

Industries emerge and perish – marketing view by a case

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ABSTRACT

The fast emerging innovations promote industrial disruption. In the modern network economy, boosted by digitalization the pace of perish and emerge of industries is ever increasing. This paper explores emerge and perish of industries in Finland, a country that has lately been losing its main industries due to the on-going industrial revolution. The study aims to understand the mechanisms behind the perishing and emerging industries. The viewpoint in this study is on technology development and the consequences thereof to a country's industry and policy-making. The public discussion is mainly occupied by the industrial and classical national economist leaving limited space for marketing professionals. The question is how we can be prepared for on-going and upcoming industrial changes. In this study, we build on Deleuze's concepts to create a framework for understanding how industrial changes occur. The framework can be employed to understand how various industries perish and others start to flourish.

Introduction

Various economic disciplines are dealing with the country's capability to compete. These disciplines have their arguments on how the competitiveness of the country can be constructed. However, there are no holistic discussions between these sciences, although they can contradict in practice in daily politics. One explanation can be that these disciplines dominate various levels in society. The classical political economy looks at the competition from the whole country's view, the industrial economics looks at the specific industry and the view of marketing management is set on individual companies. However, these disciplines have a shared zone, in which they should have a common language for knowledge sharing. This paper discusses the various views on the Finnish economy based on the arguments in the press dealing with problems of Finnish exports. The research question is whether the views of the economist are different and if they are how the differences can be explained. The ultimate question is whom to believe in the case of the economic crisis. Although these disciplines have their own zones or domains, their scientific observation might have impacted various levels in society. For example, if marketing has a view that innovation helps to build long term relationship and prevents the customers to exchange their suppliers, then it can be asked that whether we need certain innovation policy in the country in the question or not to supporting the companies relationship and business continuation. The public discussion is dominated whether the high unit cost of the Finnish products causes the loss of the markets.

Literature review

The theory of value and prices are developed by the classical economist for studying the dynamics of the economy. Petty (Berstein, 1986) introduced the market price to distinct the so-called natural price. According to Smith (Steedman, 1984), natural prices is the sum of wages pointed to the product's price. Some of the classical political economists state that the theory of prices is determined from three principles: (1) the level of outputs at the level of Smith's effectual demand, (2) technology, and (3) wages. From these givens, a theory of value is derived. The theory of salaries was closely connected to the theory

of population. The Classical economists took the theory of the factors of the level and growth of population as part of Political Economy. Classical economics tended to emphasize the benefits of trade. Its theory of value was largely exiled by marginalist schools of thought which sees "use value" as deriving from the marginal utility that consumers find in a good, and "exchange value" (i.e., natural price) as determined by the marginal opportunity- or disutility-cost of the inputs that make up the product. (Wikipedia1, 2019). Alfred Marshall (2009) defines price elasticity in his book *Principles of Economics* as follows: The elasticity of demand in a market is great or small according to as the amount demanded increases much or little for a given fall in price, and diminishes much or little for a given rise in price. The Marshallian elasticity is based on a point-price definition, using differential calculus to calculate elasticities. (Wikipedia2, 2019)

Porter's (1979) Five Forces Framework is a tool for analyzing a business competition. It originates five forces that determine the competitive strength. Porter's five forces consist of three forces from 'horizontal' competition i.e. the threat of substitute products or services, the threat of established rivals, and the threat of new entrants and two others from 'vertical' competition i.e. the bargaining power of suppliers and the bargaining power of customers. The most unappealing industry would be one approaching "pure competition", in which available profits for all firms are driven to normal profit levels. A change in any of the forces normally requires a business unit to re-assess the marketplace given the overall change in industry information. Firms are able to apply their core competencies, business model or network to achieve a profit above the industry average. An example of this is the airline industry. As an industry, profitability is low because of the industry's underlying structure of high fixed costs and low variable costs. Airlines tend to compete on cost, and that drives down the cost-effectiveness of individual carriers. It simplifies the decision by a customer to buy or not buy a ticket. A few carriers have tried, with limited success, to use sources of differentiation in order to increase profitability. (Wikipedia3, 2019)

