KTH, Royal Institute of Technology

Organizing for ambidexterity

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Abstract

The purpose of this project is to get a deeper understanding within the selected research topic “Organizing for Ambidexterity” and the question: how do companies organize for both radical and incremental innovation?

Ambidexterity is the ability of an individual to use both hands to perform tasks equally well. Organizational ambidexterity refers to an organization’s ability to exploit current resources and explore future possibilities to keep up with the market’s demand.

This project has been performed in three stages. First, A literature study has been conducted find theory relative to the topic. It was followed up by 3 interviews in different companies from separate industries to investigate their R&D strategies. The third stage consisted of analyzing the interview together with reviewed theory. Conclusions have been drawn after group discussion regarding the analysis and results.

It is a challenge for companies to find a balance when distributing resources between incremental and radical innovation. There is sometimes some tension between the exploring and exploiting parts of a company. Companies are more successful when they are prepared for future changes when new technologies and trends emerge.

Companies who seek technological leadership distribute more resources towards radical innovation to a higher extent than companies who seek technological followership. Fail fast and embracing problems are two important methods of learning how to best distribute resources and avoid repeating mistakes. Especially for technical leaders.

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1. Introduction

1.1 Background

Today, companies are facing many challenges that did not exist a century ago. Social media, globalization and the rapid development of new technology are just some of the factors that have changed the way we think, act and plan for the future [1]. In our high speed society, companies and entire industries are being challenged to keep up with competitors and stay ahead of the game [2]. Companies who only exploit current ideas and not explore new ideas will fall behind competitors and face hard times, especially if the market changes rapidly.

1.2 Problem formulation

All companies want the best of two worlds, create value now and value in the future. Due to limitations such as money, time and human capital, all R&D departments have to distribute their resources between radical and incremental innovation. To manage both radical and incremental innovation in an effective way is called ambidexterity [3]. This is something companies usually strive for, but it is not always easy, and there are many different organizational strategies with different rates of success. This project aims to investigate how different companies organize to be successfully ambidextrous and create value, both today and tomorrow.

1.3 Purpose and Research Question

The purpose of the project is to understand of how companies organize for both radical and incremental innovation by examining the topics:

- Organizing for ambidexterity - how do companies organize for both radical and incremental innovation?
    - How do companies distribute their resources?
    - How are the R&D organizations structured?

A goal with the project would be to find theory used in practice and see how well different strategies work out in real life.

The topic ambidexterity was chosen due to its importance within R&D. An ambidextrous approach is also something that can be improved in many companies and therefore a deepening within the subject will lead to better value creating in the future.

1.4 Methodology

The project was performed in three stages. To get a better understanding of the subject, a literature study has been conducted regarding ambidexterity in R&D organizations. The literature study introduced new theories within organizational structure and resource distribution. These became the base for the two subquestions as well as the following interview questions (See Appendix 1).

Three interviews were conducted with R&D Managers at 3 different companies. The interviewed companies are active in different industries and manage their own production in house. Each interview took about 45 minutes and was conducted qualitative with semi-structured questions. Two of the interviews were made over telephone due to company A and B having their R&D outside of Stockholm. Since the questions were sent ahead of the interview, the interviewee was well prepared and the conversation was effective. The interview with Company C was conducted at their swedish R&D department in Stockholm.

The last stage of the project was to analyze the findings from both the literature and the interviews. To compare theory with practise, findings were discussed within the group and later written in this report.

1.5 Companies

The company strategies seemed to be secret in many ways and they did not share their short-term and long-term goals during the interview except for the more general goals. Even so, they all expressed they had been very open about their strategy and working methods. One company did not even want the company name to be mentioned in the report due to the openness. The decision was made to call the companies by letters to easier refer, see table 1.

Table 1. Companies interviewed and examined.

	Company A	**Company B**	**Company C**
Position of interviewee			
Industry	Tolling solutions, autonomous systems in vehicles and other traffic solutions.	Manufacturing Company within the furniture industry. Their customers are the leading suppliers within office furniture.	Positioning technologies such as laser-, optical- and GPS systems.
Revenue	EUR 1 billion	EUR 116 million	EUR 2 billion
Employees	Over 6800	Over 700 (only Sweden)	Over 8000
Countries	Projects in 44 countries with products used in over 100 countries.	Operations on 3 continents with clients in over 10 countries.	Offices in 35 countries with products used in over 150 countries

2. Theory

2.1 Different perspectives of ambidexterity

Lavie et al [11] argues about the importance of organizational structures for existing activities and adapting to future activities. He further claims that ambidextrous organizations are dependent on senior-management teams to cope with the contradictions between exploration and exploitation. Stetler [10] discussed and summarised the different ways of structuring the perspectives of ambidexterity, see figure 1.

