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*Innovation in China: A qualitative research*



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## **Abstract**

This study aims to examine the topic of innovation in China. The need for innovative development is of importance for the nation to keep the rapid development. A few evaluations of both Chinas indigenous innovation policy and the opportunities for the citizens to develop innovation has criticized the lack of creativity in human resources and the examination based education system to be harmful for the development of innovation. To question these critiques interviews were conducted with seven people, who are engaged working with innovation in China. The personal opinions based in experience in the field of innovation and their involvement in China as R&D consultant, professor of strategy and Innovation, director of research center, program director of R&D executive program, General Manager, program development manager and Engineering Manager. The results were compared and analyzed into themes. The findings indicated that there is a complex relationship of factors that promotes or hinders innovation in different organizations. The results were than analyzed through the sociological theory of agency and structure by Anthony Giddens. Social structures has impact of on creativity and innovation and how the network of people available influence the outcome of innovations to be available for implementation. The most important finding is the importance of creating incentives for the individual in different areas of society and different types of innovation is not necessarily hindered by the examination based education system or lack of creativity in human resources. Innovation can be nurtured by the right organizations.

Keywords: Qualitative research, Innovation, China, Agency & structure

## **Abbreviations**

CAE Chinese Academy of Engineering

CAS Chinese Academy of Sciences

CAST China Academy of Space Technology

COS TIND Commission on Science, Technology, and Industry for National Defense

GDP Gross Domestic Product

ICT Information and Communication Technology

IPR Intellectual Property Rights

MOF Ministry of Finance

MOST, Ministry of Science and Technology

NDRC National Development and Reform Commission

NNSF National Natural Science Foundation

R&D Research and Development

S & T Science and Technology

SME Small and Medium Enterprises

SOES State Owned Enterprises

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## 1. Introduction

Innovation is a word that is used repeatedly in China today. Questions like: Will China be able to create the new Apple or Google? Is China only able to copy what has already been done? China's rapid pace of economic development since the opening up reform by Deng Xiaoping in the late 1970s, the entrance in WTO in 2001 until current time. The pace of economic growth has flourished but it has reached its peak (Link: World bank/China.). China's development of growth since the opening up has been rapid and with an average GDP on 10 percent and are at current stage the second largest economy in the world. Since 2010 the GDP has started to decrease and the need for new development is of importance to keep the growth on a stable level. The target for China is to become one of the world's leading countries in technological development and innovation. The need for innovation is important for China's economic development as Chinese industries attempt to move up the value chain while concomitantly dealing with rising labor costs nationwide (Link: China analyst). A decrease of growth rate could cause a lot of harm to China and cause social turmoil. The outcomes could trigger different groups within China to challenge the contemporary powerhouse. Chinas has had a violent past in the last century as the civil war, Japanese invasion, the great leap forward and the great famine, the Cultural Revolution and the peoples liberation army's attack on the people ordered by Deng Xiaoping in 1989. The fear of social turmoil is therefore something the contemporary power house of China wants to avoid. This introduction will therefore conclude some of the problems that needs innovative solutions. The indigenous innovation policy is created to solve these issues and will be explained shortly. Evaluations made from this policy will be presented and questioned.

While reading about the topic of innovation in China the predicted problems are many. The views will therefore in this paragraph be presented. In an article from a newspaper released from the Swedish chamber of commerce the ability of critical free thinking is questioned to be hindered by the domestic school system and the competitiveness of getting the highest grades and parent's influences over their children regarding decision-making might hinder creativity. In a comparative study from 2002 were North American and Chinese parents compared in study to be of difference, (Wu, Robinson, Yang, Hart, Olsen, Porter, & Wu 2002: 489). The results indicated that in China, children were raised to be more modest by given more protection and more directives, (Wu, Robinson, Yang, Hart, Olsen, Porter, & Wu 2002: 488). Which would hinder these children to be more independent and decrease their impacts on decision making. Research has also shown that there is a desire for a greater autonomy, independence and freedom to reject and refuse to be obedient to authority, (Lau, Lew, Hau, Cheung & Berndt, 1990: 666), (Helwig, Arnold, Tan & Boyd 2003: 794, 795). The Chinese adolescence appreciated the respect for the decisions made of a majority rule as in adult authority and decision making varies depending on social context, (Helwig, Arnold, Tan & Boyd 2003: 794, 795). Social reasoning might not be consistent towards collectivism and filial piety (Helwig, Arnold, Tan & Boyd 2003: 796). These results can be interpreted that Chinese adolescence might

respect democratic values more than traditional values. A shift in values in relation towards the ongoing political and economic development might take its pace.

The cultural practice of *saving face* was questioned to be problematic for innovation. Because of the importance to save the face by avoiding to make mistakes and risks. (Swedish chamber of commerce in Hong Kong and China 2012: 4, 13). Face is described as a collective responsibility where one member could lose the face for the group he or she belongs to, (Cardon & Scott 2003: 13). Direct confrontations in conflict is therefore avoided, (Cardon & Scott 2003: 15) (Kirkbride, Tang & Westwood. 1991: 367). Face could also serve the opposite purpose to enhance the status of another member to improve relationships, (Cardon & James Scott 2003: 14). Risk taking is not mentioned to be a problem for losing face as direct confrontations of conflicts are and might therefore be questioned to be of validity for the usage of face as a hinder for innovation. In the purpose for innovation where risk-taking is somewhat more or less necessary the possibilities for acceptance of failure might as well be accepted and encouraged.

In another article from BBC conducts an interview with Kai-Fu Lee; a CEO at China based Innovation works and was the funding president of Google China between the years of 2005 – 2009. In this interview he describes that China needs to overcome a lot of issues both cultural but also the problematic forced obedience in the education system, (Link: BBC). Government's policies towards innovation in China is connected to the universities and research. Western influences can be more valuable for the education system where students should be allowed to be curious and critical, (Link: BBC). The national promoted process of innovation in China can easily end up in conflict with political constraints, (Baark 2007: 339). The social stability in the harmonious society should not be threatened and innovations are therefore only desired as long as they do no harm the contemporary power relations. By that perspective disruptive innovation might be hindered because it could challenge the contemporary structural order of society and might therefore be avoided (Baark 2007: 354). Kai-Fu Lee reasoning is similar when he states that innovation in China will not become a world-changing outcome but rather improvements in the areas of the innovations from policies of the governments support. The indigenous innovation system are claimed to be more suitable for the Chinese culture and heritage regarding the more result driven innovation rather innovation based on creativity, (Link: linkedin.com/Kai-Fu Lee). The lack of innovative spirit within China is discussed by the newspaper English people daily. They use the example of creative Chinese people in the United States who has been successful and innovative e.g. the Yahoo founder Jerry Yang and one of the founder of YouTube, Steve Chen, (Link: English people's daily) to support the fact that innovation is possible in China and for the Chinese people to accomplish. All of these different theories and assumption about the ability of the Chinese people to be innovative and creative are many and of great variety. Are they of real essence or are they just assumptions based on prejudice? The discussion in media needs to be questioned and explored.

## **2. Literature Review**

The development of the Chinese society is important for solving an immense amount of problems. The threats of social turmoil and problems of the state are many. Firstly there is a large income gap between the rich and the poor and the many people in the republic who still live in poverty, (Jakobson 2007: xix, xx). The problems that China is facing are the results of the unevenly distributed GDP between the coastal regions and the western regions and between urban and rural areas, (OECD 2007: 16). This has caused a mass migration where people from the rural areas travel to the urban areas for work, this has impacted the social fabric in the rural areas, (OECD 2007: 16). China's demographic situation and the results of the one child policy have created a future with less workforce in comparison of the aging population. The results to come will be a society with a high dependency ratio where the workforce won't be able to support the dependent ones. The one child policy has also resulted in uneven numbers of birthrates regarding gender which will cause a lack of brides for future marriages, (OECD 2007: 16). The one child policy has also resulted in the heavy weight for the one child to bear in regards for being economically responsible for their parents and their grandparents. The future workforce in China has a lot of issues to deal with to be able to continue the fast development. The last decades of rapid development has caused problems, not only socioeconomic issues but the increasing growth of environmental problems and pollution. The increasing need to handle the energy problems in China is of importance. The industries in China are creating devastating effects on the environment, polluting the water and air. It is not only effecting China but indirect the neighboring countries and through being a large emitter of carbon dioxide, the whole world. China's energy sector is therefore a global political issue, (Jakobson 2007: xxi). As China develops and urbanizes the need for energy is only increasing. As much as two thirds of the energy usage in China comes from coal and many of the coal-plants operate with old technology, (Jakobson 2007: xxi). The need for innovation in this sector is to reduce the costs for using existing clean coal technologies. Scientific progress and innovation would contribute to a more sustainable development in all sectors of society and is a key for rapid development towards stability and increased welfare across regions, (Delegation of the European Union in China 2011: 2, 3). The improvement of manufacturing industry and strategic industry to create a better environment and to use resources more efficient is another key area of the policy, (Delegation of the European Union in China 2011: 2, 3).