The viewpoint of industrial marketing has been set on the companies' capability to maintain and develop business networks (Easton and Araujo, 1985; ; Håkansson & Snehota, 1995; Håkansson, Ford, Gadde, Snehota, & Waluszewski, 2009). Accordingly, the competitive position is based on competitive advantage, co-existence, cooperation, conflict or collusion. The methodology of such studies is based on the mapping, comparing and contrasting the perceptions and behavior of suppliers and customers in terms of identifying and characterizing competitors, examining competitive strategies and analyzing inter-competitor communications through technical and marketing networks. The industrial marketing approach provides a dynamic view on competition that unfolds over time. The active rivalry between firms within a product market occurs simultaneously with competition coming from other product markets.

According to Turnbull et al. (1996), extant studies in the field of competitiveness and competitive forces have been dominated by the contributions of Porter (1981) and Peters and Waterman (1982). The topics that have been discussed on market forces are related to productivity, market share, research and development, economies of scale and concentration on knowledge-intensive and high value-added products. Classic Economic Policy focuses on the searching balance between costs, usually labor cost, and the price of the demand, e.g., if demands decline then labor unit cost can be declined in order to preserve or gain bigger market share. According to Eilon (1999), Porter criticizes the Classic Economic's view of competing with unit labor cost and manipulation of the currency courses. He continues also stating that Porter did not see the competition as a zero-sum game between the nations. From marketing's perspective, this "competitive field" transcends the narrowly defined industry or product market. Hence, the industrial economist's paradigm of the market structure-conduct-performance relationship is an inadequate representation of the competitive forces - and real determinants of competitiveness (Easton and Araujo, 1985).

Methodology

This study is a conceptual case study. We are employing extant theories of economics and marketing and then reflecting them to emerging and perishing of the industries. We look at the industries through the lenses of the concepts introduced by France Philosophy Deleuze (1925-1995).

Status of the Finnish economy

Finnish economy has suffered from the loss of the market in its major industrial areas. Newspapers' paper consumption has declined rapidly due to the online internet services offered by major newspaper houses. Finnish electronic industry, consisting mainly of Nokia, was not able to compete against its rival coming mainly from Far-East and USA. Among others, Apple, Samsung, and Huawei were providing Unix or Linux-based mobile phones while Nokia's plans to stick in Microsoft Windows-based systems failed. Nowadays, Nokia's mobiles surcease to exist. In this situation, Finnish society and industry are searching means to maintain and develop its overall offering.

It has been reported that also the export volume of Finnish machinery industry has declined remarkably since 2010. Figure 1 shows how the Finnish Industrial Production has developed between 2005 and 2018. Lately, the Finnish economy has started to recover mainly due to the growth of the global economy.

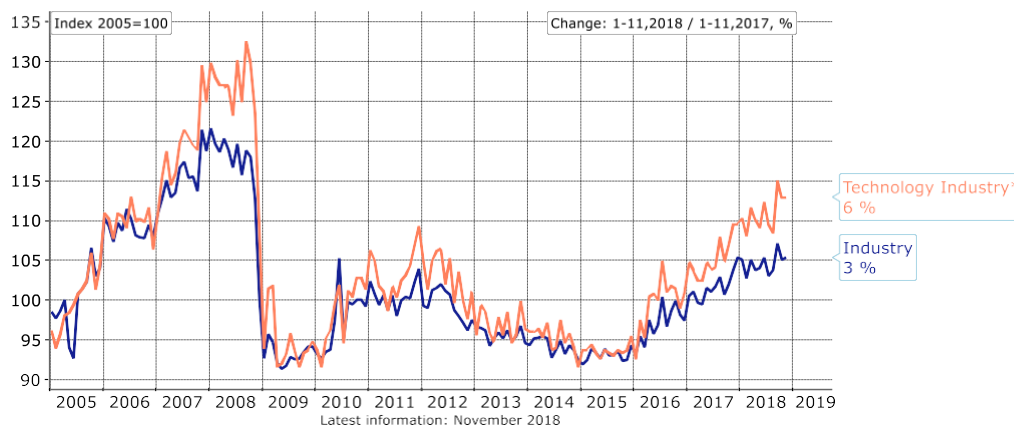


Figure 1: Volume of Industrial Production in Finland (Source: Finnish Technology Industry Federation)