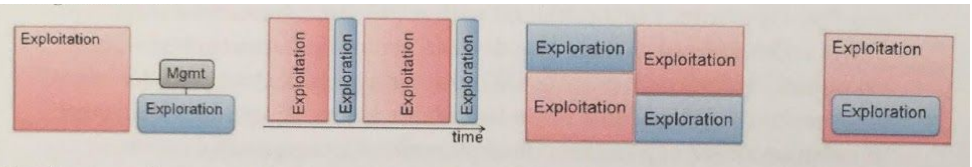

Figure 1. Different perspectives on ambidexterity (Stetler 2015) [10]. In appearing order; Structural separation, Temporal separation, Contextual Ambidexterity and Domain separation.

Scania and Google are two companies that have a contextual approach to ambidexterity. The upsides with this approach is that business units are more interacted with each other. Information and new knowledge is distributed easier which reduces the risk of repeating earlier mistakes. O'Reilly and Tushman [12] examined if a company's existing business suffered from exploitation activities. They found that the most well functioning and successful companies were the ones who separated the exploring and exploiting units. Different units often need unique processes and separation can enable versatility. However, this forces the management to be tightly interconnected. Abell stated the importance of a dual planning system in regard of short and long term planning [6].

2.2 Innovation

Creativity is important when it comes to finding innovative solutions. To promote innovation, a good company culture is crucial. As an example, Microsoft is known for having open discussions where everyone can contribute and criticise. This forces ideas to be developed even further or shut down in a earlier stage. As in all creative sessions an open mindset, openness towards each other, tolerance and constructive feedback is important. Good ideas are born in situations where people are able to collaborate, contribute and share thoughts in a safe environment. Many great artists, writers and innovators belong to different innovative communities, two examples are Silicon Valley and the author club where C.S. Lewis and J.R.R. Tolkien belonged. Technology today is becoming more complicated. Different perspectives, personalities and competences are crucial for fostering competitive and innovative ideas. Furthermore, the greatest innovations are rarely driven by money. It has also been shown that the most innovative solutions comes from real needs [6].

2.3 Resource distribution within R&D

Maintaining a good balance between radical and incremental innovation can be a challenge but also the key to long term success [4]. Similar to writing with both hands, managing for a successful ambidextral organization is hard. For most companies, the biggest limit within R&D is capital. No organization has an unlimited amount of resources, which means that certain actions has to be prioritised over others. If a company has a good and profitable product, it might seem odd to redistribute resources towards exploration instead of exploiting. Exploring more radical solutions is more expensive and involves a larger risk compared to improving and exploiting an already developed product. On the other hand is exploration a necessity if the company wants to be in the forefront of technology and survive volatile markets.

According to Nagji & Tuff, 2012 [7] there is a certain successful ratio regarding R&D distribution, see figure 2. According to them, the most successful ratio among different areas is 70% core products, 20% adjacent products and 10% transformational.

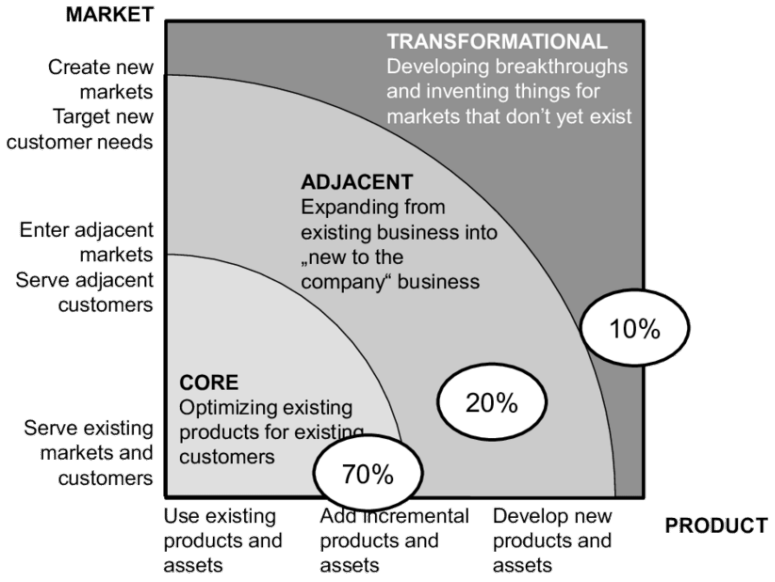

Figure 2. The Innovation Ambition Matrix (Nagji & Tuff, 2012)

2.4 Organizational structure for R&D

There are two types of organizational ambidexterity: structural ambidexterity and Contextual ambidexterity according to Grant [6]. Contextual ambidexterity is a behavioral orientation while structural ambidexterity is within the structure of the organization [15] where exploration and exploitation are separate units within the organization [6].