### **2.1 The indigenous innovation policy**

The indigenous innovation policy in China is presented and based on the Medium- and Long-Term National Plan for Science and Technology Development (2006-2020). The areas where China are in need of innovation is summarized to be to adapt and catch up with technologies for equipment in the manufacturing industry and increase agricultural production. The domestic capacity needs to be less dependent on foreign technology. It is through the development of 11 key fields: Energy, water and mineral resources, environment, agriculture, manufacturing, transportation, IT, population and health,

urbanization and development, national defense, public securities, (Jakobson 2007: 4). These key areas can achieve technological breakthroughs as: change the energy production and consumption to avoid environmental damage, support urban development, development of medicine to decrease the spread and harm of HIV/ AIDS and hepatitis, increased national security by improvements of the military sector, agricultural capacities, improve manufacturing, increase information industries, biology, materials and aerospace, (Link: S&T Development). The areas of focus to improve the country overall can be divided in four sections: IT, nanotechnology, energy-related technology and bio- technology, (Jakobson 2007: xx). These four sectors do receive a lot of government funding and have the emphasis of the government in their importance for the domestic development through S&T. Even though the whole country is governed through the one single political party CCP, it can only rule the country up to a certain point. Power relations within China and global influence are also involved in how the policies implemented take its form. Innovation is expressed to be the key for China to keep up the development towards a high- income society. The focus on innovation in the 12 year plan (2011- 2015) is to push the economic development by the help of innovation, but also to move towards increased quality of participating in global research and development networks, (China K.P.M.G. 2011: 2, 3). Innovation plays a key role for the economy, to sustain high performance of firms, industrial competitiveness, improving quality and standard of living, (Gopalakrishnan & Damanpour 1997: 15), (World Bank 2012: vii). In the 12th 5- year plan sustainable growth and moving up the value- chain are key themes, (KPMG China 2011: 1). Growth leads to changes and shapes new structures that become the dominant force as they shape production and societies, (Schön 2006: 399). China has for a long time been the manufacturer of the world. About 49 % of their GDP is from manufacturing which has consequences for industries regarding increasing costs of labor and huge environmental problems, (Feenstra & Wei 2010:432). The tools to accomplish the technological breakthroughs are through the increase of the global community and collaboration of scientists through world class research institutes and universities. The other tool to accomplish innovation is through the domestic enterprises and improved Intellectual property rights (IPR's). The government itself should thereafter be obligated to purchase the innovations from these enterprises, (Jakobson 2007: 5). The policy is a top- down approach to create innovations through central planning and R&D funding. The funding is channeled to research programs which are administrated by Ministry of Science and Technology (MOST), Chinese Academy of Sciences (CAS), National Natural Science Foundation (NNSF), Ministry of Finance (MOF), Commission on Science, Technology, and Industry for National Defense (COS TIND), National Development and Reform Commission (NDRC), Chinese Academy of Engineering (CAE) and China Academy of Space Technology CAST. Then the funding reaches universities, research- programs, centers and institutes, (Jakobson 2007: 9, 10). The indigenous innovation system is recognized for its state- led strategy to define objectives to improve the innovation rates, (Ernst 2011: 3). Compared to the United States where innovation should be driven by market forces and private sector this policy has fundamental differences. The innovation policy is obviously shaped to keep the resources to promote certain areas chosen by the government and managed by the ministries.

Problems of adapting to top down policies could risk a structural resistance and result in an uneven playing field where more established firms benefit more, (Avdeitchikova & Coenen, 2013: 18). Evaluations of the indigenous innovation policy in China have its strengths and weaknesses. This paragraph will summarize the pros and cons of the policy. China's national policy is shaped to foster innovation through the promotion of research in enterprises, financing of innovation and public support, university established science parks, the improvements of protection of intellectual and industrial property rights and cooperation between research centers, universities and companies, professional network approaches, globally integrated workforce. China is also predicted to have good use of their major input of R&D spending, which is beneficial for access of adaptations of technology, upgrading technological capabilities and the strength of global linkages. (Altenburg, Schmitz & Stamm 2008: 326, 338), (Hu & Mathews 2008: 1466, 1469), (Huang, Amorim, Spinoglio, Gouveia & Medina 2004: 377). Chinas has also created global value chains establishing possibilities for foreign partners to come and take part of the Chinese markets and the cheap production to be able to learn technological knowledge and catch up in a higher rate of speed, (Hu & Mathews 2008: 1465). Global value chains provide new markets for products and increases access to knowledge and innovations, (Pietrobelli & Rabellotti. 2011: 1261).

The areas which are falling behind with China's national innovation policy are described to be the education system, human resources and the protection of intellectual property rights, (Huang, Amorim, Spinoglio, Gouveia & Medina 2004: 382). China has according to measures a very high rate of piracy which has come to a stage were domestic enterprises has started to react. This will enforce stronger protection for laws to be followed, (Huang, Amorim, Spinoglio, Gouveia & Medina 2004: 383) even though the protection still is far away from what it should be, (Morrison 2011: 23). The UN section World Intellectual Property Organization (WIPO) rapport showed that China filed the most patents in the world last year. The Director General of WIPO Francis Gurry has expressed that the expression "Made in China" is now replaced with "Created in China", (Link SVD). Growth analysis which is located abroad as the Science and Innovation Office of the Swedish embassies in close cooperation with the Government Offices pays attention to the problem of low quality patents. The increased number of patents is argued to be an outcome of the indigenous innovation strategy where goals for patents is more quantitative. The system pushes for mote patents in numbers rather than patents for actual use and increased quality and therefor low quality patents increases and get accepted to complete up the quota, (Ekström & Hongli 2013: 1,2). Another issue with the increased patents is the paradox off the large upswing of patents compared to the weak protection of IPRs, (Hu & Jefferson 2008: 67). The results of the upswing is argued to be a combination of china's focus on R&D and FDIs (Foreign direct investments) in China, (Hu & Jefferson 2008: 67, 68). To argue that China has become an innovative nation by paying attention to the increased number of patents is a premature statement. The large investments on R&D, increased protections of IPRs and the quantitative goals of patents might altogether be the results of the increased filled patents.

China has expanded their university education and their investments in science and technology to become the world's largest workforce of scientist and engineers, (Jakobsson 2007: 16). China is known for its investments on R&D which promotes informal networks with universities, scientific communities, development of human resources and establish strategic partnerships, (Rein 2014: 3). The planned infrastructure for innovation is also a beneficial situation for China with its access to special economic and investment zones and science parks. The Chinese domestic markets incredible size also creates investments in development towards attracting the local markets, (Rein 2014: 3). Chinas has through these steps been trying to promote innovation. The challenges for China to promote innovation are to develop human resources for innovation, where they describe the importance of an improved education system. The increasing number of university students in China is discussed to be a contributor for a shift from labor- intensive to skill-intensive focus towards a more rapid pace of innovation, (OECD 2007: 9). Concluding this great number of university students might not be prepared to meet the domestic needs for a future workforce. If the education system lacks quality it will not be as likely to promote innovation, (Gereffi, Wadhwa, Rissing & Ong 2008: 22).

The foundation of an innovative society is claimed to depend upon human resources. The quality of education is questioned and is argued to be a large obstacle to improve the innovative- oriented society. Reforms has been implemented into the education system with demands for more quality in education and less examination based education, (Riley 2013: 2), (Dello-Iacovo 2009: 242, 243). The results of these implementations of new incentives has not been successful as a result from little support to create new curriculums, no evaluations or enough reasons for teachers to change their way of teaching and the importance of examinations to get accepted to universities, (Zhu 2010: 2), (Dello-Iacovo 2009: 244-246). The examination based teaching is not suitable for a transition towards a high-income society. The education system needs improvement because of its lack of promoting individual creativity, which is to be at the heart of innovation, (Xie, Wei & Li-Hua 2008: 12). Successful students within the education that has experienced high pressure has been evaluated to lack social skills and adaptability, (Dello-Iacovo 2009: 242). Even though education reforms are trying to decrease the examination oriented education system it might be increasing, (Dello-Iacovo 2009: 248). This can be explained by the harsh competition to be able to be accepted into a good university, through times of rapid changes and the results of the one child policy. Innovative thinking, creativity and entrepreneurship should be more encouraged in China, (Xie, Wei & Li-Hua 2008: 13) (OECD 2007: 17). It is of value to promote an innovative culture of risk-taking. To promote this type of culture the environment in the education system needs to be more open. It is the place for sharing information. It is the arena for open communication and a place where students gain access to intellectual freedom and exchanges of ideas, (Xie, Wei & Li-Hua 2008: 13).

Innovation and development has obviously a key role in policies as a tool to keep the Chinese society from risks of social turmoil and economic stagnation. The need for innovation on every level of the Chinese society is clearly stated. This far ahead one might assume that China has a lot of strengths to develop towards a more innovative society.