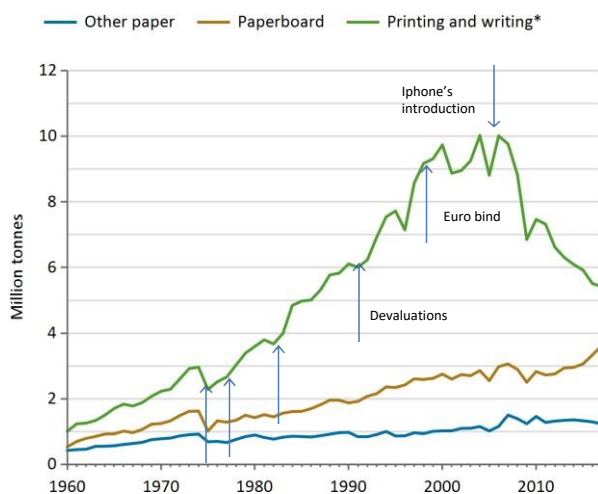
Resolutions to Finnish export problems in printing and writing paper industry

The discussion of how the Finnish industry should be developed had mainly been led so far by the political economist. In the past, the Finnish export problems have been solved by the devaluation of the Finnish earlier currency (FIM). The employment of the devaluation was based on the idea of the elasticity of the price of the printing and writing paper (see Figure 3). Thus, the industrial policy at that time was dominated by the political economist based on the mathematical balance models (e.g., Gylfason and Schmid, 1983). Gylfason and Schmid (1983) propose that the devaluation provided a short term solution but cause the stagflation.

Since Finland started, from 1999 onwards, to be a part of the European Currency Union, Euro, the devaluation and revaluation were not an option. Since 2008 at the time of the introduction of the iPhone, the demand for the printing and writing paper started to collapse. The reason behind this is that the new technology started to replace traditional newspapers' paper version. The new media has significant advantages compared to printing and writing paper as the distribution cost were minimal compared to the delivery of the paper version of the newspaper (e.g., Karimi & Walter, 2015). Many of the famous newspaper houses have changed their newspaper size to tabloid in order to reduce the cost of the printing (e.g., Santana & Dozier, 2019). The conclusion is that from 2008 onwards there was only a decline market available for traditional printing and writing papers. For Finnish Paper and Pulp industry, this declining market means the reduction of the capacity in order to keep these companies profitable. The introduction of Iphone is a symbolic sign for the entrance of the digital era in the newspaper industry. The laws of the price elasticity might not be as effective in a sharply declining market as in stable and increasing market:

the printing and writing paper is not able to compete against the internet-based delivery by declining the price of printing and writing paper. This phenomenon resembles the threat of the new entry discussed by Porter (1979). A marketing manager of a Finnish paper and pulp company stated that the business is somewhat profitable despite the declining market. He did not expect any growth is going to occur in this sector.

Until recently companies have not sought any replacement for printing paper products. Now the focus is on new materials to replace plastics to protect food. Paperboard material is produced increasingly for shipping for internet shops and on pulp. Marketing science discipline emphasizes the continuation of extant relationships. The innovation activities are part of the concept of building relationships for longer-term (Lindgren & Wynstra, 2005). However, in this context, it might come out of the meaning as the market has already been lost for printing and writing paper. The topic that can be discussed is how much pulp and paper industry has invested in research and development. The forest cluster invested about 96 million euros in 2017. The UPM, one of the largest pulp and paper companies, has invested about 40 million euros in R&D which is about 0.4 percent from its turnover in 2017 (Kauppalehti, 2017). The R&D investment does not propose that the innovation effort support remarkable the building the continuation of the relationship.



