuation Methodology

I have developed a method valuing IP using my field experience. It is important to recognize that no one method can be considered to be the definitive approach to valuing and intellectual property.

IP Strategy

I have developed a method for a startup company to design its IP strategy. This method is currently offered to SMU incubated startups.

Innovation and Entrepreneurship related monographs

Innovative Entrepreneurs’ workbook

This workbook brings together different innovation opportunity identification methodologies, project management related issues, innovation development methodologies and risk identification techniques to guide aspiring innovators and entrepreneurs with a step by step process for identifying innovations and planning their development. The second edition of this workbook integrates the
innovation rules thereby ensuring that the users of the workbook do not need to refer to two books.

This workbook has been translated into Hungarian and has been adapted for training Finnish Civil Servants.

I have given permission to translate this into Chinese, Korean Tamil, Thai, Russian and Zimbabwean languages.

Innovation Rules

I found that innovations follow one of several evolution paths, each path consisting of one or more stages. An innovation designer can ascertain the current stage of an innovation and critically examine whether the markets and technologies are ready for creating the innovation corresponding to the next stage. When a technology is ready, then the innovator has to either wait for a market to emerge for the innovation in the next stage or create the market. When a market is ready then the innovation should focus on creating the technology needed for innovation in the next stage.

The Book of Secrets for Entrepreneurial Success

This book is a compilation of insights from thought leaders on the dos and don’ts of innovation and entrepreneurship for first time entrepreneurs.

Innovation related cases

I have started writing cases related to innovation and entrepreneurship to be used in my classes. I wanted to write cases that our students can relate to and hence have focused on Asian cases

Greenpac

Greenpac case highlights the need to identify, design and create innovations that produce environmentally sustainable solutions. It offers a great lesson on pricing strategy for green innovations.

Innova Technologies

Innova Technologies case study is a great learning on how second or third movers can create high quality product innovations that are scalable globally. It also helps students understand the best commercialization path for an innovation that can be deployed in more than one market.

Jayashree industries
Jayashree Industries is a case study that highlights how observation can be a powerful tool for identifying an innovation opportunity. It also offers an interesting twist in scaling the company.

**Quantine**

Quantine is a case study that teaches lessons in how a company can pivot in a chosen field of innovation. It is also a good case to discuss the challenges related to outsourcing.

**Rainmaker Labs**

Rainmaker Labs is a case that offers insights into building a scalable company. It also discusses how to leverage technology platforms to offer new value to target customer base.

### Information Systems Management

The research in this area is opportunistic. A good example is the collaborative research undertaken with Infosys in the space of Information Security Maturity Model. I am deeply interested in other operational challenges faced by companies.

### Information Security Management

I developed two methods related to information security management with collaborators from Infosys technologies.

**Information Security Health Rating for Enterprises**

This paper reports a framework for benchmarking the quality of information security management in an enterprise. It goes on to develop a rating for information security that is very similar to the rating for financial and other institutions by Moody’s and Standard and Poor’s. The method also suggests how one might graduate from one rating to the next higher rating. An enterprise should decide the quality of information security management based on their industry and geographical location.

**Vertical Sensitivity for Information Security Health Rating of Enterprises**

This paper builds on the framework reported in the earlier paper to suggest how the information security rating could be applied to different industries.

### IT Governance
I have written teaching cases related to IT Governance

- **Bigtrumpet Case Study**
  
  This case study allows students to understand the challenges in adopting an emerging technology using .NET as an example.

- **OCBC Auto loan Case Study**
  
  This case study allows students to understand that not all solutions to a problem require information technology.

- **OCBC LOC Case Study**
  
  This case study highlights to the students how business process reengineering can vault an enterprise into a market leadership position.

- **IT Governance in Transportation Industry Case Study**
  
  This case study impresses upon the students the need to establish proper structures for effective IT governance.

- **IT Portfolio Management Case Study**
  
  This case study offers the students an opportunity to pit their portfolio management skills against a real life situation and understand how and why certain decisions were made.

- **Fly Free For Health Case Study**
  
  This case study offers the students an opportunity to design the IT governance for a rapidly growing start up company in the service sector.

---

**Future research directions**

I will continue to generate practice oriented knowledge assets that will help my students in their journey into the real world of innovation and entrepreneurship. The actual form and topic of the knowledge asset will be determined by the need and opportunity. My areas of research interest will remain to be innovation and information Systems Management.
Selected Publications and Outputs

See my CV for a list of publications.