However the stated obstacles that might hinder innovation is mentioned to be the lack of critical thinking, creativity and the rote learning based education system. One might ask oneself many questions through this summary, if the contemporary education system in China really is harmful for innovativeness? Is the rote learning system where students instead of challenging the knowledge absorbs it something that has to have a negative impact? Ideas are shaped and created through existing knowledgebase, (Ward 2004:174). Individual capacity needs knowledge and experience to have enough resources to produce novel ideas. Is critical thinking and creativity only in our awareness if we learn how to in our education system? These are questions that cannot be taken for granted. Therefore this thesis will question these statements. This through a qualitative research method where people involved in working with innovation in China could provide their view of the topic. Their experience of working with innovation on an international arena and for years in China might contribute to a further understanding of the topic. This will be combined with the knowledge from already existing research from organizational studies and sociological theory of agency and structure by Anthony Giddens. It is of importance to challenge and question the evaluations made by recent research and evaluations of the possibilities for the Chinese society to succeed to become an innovative country.

## **2.2 Research Questions & Purpose**

Research question:

*How do people working with Innovation in China promote innovation in their organization? What are their opinions of how innovation becomes promoted and how it can be hindered in China?*

*How do people working with Innovation in China understand the role of the education system to have an impact on the students' possibilities to become innovative?*

The purpose of this research is to provide a further understanding on the topic of innovation in China through the experiences from people working towards innovative solutions. The questions can offer many perspectives of how innovation in China will be promoted. The results will be questioning the critique of the indigenous innovation system and offer more perspective through experience and understanding. The question will be asked to people in the field within different organizations working towards innovation. Their different backgrounds, experiences and positions within their own organization will offer a broader understanding through different perspectives on the common factor that they work in china and have indirect experience working with people who have their background from the Chinese society. The people working with innovation in China are all also experts in their own field of occupation and they have their meaning created through their different experiences. A qualitative research perspective can offer an insight and offer a broader understanding of this research topic. The results will therefore offer a combination of knowledge from the practical field of innovation and compare these to the evaluations of the flaws of the innovations system in China. The significance of human resources as a foundation for innovative development and the influence of the education system on limiting the human resources regarding

critical thinking and creativity will also be studied. This research will also try to separate the different types of innovation, parts of innovation and how they are promoted or hindered according to experience.

### **2.3 Defining innovation**

Innovation is a word that has been defined in many different ways in scholarly research. How the word has been defined does have an impact on the outcome of results from scholarly research. In this thesis Innovation is broadly defined according to the Oslo manual 1992. Innovation is described to be the implementation of a new product or a significant improved one, (OECD 1992: 46). Innovation does not only involve products but also services, processes, marketing methods, new organization and business practices, and workplace organization. Innovation is the changes that has a significant impact of change. The border between change and an innovative change is indistinct and somewhat problematic to interpret, (Downs & More 1976: 701). The Oslo manual definition was chosen in relation to the many different needs for innovation in China. Innovations are in China needed for producing new techniques for reducing costs of the clean coal sector, improving manufacturing techniques, agricultural solutions. It is of course not only the technological development and the core research that needs innovation. Changes is also needed by new forms of strategies to handle the social issues of the Chinese society, labor, aging population, uneven ratios between the sexes, the social fabric on the countryside and more. Innovation in China is supposed to be the answer to most of the country's problematic issues. This broad definition allows for more literature and research to be relevant for this thesis as it is important to be aware that innovation as a term might not be defined as broadly in the research reviewed.

### **2.4 Typologies of Innovation**

To simplify the diversity of the meaning of innovation this sections will present different types of innovation. These types of innovation are: Products, processes, radical, incremental, technical and administrative ones. This part of the thesis will summarize the concepts, their meaning and research done. The purpose with this section is to provide a very basic overview of the different types of innovations. It is important to be aware of the complexity of the definitions and that they overlap each other. However they are summed here to offer an overview of different types of innovation to provide a development from Kai- Fu Lee's earlier statement that China will only develop innovations that are result driven by the indigenous policy. To divide these typologies offers a further understanding for the characteristics of innovations and how innovation can function.

### **2.5 Technological, technical, process and product innovations**

The innovation of product is the outputs that are beneficent for the client or the customer. A product innovation is a combination of a new technical development of a

product and its introduction on the market, (Gort & Klepper 1982: 630). A new development of a technological product is only an invention until it reaches its introduction on the market, then it becomes an innovation. If the invention reaches the market and becomes an innovation it depends on lots of explanations and theories as information flow, the degree of available producers, value creation, socio- cognitive processes and degrees of uncertainties (Gort & Klepper 1982: 651), (Rindova & Petkova 2007: 217). Both producers and consumer seeks values of expectations of an innovative technological product. The perception of the receivers has an impact on the process for an invention or an inventive idea to become an innovation, (Lyytinen & Rose 2003: 599). Innovations is also defined in relation to an individual, organization or a community. The technological innovations are products and processes used to produce products directly to the work activity of an organization, (Rehfeld, Rennings & Ziegler 1997: 92). The processes of innovations are tools, devices and knowledge that mediate between input and outputs within an industry or organization, (Gopalakrishnan & Damanpour 1997: 18). This occurs when goods and services can be produced with less effort or costs, (Rennings 2000: 322). Technical innovations are implementation of a new product, service operation or production process and serve the purpose to improve performance of the technical system of an organization, (Damanpour & Evan 1984: 394). Process innovations is an implementation of a new product, service operation or production process and serve the purpose to improve performance of the technical system of an organization, (Damanpour & Evan 1984: 394). The technical innovations are resulting from technology and they occur in the technical system of an organization in the work activity. Therefore a product innovation in one sector could become a process innovation in another sector, (Rennings 2000: 322).

## 2.6 Radical and incremental innovations

The radical innovations is signified with producing significant and fundamental changes to a product, industry or organization and departs from the antecedent practices, (Gopalakrishnan & Damanpour 1997: 18). Radical product innovations are different from technological innovations in the way the marketing and control of markets are divided. A technological innovation is only an idea that can develop through access to markets and by capital. Only if the innovation reaches this stage it becomes a radical product innovation, (Markides 2006: 24). The incremental innovation is more marginal in the way the new practices are implemented, (Gopalakrishnan & Damanpour 1997: 18).

Incremental products are products that have been modified, (Abdul 1994: 48), (Garcia & Calantone 2002:123). It is more common for larger already established enterprises or organizations to implement new innovations. The context and structure of an organization influences the adoption and risk-taking of new innovative products depending not only on the size but also on the type of enterprise, leadership, managerial attitudes, distribution of knowledge and organizational structure, (Ettlie, Bridges & O'Keefe 1984: 683), (Dewar & Dutton 1986: 1423, 1424). Incumbent firms tend to not be the producer of radical innovations because of the costs of the risks in an already established industry, value network of investors, customers, suppliers and more (Hill &

Rothaermel 2003 :257, 261). The disruptive innovation is a radical innovation that has reached and disrupted the markets, (Constantinos 2006: 22). For example, radio, cars, cellphones, smartphones, computers and much more. Disruptive innovation can be defined to have a slow development once the innovative product is introduced but with time might lead to a game changer within an industry which often starts off as a low margin business, (Govindarajan & Kopalle 2006: 190). The disruptive innovations are rarely driven by demand they are the results of new pioneers trying to enter the already established markets. They are the outcome that radically changes existing product lines and principles, (Lyytinen & Rose 2003: 560). This paragraph offers insight into how innovation is connected with social connections, behavior and perceptions. It is a value of a new changing product or process that has to be developed and established within an organization.

## **2.7 Organization & Innovation**

The administrative innovations are connected changes to organizational structure, administrative processes and human resources, (Gopalakrishnan & Damanpour 1997: 18), (Melnyk, Ritchie & Calantone 2013: 290). It is related to the work and activity of an organization, outsourcing, and third-party logistics, planning of material requirements or enterprise resources and its management, (Melnyk, Ritchie & Calantone 2013: 290). Administrative innovation occur in the social system of an organization, relationships and interactions within them to accomplish a task. These interactions constitutes rules, roles, procedure of communication and exchange within the organization, (Damanpour & Evan 1984: 394). Therefore will an administrative innovation be related to new ways of interaction, rules, and guidelines for communication by structure and authority. It could also be analyzed through supply chains with a focus on adoption decisions on strategic initiatives, (Melnyk, Ritchie & Calantone 2013: 290). Adoption of an innovation to an organization rely on the administration and the structure and the overall performance of the organization, (Damanpour & Evan 1984: 393). The process of adopting an innovation is evaluated from both economic incentives as costs, risk, evaluated chance of profits and the people in position to invest, external forces and customer demands, (Melnyk, Ritchie & Calantone 2013: 290). Administrative innovations can both adopt a technical innovation and result in more technical innovations because of the changes within an organization which creates a new environment with new opportunities, (Damanpour & Evan 1984: 406). The implementations of an innovation does also depend on education level of administrators, size of the organization, social factors and presence of competition, (Kimberly & Evanisko 1981: 708, 709). (Melnyk, Ritchie & Calantone 2013: 290). Individual, organizational and contextual situations might influence the adoptions of technological innovations more than administrative innovation. Organizational size has been emphasized to be a strong predictor of adoption. This can be explained through their greater ability to be able to afford innovations, (Kimberly & Evanisko 1981: 699, 709).