SOURCE: Finnish Forest Industries Federation

Figure 3: Paper and paperboard production in Finland (modified with arrows from the source)

Table 1: Economic disciplines views on the capability of the competition of the paper and pulp industry

Paper and pulp industry	Political economy	Industrial economy	Marketing
Growth until 2008 and then declining markets	Price elasticity theory seems to work until 2008 with devaluations and revaluations.	The threat of the new entry in the form of the portable mobile devices realized	No or limited R&D investments to ensure a future relationship with newspapers.
Future actions	The road with price elasticity has reached its culmination	One of the pillars in the forest cluster is lost. New ones are needed to be built.	Creating a new market requires a study of the potential new customers and their needs and building relationship.

The critics that have been raised is that if there is no market then how the declined price can help the business as there is diminishing demand for printing and writing Finnish paper products. It has been argued that the focus should be on creating new industries for Finnish society. Some of the aims are to increase

pulp and biofuels production as it has been estimated that the demand for these products might increase due to climate changes. However, as these products only provide a short term carbon sink, an alternative solution might be needed

Resolutions to Finnish export problems in the electronic industry

The financial crises started 2008 covered-up the changes in the mobile phone industry. Nokia Mobile Phone started to lose its market share as its Symbian based ecosystem was not able to compete against Google Android’s and Apple’s ones. The cooperation with Microsoft’s ecosystem did not bring any long term solution, and finally, the operations were closed in 2014 due to the total loss of the markets of Microsofts’ mobile phones. (e.g., Chaplinsky et al., 2017). Thus, one of the major pillars of the electronic cluster was also lost. The price of mobile phones decline as the size, and, thus, the volume of the markets increase. The rationalization of the product lines and an increase in the purchasing volume create the space for declining the market. Political and industrial economics policies do not deal with the consequences of the choice of their policies. The mobile-phone competition with the price leads to simplifying products not filling the expectation of the consumers.

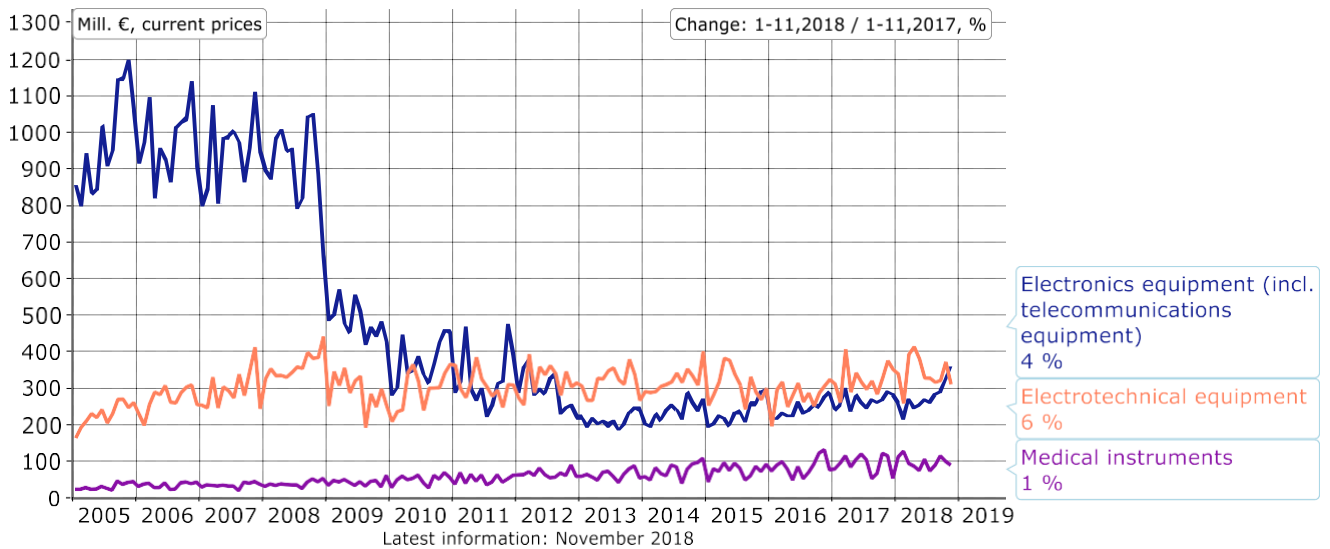


Figure 3: describes the development of the Finnish electronic industry.