McCarthy and R. Gordon argues that contextual ambidexterity is important and suited to R&D for at least two major reasons [5]. R&D activities are in most cases already separated from other departments within a company such as, legal, manufacturing and sale. If radical and incremental innovation becomes separate, there is a potential that it will become harder to implement R&D output in the organization. The second reason why contextual ambidexterity suits R&D is because of the general idea that each individual should be encouraged to make their own judgment how to divide time between alignment and adaptability.

“The dual challenge of managing for today while preparing for tomorrow”
“Strategy has two major dimensions: positioning for the present and adapting to the future”
(Grant)

In the book “The Innovator’s Dilemma”, Christensen looked into why prospering and well functioning companies sometimes fail. He argued that it is important to continuously adapt to the market even though it might be on the cost of today's profit [9].

Large companies require an organizational structure due to large size and inability of the CEO to track and call on all of the decisions being made within the organization. There are currently three distinguished types of organizational structures [14]: functional, projectized (also referred as autonomous) and matrix.

The last type is also divided into three subtypes based on the distribution of authority between the functional manager’s authority and the project manager’s authority. Matrix structured organizations can be of weak (Lightweight) team structure with limited authority of the project manager and extended authority of the functional manager. The balanced team structure reasonably distributes the authority between both managers. Strong (Heavyweight) team structure is mostly operated by the project manager with little involvement of the functional manager and his influence.

Functional organization structure is based in hierarchy going from individual employees, to functional managers and only then to top management. This is best suited for a company with ongoing processes, such as production or manufacturing.

Projectized team structure also has a similar hierarchy, but the loyalty of the employees is not focused on the manager, but rather the projects. Due to that there is an unavoidable change of staff from one project to the next.

2.5 Product and market diversification

The corporate strategy for product and market diversification (Ansoff, 1957) is a model, see figure 3, on how a company's strategically place themselves within products and markets. The model is a helpful tool, especially when markets are changing and product revenues are decreasing.

Figure 3. The corporate strategy for product and market diversification (Ansoff, 1957)

3. Empirical observations

In the interviews, two out of the three studied companies had felt an increase in market velocity during the past 10 years. According to company A, the whole software industry is experiencing a higher tempo. Today they create, test and release new software every 24 hours. Even when it comes to hardware, prototypes are developed much faster so that developers can touch and feel in a earlier stage. However, with agile working methods, company A states that the customers are required to be more agile. This can sometimes cause problems with customers who work in non agile ways. One example is the Automotive industry where deal usually are large and sometimes takes years to get. The customers are often being careful with the new software releases due to the contracts.

In similarity to company A, company B has also felt an increase of velocity in their industry. E-commerce has changed consumer habits and customers are demanding new products faster. The way information can be exchanged on the internet and in different communities are one cause for all industries to increase market velocity. The furniture industry is quite conservative and has looked the same for a long time. However, products are now getting additional features such as Internet of Things. Company C states that their market has a slow market cycle compared to other industries but they see a need to speed

up. As an example, one of their products was launched in 2004, but is still market-competitive with sales growing sales.

Company A has experienced that they often are being too early when launching new products in a market that is not ready. Porter has a theory about innovative leadership and innovative followership. Company A and C are definitely in the leadership segment with products. Company B is early with some things, but it was understood that they usually observe competitors to a higher extent. They have become really good at what they are doing but they were not interpreted as an innovative leader but rather a follower of new ideas and trends.