Organizational learning enhance competitive advantage as well as innovation. Organizational learning is when internal communication between people within an organization communicates about their common experiences, (Jiménez-Jiménez & Sanz-Valle 2011:409). This can lead to developed understandings about the organizations strengths and weaknesses and can influence behavior to improvements. It can also lead to organizational innovations as the implementation of new forms, methods, routines and styles of management within an organization, (Rennings 2000: 322) (Camisón & Villar-López 2014: 2892), This learning process does also create opportunities for new innovative ideas through more insights and can be developed and transform new knowledge, (Jiménez-Jiménez & Sanz-Valle 2011:410). When an organization focuses on the internal learning process it will be developing a step towards innovation and develop actions through the experienced situation which will create change in actions within the organization, (Jiménez-Jiménez & Sanz-Valle 2011:410). Innovations within the organization, as new styles, routines, structures and tools also have a positive effect on developing new innovations in products and services, (Camisón & Villar-López 2014: 2898). An adoption of an innovation to an organization tends to improve and make the organization more effective where the environment within the organization has strong impact on the ability to be able to adapt, (Damanpour & Gopalakrishnan 1998: 4).

Creativity which is related to innovations can be produced by organizations formational operation, (Phan, Zhou & Abrahamson 2010: 181). Creativity should be captured and directed into specific directions for an idea to become an innovation, (Phan, Zhou & Abrahamson 2010: 181). Research has been done on the relationship between determinants to promote innovation within an organization. Communication as mentioned is a powerful tool toward innovative development. It is not only important for the variety among specialist but also internally through internal learning and externally through extra activities outside of the organization where associates can communicate and develop through contact with other contexts than their own. When there is a variety among different specialists the knowledge base becomes broader and will therefore bring a variety and complexity in new ideas, (Damanpour 1991: 558). Coalitions of different professionals in different areas of the organization can create new technical systems and develop the administrative systems. The importance of the right attitude towards innovation is also of importance as access to technical knowledge resources and a large proportion of managers who are responsible and can facilitate innovation, (Damanpour 1991: 558). Innovation needs to be promoted, searched for and should be encouraged by the leadership within an organization. If innovation is promoted by the management and the administrative structure there will be more allowance for an organization to afford innovation through both adoption and development, (Damanpour 1991: 559). The type of leadership is important to have an impact to create an environment at the organization that promotes innovation through the mentioned areas. The transformational leadership has a positive impact on organizations to be more innovative. Role expectations from the leadership will influence behavior and promote employees' creative performance, (Jung, Chow & Wu 2003: 528). The transformational leaders are recognized in the way they personalize the value systems and create a strong organizational culture and a collective identity of the group. This with the purpose to increase motivation to come from within

and not only be based on job performance of completing tasks, (Jung, Chow & Wu 2003: 529). Organizations can be created to promote innovation in the Chinese context. These organizations can be created through clear information and expectations of policy regarding intellectual property and promotions through rewards as patents on inventions, or other career opportunities as welfare packages and internal guanxi e.g. strong inner connections (Rein 2014: 76).

The lack of innovativeness in Chinese history is often explained by the role of their earlier emperors and even though China has a lot of history of repressing innovative behavior there is some key feature of the culture described to give incentives to innovativeness. The philosophy of Confucius has still an impact on Chinese thought and character and how Chinese organizations functions where a strong leadership is of importance (Someren & Someren Wang 2013: 40). This might imply that the Chinese language also carries some expressions that promotes innovation as “If you don’t enter the tiger’s den, how will you get the tiger’s cub?” which promotes risk-taking and “There is no person that has 1,000 good days in a row and no flower that stays red for 100 days” which supports acceptance of failure and “A mountain cannot turn, but a road can’ which supports reversed engineering” (Someren & Someren Wang 2013: 45).

### **3. Theory**

In Sociological research the term innovation has been used to refer to new organizational forms, processes or routines and new products or services, (Hill 2010: 1). How the word innovation has been defined and interpreted in many sociological studies is of a wide variety but could be organized into different steps, (Hill 2010: 2). The different forms are new organizational forms, new organizational processes and new products and services. The amount of literature from sociology of innovations can function as a framework where weaknesses or missing parts could be spotted, (Hill 2010: 2). Through this approach the importance of how social structures influence both process and products of activity of innovation is of value for a further understanding of innovation, (Hill 2010: 3). The impact of social structures on what types of innovations that are created and how the network of people available influence the outcome of innovations to be available for implementation is also important. Not only what is created depends on social structure but also how the new innovation whether it is a product or a new form of organization gets implemented, (Hill 2010: 16). Social structure is of importance in regards to how new innovations develop and how they become used. The Sociological theory of agency and structure by Anthony Giddens are aimed to work as a lens to develop an understanding and interpret the empirical material in this thesis. The theory about structure and agency offers a theoretical and conceptual framework to make the empirical material meaningful. The theory will be used for the purpose to explain the complex relationship between the agents and structure e.g. the individual and the society. The purpose of this research is to provide a further understanding on the topic of innovation in China through the experiences from people involved working towards innovative solutions. The questions can offer many perspectives of how innovation in China will be promoted. The evaluations of the innovation policy in China are pointing out problems with the Chinese education system, that it lacks the capability of providing students with independency, creativity and critical thinking. This thesis will also offer a further understanding of the topic innovation in china through their experiences and how they promote innovation within an organization. Therefore the need for a theoretical framework that focuses on the interplay between structure and agency to help clarifying what different crucial factors promote or hinder an individual to become innovative. The complex relationship of the duality of structure and the outcomes of it enables or hinder action from agents. This theory also offers an overall overview, it is offering a lens of the role of the individual as a reflexive agent which could through space and time develop perception and learn through new social contexts. Since the opening up reform in the late 1970s until now, a lot of social, cultural and economic changes have influenced the Chinese citizens to be reflexive towards new social systems and the structure has changed depending on the creation and recreation of the systems. The question of different factors that might hinder or encourage innovation for the individual is compatible which Anthony Giddens theory where their experiences could be compared and analyzed. The relationship between the agent and the structure is abstract but the awareness of its complex duality is a key feature to understand and see some of the many possible incentives, hinders and possibilities to be innovative. Anthony Giddens theory of structuration involves some basic elements

that first of all need to be explained. This structuration theory is created to fill the gap between the sociological division on ontological stance and epistemology, (what is real and how to capture it). In interpretative sociology Giddens describes human conduct to be more semi-structured on action and meaning and less attention is put on constraints, in opposition to functionalism and structuralism where the structure is constraining human conduct, (Giddens 1984: 3). The importance is to combine both perspectives where the theory does not depend on the experience of the individual actor nor the societal totality but rather the social practices ordered across space and time, (Ibid, 1). Giddens explains that social activities are recursive in the way that could be compared to some of the self-reproducing items in nature but are not necessarily objective rules because of that, (Ibid, 1). To try to simplify this, human social activities are brought into being by a continuing of recreation of activities by people who express themselves to be social actors. The major difference that divides humans from nature is their cognitive skills or knowledgeability that affects action and involvement. With this short introduction of the background towards a further understanding the key concepts of his theory will here be represented.