Table 2: Finnish export problems in electronic devices

Finnish electronic industry	Political economy	Industrial economy	Marketing
Growth until 2008 and then declining markets	Price elasticity theory seems to work until 2008 due to the volume growth: rationalization of the production and high utilization of the investments	The threat of the new entry and competition in the form of a new type of ecosystem thinking derived from DoCoMo’s concepts	Probably the customer relationship building with major USA based telecom operators failed.

Future actions	The road with price elasticity has reached its culmination as the market started to cease to exist	One of the pillars in the Finnish electronic cluster was lost. The new one is needed to build.	Extant Nokia brand in mobile might is applicable to support to build new growth. The strong patent portfolio might help on the new start.
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Public discussions on the crisis of the Finnish industry

Several public opening debate speeches were made to discuss the loss of the Finnish markets. One of the arguments state as follows:

1. If we are able to reduce our unit labor price, we would be able to gain more markets and then hire more employees in our export sector (citation translated: Äimälä, 2015, Kauppalehti, 10.6.2015)

This statement is based on the price elasticity theory indicating that reduction on unit labor cost is directly reflected the price of the export goods and thus it brings more volume. The statement seems to problematic from several points of views: Have the export products’ unit price declined because of the lowering of the labor unit price? Lowering the export unit price without lowering the labor unit price might increase the demand. If the products are still profitable, it means a higher overall profit. There are quite good indications that for major Finnish products there is no demand, e.g., mobile phones and printing and writing paper. If we were interested in lowering the unit prices, should we instead create new products for which the demand exists? This means focusing on innovation and research development.

The second statement is as well saying as follows:

2. The agreement to lower the labor unit prices have led likely to increase the demand for the labor forces. (citation translated: Uusitalo et al., 2018, Economic Policy Council).

This statement is also built on the price elasticity theory. The word likely is employed here as there are no empirical evidence and the statement is based on mathematical models as described above (Marschall, 2009). The problem of this statement is that lowering the unit labor cost was based on the increase of the daily working hours. It contradicts against the several studies that the decline of the working ours increase productivity. From marketing’s point of view, the value add perspective could be a more critical perspective: e.g., can labor force bring more value with additional knowledge? From industrial economics point view, one can ask if the labor force is able to improve the relative competitive position of the company.

Towards a model to study the industrial changes

The roots of the problems of the Finnish economy are in its industry that has not renewed and, thus, has not alienated from the declining markets. The situation resembles Drucker’s (2011) description of the changes in the industry that leaves much space for new players as the old ones are not willing to react or cannot react on the industry changes. Usually, the expectation the business continues as it has occurred for a long time. Drucker’s writes how the steel industry did not accept Mini Mills’ recycle steel concept, and, therefore, these new players were able to develop their businesses for a long time without the interference of the traditional steel industries. It leads to that traditional steel industry diminished. The competition with the price seems to lead to the situation that in some of the points of time, competitors come with a new innovative solution and leave competitors to deal with lowering volumes and prices.

Late market changes

The change in the market is more profound than just the loss of the market of the industry. The industrial

development is going in the direction of the power of crowd that is also enabled by various new platforms based on the virtualization and the development of the manufacturing, especially 3D printing. These developments revolutionize the design of the products and the distributions of them. The example of these are the latest DevOps models speed-up the development and distribution to occur in seconds in a virtual computing environment. The crowd power means in practice that closed, firms specific, innovations cannot beat against the solutions from open source or open innovation representing crowd power communities. For example, Tesla has not revealed its patents to be used by third parties.