When it came to having a contextual approach to ambidexterity, company A and C had a clear strategy in how to divide resources between exploration and exploitation. However, company B had no goal regarding the distribution of resources but sometimes they set aside certain days to benchmark competition. All three companies were evaluated as contextual ambidexterity since exploration and exploitation was within the same unit in the organisation. The resource distribution within the R&D department at company B could be approximated to 95% incremental and 5% radical. Company A had different strategies within different teams. The software team have one day every month where the employees can work with anything they want and try out new things. In difference, the mechanical team have no certain day but instead work with project themes for certain periods of time. Today the resources are distributed 90% incremental and 10% radical but Company C states that it differs from time to time and that 10% radical is too little. The highest distribution of radical innovation was at company C. Being a tech push company as well as the market leader, Company C distribute 20% of the resources within R&D to radical innovation and 80% on incremental. At company C the incremental innovation can be divided into two parts; current products are given 65% and old products are given 15% of the resources. This is due to the slow market cycles in the industry where a lot of customers are using old products that are no longer produced but still need updates and maintenance from time to time.

Company A divided their resources within R&D 50/50 between market and products. Company B did not have any numbers on market/product ratio but said they have the largest focus within existing products and customers and not new markets. This focus is also shared by company C. Their strategy is being the market leader by focusing on their product and maintaining their customers.

4. Analysis

4.1 Organizational structure

It is a difficult task to interpret a company's structure and way of working into existing theories. Theories are often simplifications of complex systems, there are almost as many structures and ways of working as there are companies. The different kind of answers from the companies made it harder to compare them. Also, the organizational structure of company A, B and C looked very different.

Company A has 6 different business areas that could be described as individual companies within the organization. The R&D manager at company A (interviewee) had tight links to both sides and responsible for 2 out 6 business areas, “tolling systems” and “autonomous vehicles”, with tight connections to both the other managers in other business areas but also within his own area and to the CEO. Each business area works through 4 different workflows: Business development, Product management, Project management and R&D.

Based on the interview, company A has a matrix organizational structure with a weak (Lightweight) team structure. The project manager has close to no authority compared to functional manager. The functional manager of each division manages the project budget and the administration is also performed by him, as well as most of his employees workload is distributed by him.

Company B showed to be a flatter organization, where there is obvious hierarchy. They are purely a functional organization and this is the best among well-known structures for exploiting and exploring, while making a large emphasis on ongoing processes, which in this company is production. Eventually they might see the need to shift from this structure, if their products will start to make a smaller income and will require more R&D and project-based approach.

Lastly, company C clearly stated, that they are a matrix structured organization, without specifying the concrete type. Judging by the long-cycle of of products within their company and industry overall, a conclusion has been made that the main “power” is held by the project managers. Thus, the organization has a strong (Heavyweight) team structure. This is beneficial for this specific industry due to large amount of R&D that is required to release a new and innovative product with tight collaboration between all departments.

4.2 Collaboration

Even though a company has a strategy technological and innovational leadership, they still look at competitors. Company A argued about the autonomous vehicle industry, the system is too complex to develop on your own, thus collaboration is essential. There is a need for different disciplines, people with different backgrounds to solve future problems. This is why it is so important with interdisciplinary teams, cross-functional teams etc.

Company C also stated, that collaboration, even in a limited way is required, for example, with the current and potential customers, while developing new products.

4.3 Market velocity

The three interviewed companies have all felt an increase in market velocity. Today, Companies are more structured and have better processes for choosing ideas and implementing them in a short period of time. Rapid prototyping is also something that has changed many industries by making development faster and more agile. There can often be a big difference in appearence on paper or CAD model compared to holding a prototype in the hand. Some companies are using augmented reality to build digital models. This in combination with better tools for making the experience more real will cause the product development to be even faster and more realistic. As industries learn from earlier products, processes and can apply things from earlier markets the velocity will increase even more.

The technological development is growing exponentially and is major cause for the increase of velocity. LEAN and SCRUM and other models creates an understanding and gives knowledge to people. Things within the industry that were radical several years ago are suddenly obvious.

The market velocity, higher complexity in organizational structure, more inhomogene and demanding customer groups. The climate for survival seems to be tougher. At the same time the more information can be obtained about how to cope with the changing market conditions. A good start for companies seem to be to organize for ambidexterity.

4.4 Decision making

As Christensen argued about the need of adapting early and often, regardless of loss of profit today, all three companies seemed to cope with this issue well.

One of the hardest challenges within R&D is to decide whether an idea has a potential or if it should be shut down. Both company A and C expressed a fail fast and learn culture. Company C stated that they “love failures” and encourage out of the box thinking, “because we learn from our mistakes”. Knowing when to shut a product is a hard. Sometimes it can be a very successful product where sales and revenues suddenly start decreasing.