### **3.1 The agent**

Giddens describes a human to be a purposive agent, (Giddens 1984: 4). A purposive agent means that reasons for activities is elaborated discursively and actions occurs as a durée, as something continuing as a flow of behavior in regards to reflexivity as a process of actions displayed and expectations of others to display. Giddens explains how an agent could be represented through a reflexive monitoring of activity where an actor's motivation and rationalization of action could take its form of unacknowledged and unintended consequences, (Ibid, 6). The rationalization of action is in a way a form of theoretical understanding and what support the activity of the agent. The importance of what actions the agent is aware of or not, is of importance for the divergence of rationalization from the motivation of action. When an agent's motive is the direct reason for action it could break with the routine and changes are made, because the agent does suddenly act upon the unconscious motives instead of the discursive- and practical consciousness. The discursive and practical consciousness describes the individual to be a sociological theorist by its awareness of how to communicate in a specific social context and how to be understood. This discursive and practical consciousness is of importance to be aware of in the rationalization of actions, (Ibid, 43, 44). The concepts of Reflexivity, Discursive- and Practical Consciousness are based upon a combination of Goffman's theory of interaction order and Freud's id, ego and super-ego. The three concepts are developed by Giddens to better explain as social basic security system, discursive and practical consciousness, (Ibid, 44). The be conscious is the reflexive monitoring of behavior by agents where an agent might be focused on one aspect and by that does not pay attention to another aspect by the agents action, which is the practical consciousness. The other form of consciousness of discursive character is the reasons for the action to happen, (Ibid, 45). To be conscious, is that the agent has to be able to explain the actions and the reasons for them. The unconscious is found where actions are not to be explained by words and are connected to one's memory because of its close link to perception,

(Ibid, 47). Perception is explained to depend upon spatial and temporal continuity, which is organized by the agent by filtering of information, (Ibid, 48). The agent demonstrate the rules of a system so the agent could interact and be understood in a meaningful way. Rules are to be defined to be related to meaning and sanctions, there is a purpose to follow the rules and sanctions will be a method to justify the rule. A sanction does not only have to be done by the legal system but also normatively through socialization processes. Social structures cannot exist without agents that are recreating social structures; this is called the duality of the system. An agent could change the structure and make a difference which is connected to the consciousness of actions and speech. The individual must though have an ability to deploy a range of social powers, (Ibid, 15). Even though some agents can make a difference and some agents are more constrained by the structure in the lack of knowledge of rules and resources to do so it does not mean that the agent is not able to do anything, (Ibid, 16). It is through resources power is exercised and through space and time they will be regularized between actors in the context of social interaction, (Ibid, 17). Those agents who are subordinated could influence their superior's action, which is what Giddens call the dialectic of control in social systems.

### **3.2 Structure, system and duality of structure**

By using the concept of structure Giddens want to make a different use of the concept of structure than the functionalist, where structure is external to human action, (Ibid, 17). In a perspective from a post-structuralist approach Giddens finds the notion of structure to be of interest because structure is thought of as an intersection of presence and absence of it (Ibid, 17). These two different interpretations and conceptualizations of structure have to be combined to be understood, and by that be divided to structure and system. On the one hand patterns of social relations in relation to time and space are involved in the reproduction of the structure as it also involves a kind if a virtual order and modes of structuring, (Ibid, 18). Structure could then be equal to rules and resources as properties who are allowing the binding of time and space in social systems. Institutions are a result of something that Giddens call structural principles which are explained to be the most deeply embedded structural properties, (Ibid, 18). Institutions are according to Oxfords dictionary to be defined in two ways; the first is that an institution is an organization which has a particular purpose involved with science, education or a specific profession. The second way to define it is as summaries of principles concerning law. (Link: Oxford dictionary/institution). For example laws are rules from a legal institution, the laws does not exist without agents who reproduces them and creates the punishment of breaking the law which is made conscious to people by the system. At the same time these laws could not exist without social agency and with the right position of power enables agents to change them but at the same time these laws could have an impact on people where they restrict action. Rules are explained by Giddens to have a role of constituting meanings and are very much related with normative sanctions through socialization processes, (Ibid, 21). Structure does not only implicate rules in production and reproduction of social systems, resources is another important aspect involved in an institution, (Ibid, 24, 25). To simplify what Giddens mean is to explain the concept of structure, system and structuration with some examples.

The structure is the outcome of the rules and resources of transformation relations which are organized as properties of a social system, (Ibid, 26). Structure has a function of protecting and guarding society itself. The system is described by Giddens to be the reproduction of relationships between actors who are organized as social practices. The system are to be found in the major institutions, legal constitutions, culture, social constructions as class-stratification or the economy which are maintained through structuration. The duality of structure is the conditions of continuity of structures and is the reproduction of social systems. This means the actors interaction with or within the systems. For example, obeying laws gives laws meaning as well as punishment that are handed out to those who disobey the law. Another example could be religion where rules of the bible in combination with the agents' of church interpretation of the bible only exists through the structuration where the members of the church believe and follow the rules with the threat of punishment in the afterlife if they don't, among other rules. When people act upon these rules there is the outcome of a system, which by agents will be reproduced and becomes a part of the structure. This is once again a simplified example of the duality of agency and structure and their interdependence. Structures does not only enforce but also enables people, depending on their position, to change them



## **4. Methodology**

### **4.1 Methodological approach**

It is important to add experiences from people working with innovation in China to the field of sociology and innovation. A qualitative approach might be of value to gather knowledge which could be connected to experiences. The epistemological standpoint is hermeneutic with the purpose to investigate how people's experiences have influenced interpretations of innovation in China. The people working with Innovation in China have through their experiences been engaged to get an understanding of social life and narratives are of importance to create a further understanding, (Skott 2004: 9). With a qualitative approach the individual can be considered a part of a subject socio- cultural environment where the perceptions of a specific topic are of value, (Backman. 2008: 52). The people's experiences that are interpreted in this thesis are related to the purpose for this study to create research that describes the experiences of how innovation in China is interpreted by different actors through their life- world, experiences and opinions, (Kvale 1997: 54).

The method in this thesis is qualitative and has been conducted through interviews as a tool to gather empirical data. The interviews were conducted by semi-structured interview technique with the purpose to let the interviewees answer the question with their own frame of reference. The questions asked to the interviewees depended on the interviewee in the way they were asked, or in which order they were asked and the interviewer had a guideline to follow. This technique allows for more exploration of emergent themes and ideas. If someone tells a narrative from their own references the interviewee can reveal information that are important for their own position of understanding, (May 1997: 112).The advantage with conducting semi-structured interviews for this thesis is that the research process can be more flexible and open and most importantly more suitable for the interviewee, (Kvale 1997: 82). The importance of using an interview guide is to not hinder the conversation and to avoid missing out on important information. The purpose is to intervene as little as possible where the questions are more of various themes for discussion, where informants can develop responses based on their own reasoning, (Denscombe 2000:135).The interviewees have different backgrounds regarding their work with innovation in China and their differences provides for a broader perspective of the gathered results. Therefore the choices of semi-structured interviews were most suitable for the purpose of this thesis. The interviews were conducted face to face and by telephone depending on the interviewee's possibilities to participate.

### **4.2 Research procedure and cases**

The first step was to contact people involved working with innovation in China. The method used was to find people engaged in innovation at different levels. Scholars, managers and research assistants with a wide range of experience were all suitable for this thesis. The interviewees were contacted by e-mail which contained a short description of the purpose of the thesis.(See Appendix). The information about the thesis and its purpose was followed by an attached document with a stamp provided from Fudan

University which served the purpose to confirm the researcher's role as a student. This email were sent out to people involved in R & D centers, Innovation centers, Research institutions and firms involved with innovation in China. This might have had an impact on the interviewee responses, but the importance to have an understanding about the thesis could help to avoid ambiguities which is more important, (May 1997: 119). The contact information was many times found on web- pages online and where a telephone number was available they were contacted by both email and a telephone call. By sending out around 70 emails and calling 20 different companies, research institutions, R&D centers and more the response rate was very low.

The people that wanted to participate in this research are Research Assistant Lin Na from Innovation center Denmark, involved as a R&D consultant and coordinator. She also has a background working for the British embassy designing environmental policies for China. The next interview conducted were with Maximilian Von Zedwitz who is a professor of strategy and Innovation at Tongji University at Shanghai, HSG University of St. Gallen (Switzerland), Grenoble School of Management (France). Chalmers University of Technology (Sweden), Nyenrode Business School (Netherlands). Maximilian is also a director of GLORAD, the Research Center for Global R&D Management and Reverse Innovation and a program director of The China R&D Executive's Program. The next three interviewees were Eric Langmans who is General Manager at Atlas Copco (Wuxi) Compressor Co., Ltd together with Koen Lemmens who is a product Development Manager supporting the Engineering department. From Atlas Copco Wuxi, Cong Hai Ying who is a Development and Engineering Manager for Portable Energy division also participated. Another interviewee is Charlotte who is a range manager and team- leader at IKEA Product development center in Shanghai. There is also one anonymous interviewee who has 10 years of experience in China working in the R&D sector; more information is not available because of ethical considerations.

The three interviewees from Atlas Copco Wuxi were conducted through a semi-structured group interview. This interview were conducted by a telephone meeting and the interview took its form by one person giving their answer and then ask the others if they did agree or had anything to add, which opened up for a broader perspective on the themes of the question. Some questions were redirected depending on who was the most suitable to give the responses. The result of this interview is represented as one unit combined by three perspectives.