These ecosystems, ecosystems platforms, and open innovations will change postindustrial mantras such as cost-conscious, effectiveness, productiveness and customer-centric values to be more capability and community-centric (Letaifa, 2014; Pitelis, 2009). The overall development of the technologies that revolutionize the distribution and design will change the industry. Figure 4 shows the rapid development of the new industrial sectors that are related to Information Technology and Consulting Engineering. These two industrial sectors describe the strong development of the service sectors that rely on consulting and IT services.



Figure 4: Turnover of the Technology Industry in Finland (source: Finnish Technology Industry Federation)

New industry creation

These trends lead to the question following question: how the Finnish industry should be developed and how to meet these requirements of being a dynamic process over time? Industry creation is based on technology and market development. The steam machine creates a new set of the industries starting of the machine construction of the steam engine. The new era in the travel industry was the consequence of able to make steel based vehicle combined with the steams engine. The next era of the industry was created by combustion engine together oil industry. The third industrial revolution was a consequence of the silicon chips. The importance of the silicon ship was seen in telecommunication, development of the computing power and lately on the creation of the web-scale industry. Later these technologies change the way how companies interact with each other, e.g., silicon ships based communication enable the outsourcing of the companies' hierarchies. The question is what the next technology trend is that it creates a new set of industries.

Framework: A method to create methods for analyzing industrial changes

In this study, these researchers employ Deleuze's concepts for studying the industry and change in the industry. Previously Deleuze's concepts have been employed, for example, in architecture and anthropology. This study aims to create a toolset to describe the changes in the industry that can be further analyzed with the other toolset such as IMP's relationship models.

Concept of assemblage

An assemblage refers to territory, its signs' regime, and pragmatic system including forces, desires, i.e., processes that deterritorialize and reterritorialize the underlying structure of an assemblage. Apple iPhone's and Google Android's ecosystems caused the Nokia Symbian and its ecosystem's elimination from the market. In practice, these new ecosystems that were employed and developed by many information technology companies deterritorialize and then reterritorialize Nokia's Symbian that had its roots in telecommunication. Global assemblages emerge over time and may involve new forms, reformations or shifting forms (Collier & Ong, 2005; Deleuze & Guattari, 1987).

Concepts of repetition and difference

The two other concepts that are useful to explain the changes in the industry are related to Deleuze's repetition and difference. According to Deleuze, the repetition is a difference without concept; i.e., it has no direction to point. It is transgressive with not be confined by the norms and expectations, but with the aim to break free of those. Example of this that, any of the inventions are employed outside of the original purposes such as the steam machine that was developed originally for emptying mines from the water. In order to employ the repetition, there is a need to amplify the difference. Example of the repetition and difference is that the first vibrator was a steam engine based. The repetition and difference cause the new ideas, innovations, and industries to grow rhizomely searching new way to expand, deterritorialize and then reterritorialize existing solutions. The technologies have a line of flight, a span of their lifetime, that the repetition and difference can extend. An example of this the nuclear power stations that are still steam engine based solutions.

Analysis of Deleuze's concepts

In order to study the changes in society, the new potential and extant assemblage are needed to be analyzed in terms of if new extensions can be created for the rhizome or not. Lack of repetition and a minimal difference can be a sign of apathy of the assemblage in the question. If there is no repetition and no difference, then it can be proposed that this assemblage can be at the end of its lines of flight and it might be needed to be replaced by other technologies sooner than later.

Newspapers' paper is replaced by internet technology that employs mobile phones, computers, easy to edit and publish IT system. Internet web pages can be accessed nearly and increasingly by most of people globally. However, internet technology applies to Moore's law and has its own limitations. There are already signs that the impact limitations of the law cause the scaling down of the development and innovation speed of that technology. The limit of the light speed cannot be exceeded, and the laws of the quantum mechanics start to affect negatively making it difficult to keep the phase of Moore's law. The 3D transistors extend the lines of lights of the silicon chips, but ultimately the laws of the nature are not easy to break.