There is a big difference in long-term and short-term goals depending on the ownership of the company. When a company is listed on the stock market, decisions tend to be more based on short-term than long-term strategies because of pressure to give shareholders a high rate of return. Company A is 125 years old and it is the same family who still owns 60% of the company. This makes long-term goals more important and the whole structure more rigid. It seems to be a problem when departments sometimes are being pushed too hard by managers to deliver results. In these cases, short term prioritizations may affect long term stability of different departments and overall growth.

5. Conclusion

Based on the three interviews and a literature study, the following conclusions have been made:

- Market leading companies with a techpush strategy needs a bigger distribution towards radical innovation.
- Radical Innovation and Incremental Innovation means different things to different companies or industries.
- Ownership can make a difference regarding short term and long term decisionmaking. When a company is listed on a public stock market, they sometimes tend to focus on short term profit and a high rate of return. On the other hand, a privately owned company can afford long term thinking to a higher extent.

- Companies with a techpush strategy to become technology leaders have a well defined model for decision making. Rapidly changing conditions demands fast yet robust decisions.
- Radical Innovations are often evaluated several times along the way.
- Radical innovations are sometimes made through many incremental steps.
- Fail fast and embracing problems are two important methods of learning how to best distribute resources and avoid repeating mistakes. Especially for technical leaders.
- Investments in radical innovation demands determination when existing products and profits are suffering from it.
- Complexity of systems today demands different backgrounds, disciplines and collaborations to be solved.
- How the resources are distributed is important not to say crucial for a company's survival.
- It is important to know when to leave a business. Successful companies are able to adapt to the changing markets, including leaving industries and businesses they once were successful in.
- Radical innovation opens up for new businesses and possibilities.

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Appendix I

Interview questions

This interview is part of a project at KTH within the course Managing R&D. We are 3 student that will look into the subject “Organizing for Ambidexterity”. The interview will take about 30-60 minutes. We really appreciate you taking this time!

Background info
Company:
Position at company:
Years within the industry:
Years within R&D:

Organization

1. Has the company felt the increase in market velocity and how does it adapt to it, if so?
2. Does the firm have a contextual approach to ambidexterity? (days for exploitation and days for exploration) If yes, then how do you make decisions on when to do what?
3. Is there tension within the department due to exploration and exploitation activities? How are you managing to lower it?
4. Approximately, how are the resources distributed between radical and incremental innovation?
5. How have you changed the distribution between radical/incremental innovation during the past 10 years?
6. How is the organization structured, what department answers to whom?
7. How is your R&D strategy structured for increasing globalisation?
8. How close are the R&D department with other parts of the organization?
9. How do you develop radical innovation but still protect the current product portfolio?

10. When working on the breakthrough, are they most often:
    - Within the regular organization and management structure? (functional design)
    - Within regular organization structure but outside existing management (cross-functional teams)
    - Outside both regular organization and management (unsupported teams)
    - independent unit integrated to existing senior management (ambidextrous organizations)

Generating ideas

1. From which department does most ideas come from?
2. What are their methods for idea generation?
3. How many are working on every idea and how many projects are each employee working on?
4. What are the main sources for new knowledge within the company?
5. How is it decided which products to keep developing and who has the final saying?
6. Are there opportunities where individual employees can create their own innovative projects?

Product development

1. How many products are there at the moment?
2. How many projects are going on at the same time?
3. Would you define yourselves as tech push or demand pull? Where do most of the products come from?
4. What are your methods to minimize failure (failure is a costly etc).
5. How much freedom does the R&D department have to choose their own ideas, both to start but also to continue with.
6. How do you most often expand; by new/better products or by new market shares?
7. How much is done in house and how much is outsourced?
8. Is the exploration of new ideas integrated in the exploitation of current solutions?

Leadership or followership

Which one describes your strategy best

- First to market OR later?
- Risk Taking OR learning from technological leaders?

Roughly in percentage, how do you divide your innovation goals between (1) existing products, markets and customers, (2) new businesses for the company and incremental innovation (3) new markets and new products.

(1) % (2) % (3) %

Sharing Information

1. How is feedback presented and who does R&D answer to?
2. How much contact do managers between different departments have?
3. How much contact do employees between different departments have?
4. How much cooperation is there between other divisions, companies and industries?
5. What competencies is there in R&D and how diverse is it?
6. How much cooperation is there between other divisions, companies and industries?

Vision/goals

1. What are you short term goals?
2. What are your long term goals?

Closing / Avslut

Anything else you would like to add?

Thank you for you time!