#### **4.3 Ethical considerations**

The transparency requirement has been respected in this research where all of the interviewees were informed of the purpose with the thesis. The self-determination requirement was also respected through the fact that the ones who collaborate in the study has the right to approve to do the interview and also describe how their information should be used, e.g. personal opinions is clearly stated. The anonymous interviewee did agree to do the interview on the basis that the anonymity was guaranteed with the purpose to protect the anonymous interviewee. The autonomy requirement was followed

and the data gathered is only to be used for the purpose of this thesis and nothing else, (Gustafsson et al. 2005: 18). 24

#### **4.4 Methodological discussion**

Given the opportunity to let the interviewee speak from their own perspective and through their understanding in regards to this research topic provides a broader framework of insights. Through the interviewees different positions they might have different experiences that could develop contemporary knowledge about impacts of society for the individual's capability to be innovative rather than just rely on generalized patterns which might give knowledge a sense of direction which is of importance but cannot offer a further depth. With the use of a semi-structured interview academic and personal preconceptions of the topic would not have as a strong impact on the interviewee's responses. If a guide were provided with different questions the responses would be more dependent on the type of questions asked which a semi-structured interview technique avoids. This is an advantage for the results and the strength with conducting interviews is the possibility to be flexible and to adjust questions for the purpose to allow the interviewee to be more descriptive.

The limitation of this method is that it is a complicated process of coding the empirical data. It is a time consuming process which has to be repeated to be able to capture the different themes. Therefore the results are presented from the interviewees perspectives and combined in the analysis section. The opportunity to record the interview is also of advantages, especially because of the style of semi-structured interviews which are based on a conversation that needs the researcher's attention to be able to manage the interview without a fixed guide, (May 1997: 125). The impact on the interviewee is of importance to be aware of but that doesn't mean that the data which is gathered would not be useful because the dialog will always be affected by social circumstances, (May 1997: 115). Even though the results were quite different, similarities in responses made the process of presenting the data in different categories possible. After the transcripts were put together the results of the interpretation were sent out to the interviewees for the purpose of avoiding misconceptions according to language barriers. It is also because of ethical considerations where the interviewees understanding and description is of more value than my interpretation of their interviews. They had the opportunity to clarify and agree on what I as a researcher had interpreted from their descriptions. The material has been processed through a detailed transcription of the information. These transcripts were later on used to organize the information into specific themes and the use of keywords through open coding, (Neuman 2006: 461). This procedure was separately analyzed to be combined and compared to the sum of all the responses by the help of categorization.

The limitation of this research is the limited amount of interviews conducted, because of lack of accessibility which is important to state clearly. The researcher should be aware of his or her accessibility to interviewees that could provide answers for the research question. I would argue that the interviewees for this study has enough information to provide answers to my research questions and that I also avoid premature closure. The

interviewees have different backgrounds, some with experiences in different sectors which is of value for a broader understanding. The combination of interviewees as professor, program director of a R&D education, manager, engineers and R&D consultant and coordinator are all different sectors that the interviewees has been or are involved with. The numbers of interviews conducted must be compared by this consideration in mind. Another limitation for this thesis is the fact that very few of the interviewees were from Chinese R&D centers, science parks, innovation centers and only two of the interviewees are from China. The experiences that the interviewees have in this study are of value for this research. They have a variety of experiences from different fields and some of them have spent many years living in China and one of them has his own research center about innovation. Their knowledge about China is of great value to create a further understanding of the topic. The purpose of this thesis is to create further understanding from peoples' experience in China to add to the ongoing scholarly discussion about the topic of innovation in China.

## **5. Results**

The results are here to be presented by the form of a summary of the interviewees responses. This for the purpose to give the reader a clear understanding of the different interpretations on the variety of interviews which all serve the purpose to broaden the understanding of constraints on the individual to be innovative in China. The result will be summarized in the end of this presentation and further developed through the analysis section. The results are divided into categories where the different actors in China give their narrative according to their experiences of innovation within China but also according to their backgrounds and earlier experiences. The categories are divided as follows: Organization, Market and Policies, intellectual property rights, State owned enterprises (SOEs) and Small- and medium sized enterprises (SMEs) and Education system. All of these sections of themes represent the results from the different interviewees.

### **5.1 Organization**

Organization of people is one aspect that is crucial for innovation. Lin Na describes her role at the Innovation center Denmark to be of importance to organize people into structures. It can be an individual who want to establish a project together with a Chinese planner. At the innovation center they have access to people and help people find a R&D which could be of help or to build up a platform where information could be shared and ideas created that might be transformed and developed. There are also the possibilities to get access to innovation reports which influence people. The strength of this center which is promoting innovation is that it works as a networking- platform where people could get help or advice how to get in contact with the right people at specific key institutes. The people that are employed at this center do all have different areas of experiences working with other sectors such as ICT, health care, clean tech and education. Lin Na has herself her focus on clean tech. The focus in clean tech is to reduce the strain on the environment, as efficient and low energy products among other projects. The importance with a center as a promoter for innovation is that the possibilities increase for knowledge to be shared and combined for people with a common interest. When people with the same interests come together and then creates a place for mutual learning knowledge and ideas develops and might lead to a new way of creating technology. The combination of a platform where people have different areas of expertise and experience could help to create a certain environment of easier access to the specific area of interest. Innovation is promoted by collaboration and cooperation's when there is a "sharing environment or open idea community" which is described to be of great importance. If Innovation is good for economic growth then an industry that supports innovation must be good as well.

Max

Innovation can be promoted in many different ways, the different ways how to promote creativity or promote innovation depends on different personalities and the different stages of innovation. Max explains it as in the early stages there should be a free

environment for ideas to flourish and more creative types should be the people for the job. There must also be someone who can recognize a good idea and someone who can nurture it. Later on there has to be more structure to promote and make something out of the idea towards innovation. Finally in the later steps there has to be people who can plan the budget and do market evaluation to create a plan with a deadline. In these latter steps boundaries are of importance and innovation could sometimes also be promoted by using force and rules. Within a company a team has to be well established, “It would be very damaging if you put a deadline oriented manager into a group with creative persons” (if this is an early-stage innovation team). Max explains it by separating the Research from the Development in R&D, multinational businesses do very often place their research within their headquarters in their home countries and place the development closer to markets, e.g. in China. Max also explains that application of pressure on people could be an incentive for innovation by giving a certain deadline and if the (e.g., an advertising agency) has not completed the task the employee loses the contract which had positive outcome in the advertisement industry. This situation of forced- or deadline driven innovation might be more common in China because of multinational companies setting up the development center there and keep most of their research where the headquarters is.

Eric Langmans, Koen Lemmens and Cong Hai Ying

The organizational structure of promoting creativity among people at Atlas Copco Wuxi is related to the development of their products. The people in this case that are to develop these products are the engineers. The engineering organization is formed by the purpose to have a wide range of engineers that are specialized in specific areas as mechanical, material, design and electronics; it is described to be a “typical engineer organization”. They also have a specialized team to “put the corporation together” with the purpose of increasing the collaboration and together create the next innovative idea. The different steps of the organization starts off with engineers that are specialized to meet the requirements of the market and gathers information from their customers. Then an evaluation of their products is established and the results are brought back to the company. The next step involves technical specification from an engineer to be examined and outlined. The next steps that follow involve the possibilities from the different sectors to meet up with the requirements. “We have the demand and we have to see if we could make that demand comprehensible”. The results from the evaluation and the specific flaws in the certain product are detected and the project moves to a product team with engineers to develop new solutions with aspects of the dimension of performance. “And that’s actually when your innovation starts because they are those engineers are very forced to come up with solutions”. Innovation at Atlas Copco Wuxi are not described to be disruptive innovations but rather to develop a product to increase the prestige, “we don’t really do the research here we are creating new technologies of compression etc. we at Wuxi are being creative with existing technologies”.

The strength of their organization is the close relation to the local market in combination with collaboration and sharing of knowledge between the different sectors of engineers. “I think we have good engineers in China, I think we can find good engineers it has more

to do with mentality". Mentality is explained to be a state of the right attitude that is promoted by the company by training their engineers to develop their individual skills using performance. The environment they want to create for the engineers is strengthened by a test- lab where new ideas about design could be tested. This opens up for the possibility for the engineers to "having the mentality and the spirit to try to always look for something new". To create a stage of mind to be innovative people has to be promoted. The company is in ownership of their own designs which creates the possibility to promote engineers to be more involved and creative and to "bring them out of their boxes, so you bring me something new it's yours, take ownership!" This is described to create a certain spirit within the departments of a drive together with responsibility ", it is what I call to nourishing the plant, we have to give the right water, the right earth so that the seed can grow, and you have to nurture innovation so the seeds can grow".

Anonymous Interviewee

There are many different ways to promote innovation. But there are also many different sorts of innovation. Communication could be one way to increase innovation but it is not always the case. Disruptive innovation seems to come from people that are peculiar or odd, where examples like Steve Jobs and Markus Zuckerberg were mentioned. Another aspect of being innovative could also be to have the beneficial opportunity to stay out of the established system as initially Newton, Bill Gates, Steve Jobs and Einstein. "To be able to think outside the box, you might have to be outside the box". The main point that needs to be clarified is that different types of styles of innovation; as disruptive or system evolution types of innovation, needs different promotions and environments.