One of the propositions is that the higher the difference, the longer is the lines of the flight due to repetition. Rhizome describes that the new connection, new thinking, emerges like roots without a clear path but navigating through the soil expanding in various directions. It can be discussed if this is how the technologies also create industries. Although the technology employed previously is replaced by other new technologies, many time new technologies continues its line of flight. Table 1 gives an example of the technology that caused the industrial revolution and has mainly perished. Table 2 gives an example of on-going technology changes.

Table 1: Lines of flight of steam engine industrial revolution

Assemblage	Deterrotiolize	Reterrotialize	Repeat and differentiate	Rhizome	Lines of flight
Steam engine	The use of horses and wind and related knowledge areas and skills	New power source with new knowledge areas: materials, material strengths, machine construction and industries	Aeolipile, pumping, piston, high-pressure, horizontal stationary, road vehicles and marine engines, steam locomotives, steam turbines	New industry players in transportation, materials, power production with coal, new waves of migrations, the industrial revolution, the cause of the change of the Industrial structures	Still in use in some of the areas: e.g., steam turbines

Table 2: Virtualization technology

Assemblage	Deterrotiolize	Reterrotialize	Repeat and differentiate	Rhizome	Lines of flight
Virtualization of computing power	Extant computing devices such as switches, servers, computers, other microprocessors based devices. The way of distributing these devices, maintain them.	New IT base approach, running in standards HWs, distributions in seconds from computing centers, thinking of reliability	Grid Computing, IaaS, SaaS, PaaS, Virtualization of Traditional IT, Telecommunication, Healthcare devices, Use of virtual computing in global delivery models	Creation of webscale industry, platform, enables global social media, global cooperation	New business areas use virtualization.

Conclusion

The inspiration for this paper came from the changes that happened in the Finnish industry since 2008. This radical economic transformation was not the first time as the Finnish industry change radically at the beginning of the 1990s. In this paper, this researcher tries to seek some of the ideas about how and why industries based on technologies emerge and perish, but also how these changes in the industry are viewed and solved by various economist disciplines. It looks like that price elasticity leads the situation in which that line of flights reaches its culmination: new alternative concepts are introduced. This culmination is well aligning with the innovation S-curve that states in stagnation innovation are introduced. Some of the technologies were studied with the help of Deleuze's concepts. Based on this study, it can be proposed that new ideas and technologies to be evaluated with the help of the selected Deleuzian concepts can bring new ideas and thoughts about the changes in the market. Extant technologies are needed to look critical to see if these technologies have still capabilities to repeat and differentiate.

The Deleuze's concepts and the example given above can be summarized in the following figure (see Figure 5). Figure 5 describes the relationship between Deleuze's concepts in the context of the industries creation and perish. New assemblage, for example, new General Purpose Technology (GPT) (e.g., Bresnahan, 1995) such steam engine or virtualization starts the renewal of the industry with deterritorializing old ecosystems and reterritorializing them with a new ecosystem's structures. The success of the ecosystem depends on its capability repeat and differentiate itself and diffuse its rhizomes into the new industries or renew the old ones.

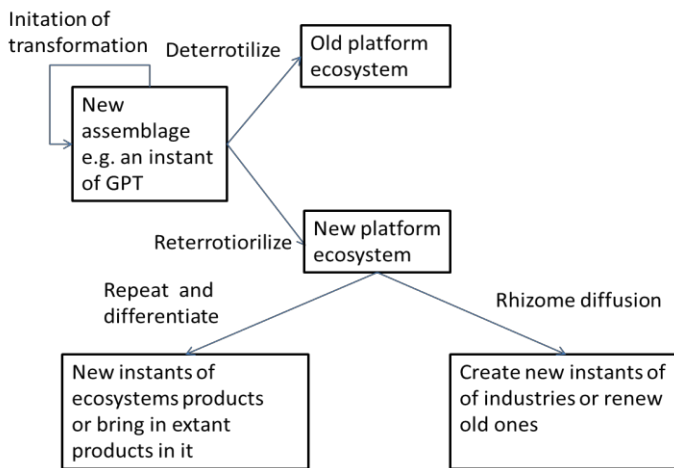


Figure 5: Deleuze's concepts in the context of industries transformation

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