In regards to managing people at a company it is important to set up an organizational environment where everybody should have the same opportunities to develop within the company and he believes that it is a smart solution for companies to do business in different countries, as a global strategy. The problem in China that some companies have reported, like high turn-over rates of 30 %, does not apply for the company he is working for; it has to do with how the workplace is organized. A good management model is important to promote people to be innovative and it applies anywhere in the world. By promoting equally and creating an environment where creativity and innovation could be promoted the results will be of great value. It is easy to differentiate oneself from people who does not behave in the same way, looks a little bit different and especially when cultural differences take its tones in a negative way. The importance of these situations is that people are blocked by lack of knowledge of the other culture and the misconceptions of language barriers which easily could turn into prejudiced generalizations. "According to my personal opinion; when people claim to know how 1.3 billion people collectively behave, they are by far qualified for the Noble Prize"

### Charlotte Blomqvist

The organization at the development center is built upon a combination of Swedish and Chinese employees where about 1/3 of the employed are Chinese citizens, the local. The importance to have local knowledge to come up with new innovative ideas in product development, the combination of cultures and experiences is of value. She describes the process of working together to be interesting, to work with people from a different culture. The purpose with the development center is to create new products from the very beginning to the end and use local talents to develop their products. As a start the customer needs is of importance to cover. Therefore specific agents help out to find families and the product development team does a process of home visits to map out different needs of both price and function for products. The factors for innovative ideas to be creative at the development center are that people are working together in teams where product developers work together with the designers, which are described to be of value for the ability to be more creative. Brainstorming is something that is to be used and to promote ideas by the atmosphere that all ideas are valuable. Other important factors are to allocate time for innovative ideas early on, in the beginning so the employees have time to process and develop their idea. From a different aspect an innovative physical environment is to have the material available so that the people could be more aware of them by their presence.

## 5.2 Market demand & Policy implications

Policy towards innovation could have positive effects, supporting innovation in many different ways, especially policies regarding the concerns about the environment. China is promoting policies into specific areas where problems is to be solved. These policies could be a way to solve needs, to put these areas into a strategic level towards the focus of improvement. The R&D input in China is of value because it is increasing every year so a lot of policy implementations could be of value for promoting planned innovation to specific areas where there is a need for change. The investments from China on clean coal- technology are plenty and are meant to promote the use of coal more efficient and reduce the environmental impacts, as coal is still a dominant resource for energy in China. In this sector is the international cooperation described to be very involved, not only domestic experts. This collaboration is of value for everybody involved in the system. From the interest of reducing damages globally, where every country could develop and progress, while at the same time leave room for individual researchers to develop.

Then there is the aspect of the policy by itself to be a certain kind of innovation, people in charge of policy making or designing also create a new way of organizing a certain structure. “So when you ask me if this policy is important, I say definitely yes”- Lin Na. Policy makers need to learn from other countries to be more open to other solutions and by that support different funding and let the experts as Centers and researcher’s to do their work. The role of the policies should be to offer economic support to projects which otherwise would not be able to develop. This is compared to companies in Silicon Valley which enters “death valley” when the initial research has been done but there is too

much risk at stage to further invest money into a project. Another positive aspect of involving policy in innovation projects is to support NGOs to make improvements and evaluations of different aspects of a policy, without the funding they cannot be helpful either. The innovation policy in China is described to still be focused on needs assessments and problem solving instead of a focus on the idea to sell and export innovations, which is explained by the country as a whole are not really there yet. Policy could hinder innovation in China because it does not cover every aspect of innovation to be created, because of the focus of the law on specific areas, "both the policy support and resource are centralized. And in many cases the policy is top-down".

Another aspect of importance according to Max is that many industries still have a large beneficial use of adapting to the market expansion. The timing for promoting R&D with the purpose to come up with new innovations is not suitable for all companies. China is described to be in a current situation of market expansion. The examples of the automobile sector are being used to explain how the situation of the market has an impact of innovation to be promoted or not. Only 10% of the population in China has a car which means that it is more beneficial to focus on to saturate the market first instead of developing new cars. Industries must be able to focus on what is most beneficial for their situation on the market. For sectors as the automobile it is not beneficial to invest a lot of money into the R&D but to focus more on sales and marketing. The timing to invest in R&D is not suitable for firms in China when the markets expand with 10 % annually, when the timing is right investments in R&D is more suitable in a replacement- market where new products has to replace the old. The incentives of R&D that the government promotes is obsolete, "It is like pushing a rope, have you ever pushed a rope? You can push as hard as you want, it is not necessarily moving forward at all".

The development is still in movement and the tactic to be more innovative is planned from a top down direction which is described as "there is a long time between there is a decision taken and long time before it comes down". The leadership is there and the implementations from the government are available for people but "a lot of people is not there yet"- Lin Na .These are the personal opinions through their own experiences but even though there are doubts in specific areas there is a positive belief on China to become more innovative. The global market is huge and most international companies are at the frontline, so the Chinese companies have to step up and move out from the focus of the domestic market and develop to compete. Charlotte describes the market to be a great driver for innovation. She describes that the most important thing for creating innovation is to know what is the costumer value, "people do not want a product just because it is new but they want a product that could fulfill their needs". Eric Langmans, Koen Lemmens and Cong Hai Ying all agree that the process of being innovative is driven a lot by the market forces. The demand from the market is the drive for the company and innovative improvements is a must, "if you don't innovate you will end up to be somewhere in the backyard, in the back of the line". In the early stages of the company the responsibility to design and develop the different products were outside of their responsibilities and their role was to sell the products but as the company got more and more to shape and develop their products the more success for innovative ideas. The

challenge for the company is to bring the right solution to the market together with the competence of the right people.

Atlas Copco could also benefit from the national policies of innovation in regards to their development of more energy efficient technology which results in that their customers get a tax reduction. “So it supports innovation as such, it supports us as a company, it supports our sustainability as to be seen as a responsible manufacturer”. This is also described to be a positive incentive for them to gather more customers from the market as a form of sustainable marketing. The reflections from the anonymous interviewee are that one of the most important factors for innovation to flourish is to let private investors play a larger role. When public funding is used to promote innovation the risk is that the people who are in charge of the capital do not recognize an idea. Another implication is described to be that political ethics is taken into account, which might hinder innovative ideas to develop. People must have the incentives to be allowed to become rich to promote innovation, which he believes is the situation in China, but the venture capitalists must have the same opportunity to get rich, they are the ones that should invest in projects. The implication when politicians are the ones that offers economic support to companies, anywhere in the world, is that there is a great chance that they will contribute in a way that will have a negative impact because in a sense they do not have the similar situation of risk involvement that are important to investments “when there is enough at stake people will listen more clearly”.

### **5.3 Intellectual property rights**

One of the problems with innovation in China is the lack of proper intellectual property rights; it is not beneficial for someone to be creative when your idea is not protected. As long as this is lacking there is no benefits for anyone to file for a patent. It has developed to a difficult situation to manage and Max compares this situation to the prisoner’s dilemma, the lack of a consensus to follow the legal system. If there is a consensus on respecting intellectual property rights it would be more beneficial for the society as a whole. The example of prisoner’s dilemma could explain the reasoning in cheating the system where a position of following the rules leaves you behind because someone else will do it and then benefit from it, “it is benefiting for people to cheat the rules so society suffers and everybody else suffers but there is the personal benefits,”. This is a serious problem that must be revised otherwise it is a great risk that it will be harmful for society on a larger scale.

The difficulty to make an idea to a product is because of the existing flaws in legal institutions. Innovation in China is not lacking because of “by individuals mental genetic, it is not a matter of race or something like that, it is a matter of the environment in many ways”. The anonymous interviewee also sympathizes with an important aspect of promoting innovation is the complete protection of Intellectual property agreements where he cites the manager for Huawei. “To make startups, and their new ideas fly, you have to have completely protected intellectual property rights”. An inventor has to be

able to protect and make a living of the invention. Without a proper legal system there would be a lot of problems for people to invest in their outcomes of new creative ideas.

#### **5.4 State owned enterprises (SOEs) and Small and medium sized enterprises (SMEs)**

The anonymous interviewee describes another environmental aspect of promoting innovation that is of importance, to not leave start-ups companies out. The difficulties for this group of possible inventors in the Chinese society are pretty rough when there is a lot of focus on SOEs and public projects of science. Companies do need financial support when they want to develop new types of products. This problem is also to be found in Europe, when the amounts of start- ups are compared to the same situation in the United States. Lin Na describes the situation in China with that most of the larger funding's goes to big state-owned companies that have the privileges to run their R&D which allows them to go further. The problem is that the situation for SMEs is more problematic in China. "I think that they probable have to be very outstanding to survive in this kind of rough environment".

To foster innovation requires both public and private funding so projects or ideas have a larger chance to become a new innovation. Another environmental aspect of promoting innovation that is of importance is to not leave start-up companies out. The Chinese Government has the strength to promote innovation where the reasons are based on the combination of that there are well educated, good connections with the academic world, plans as well as private companies. They also have their SOEs and the 5 year plans. This combination of factors enables communication and knowledge within the political system. The most important factor that the government should focus on is to create the right mechanism s for promoting an innovative environment for startups.

#### **5.5 Education system**

The education system in China is by Max described to be of negative impact on the student's ability to be more independent. Max describes his experiences as a professor in China and he describes the differences between Chinese students and Chinese students that have been abroad. His Chinese students who have not been studying overseas are more in need of specific directions for how to conduct research projects, he does not experience them to be as concerned about the main goal but rather on getting directions on how to get there. He draws the connection with Confucian culture where the teacher is hierarchically superior to the student. Max sympathizes with the importance of sharing information between partners which will create a bond of trust that only could increase quality of the outcome. He also raises a warning about some of his Chinese Ph. D students that are "very much stuck in their own ways" because of the streamlining of information in the education system. Students after a few years overseas is experienced to be more mature and developed and have a more individual personality. Streamlining of society makes it difficult for people to stick out and to be different which might be of negative impact on society as a whole to be more creative. Max does not claim that this might hinder innovation in China because of people's ability to avoid shaping or adapting to existing rules. He believes that innovation is possible in China either way and uses the

examples of artists in China who have been creative and innovative in how to create art. “There are certain people everywhere, also in China, who can abrupt the society more easily, look at artists in China they are great inventors”. The anonymous interviewee does not agree that China’s education system is a hinder of creativity. The students graduating have a lot of knowledge in their baggage to be of value for future creativity. There is also the person who has the experiences of studying- or has worked a few years abroad “those people are very welcomed where another type of intellectual capital is to capture”.

What the main point is about is that through the development since the economic reform the government has opened up step by step. The micro blogs in China as Sina Weibo are an interesting place to see discussions where critical thinking and questioning the Chinese society takes place. This might be seen as a trend towards a more open environment for people to express opinions. People in China are allowed to be individual enough to have their own opinion about issues as long as it does not coordinate into a political movement. The examples of many great Chinese artists are mentioned and the movie industry where there is collaboration with Hollywood and so on. Companies as Huawei, and Tencent who offers online services to people as QQ and what’s app are increasing their position to be a global player. *“There is a lot of creativity going on in China?”* Charlotte describes that there is a cultural difference between her local- and the Swedish employees but she prefers to generalize very broad about it. When she talks about cultural differences she describes one aspect of raising children as one example. There is a consensus in Sweden that children should be allowed to play when they grow up and “Compared to China the climate is quite different”. The climate in China for children are described to be more based on the ability to succeed and parents are encouraging their children to seek for an education or strategy to find a job which could support them rather than let them focus on their personal interests.

## **5.6 Summary of the results**

The interviewees do promote innovation at their own organizations through different methods. Access to people and resources is important for innovative development. Shared information increases the possibilities for innovation where a platform is of value for people to meet, discuss and exchange ideas and reach mutual learning. A space for communication for innovative ideas to flourish might be a great resource for some people but some might be successful without sharing ideas and thought with other people. If someone already has a developed idea or product this area of communication might bring opportunities of meeting people who can help promote the innovation forward. The importance of communication and networking is important for an innovative idea or product to be able to come in contact with people in the right position to develop or finance the idea. Another important aspect of organizations is how it is structured. The organization should set up an environment where everybody will have the same opportunities to develop. There should be an arena for equal treatment of opportunities for the employees and origin, nationality and gender related discrimination should be acknowledged. This is especially important for organizations with a global strategy. Therefore it is a good investment to promote an environment that is open and accepted and deals with issues as cultural misconceptions, language barriers and other differences that can create a divided workforce. It is easy to differentiate oneself from people who does not behave in the same way, looks a little bit different and especially when cultural differences take its tones in a negative way. The importance of these situations is that people are blocked by lack of knowledge of the other culture and the misconceptions of language barriers which easily could turn into prejudiced generalizations. Both global and local knowledge is of importance to capture. If innovation is the goal, the way there needs to be divided into different steps and people with the right capabilities. In the beginning of the process of innovation within an organization the creative types of people do their part. They might have market research available of consumer needs or wishes about products as a guide. The creative team needs to be specialized in their area of field. Engineers with different interests and experiences are of value for innovative ideas. The many areas of expertise available can easily predict if an innovative idea is going to be manageable to create. In the second step there needs to be someone in place to be able to recognize a good idea and can nurture it. The organization can also increase the chances for innovation to happen by creating a culture of the right values. This can be done by individual training for development of individual skills. This can be implemented by an open space in a lab where engineers can test out new ideas on their own as well as in a team. Individual promotions as well as collective promotions within an organization can also promote a culture toward innovativeness. The third step should involve someone who can plan the budget, do a markets evaluation and create a business plan. If the right people with capabilities have these positions innovation might be developed. Innovation does only become an innovation when it reaches the markets. If the wrong people are in place a great innovative idea might never be able to be developed. The organization of employees is therefore of relevance for the level of success.

To summarize the results and provide an answer for the research question is that the possibilities to become innovative depends on the right type of environment in different stages. The different themes could be summarized into a framework that should contain different arenas where innovation could flourish. These arenas are research centers, scientific parks and so on. These arenas provide the opportunity for people engaged in the same interests to meet across borders. Communication is of importance for innovation to flourish and within China there are already many arenas to provide individuals with the right environment. The organizational structure within organizations is also of importance to promote innovation. To promote an organizational structure it is important to create the right types of teams in different aspects of time as Atlas Copco engineer organization or Max's example of creative personalities and force. Opportunities to be successful should be provided in an equal environment where the difficulties of cultural differences should be handled by the management to avoid high turnover rates and leaking information and create an innovative environment. The importance of local knowledge is an important resource, because a variety of different people and different sectors ability to communicate together is a strength as well. Equality and the same opportunities to be promoted and to take personal responsibility to ownership increase the opportunities for people to be innovative. Policy could promote specific types of innovation and are important for society as a whole, as the example Li Na has experience of in clean technology which focuses on reducing the environmental impacts of the coal industry. In those situations policy is providing the opportunity for companies to get economic benefits for developing more environmentally friendly innovation and it is also a topic for the global community where the impacts of environmental damages not stay inside boarders but affect everyone, which promotes an international collaboration.

Policy could also be less efficient for companies in China where a market expansion still is relevant for many companies where businesses would not make a profit to innovate. Market forces play a big role in innovative development where the incentives of profit are of value for the companies and if it's not beneficial enough to innovate that could be of hinder. Policies for innovation in China are top- down and support and resources are centralized and it is a tough environment for startups. This is a situation where innovation might be hindered by external factors because a lot of innovative ideas might not be financed. The Government in China is described to have good connections with the academic world and with companies but the problematic situation to handle is to create the right mechanisms to promote an environment for startups and let venture capitalists play a larger role in investments. By that economic support for innovation could be contributed through a broader scale of investors. Innovation would not then be hindered for the individual within society if there is more opportunity to get economic support. The protection of intellectual property right is the factor that hinders innovation to happen because of the lack of legal protection. It is not beneficial for SMEs and venture capitalists to invest in an idea innovation will be hindered in areas that are outside the national policies. The citizens of China needs an environment where there is enough incentives to be innovative. It is a complex situation which already is described to be on its way forwards by governmental support and arenas for innovation to flourish. The

Chinese individual's possibility to be innovative is based on access to support, communication, incentives and profitability. If there is a lack of incentives the individual will be hindered by society and structural constraints which only will fall back on China's development to become a high income society. Even though the hindrances for the individual within the Chinese society is experienced to be hindered through several factors innovation is already to be found within China, national companies and artists are mentioned.

According to the results there is a difference among students that have been educated within China and students that have been studying abroad. The education system is claimed to be damaging for the students' possibility to become independent. The Chinese education system is described to be based on rules and instructions which creates students that focus on directions rather than curiosity. Parent's involvement in the children's choice of education system is also an issue that might prevent individuals to develop their personal interests and rather secure their future position in the rapid development in China. This creates students with a lot of knowledge but with a lack of independence and creativity. This is described to be a difference between the outcomes of the western- and Chinese academic students. Even though the education system might hinder the development of independency and creativity there will always be people disobeying the rules and have rebellious personalities. The education system is not overall a strong enough institution to streamline people into the same thoughts and values even though it is argued to have a negative impact on student's behavior. The students from the Chinese education system that has studied abroad are mentioned to be a great resource for people working with innovation in China. This implies that students that have been abroad only for a few years develop skills of more independency, creative thinking and creativity in a fast pace. Even though the current education system in China prevents individual creativity, it might not be a hindering factor in the long run because the ability of people to adapt to changes is rapid. A combination of the two is of great value where ideas need a lot of knowledge to become developed.

## 6. Analysis

Through the summary of the results Anthony Giddens theory of Structure and Agency becomes useful as an analyzing tool. All of the interviewees described areas, organizational structures, the right connections, policies and more to create and give incentives for innovation. The interviewees describe their experiences of how innovation could be constrained in the social structure both in China but also generally. The different types of structural constraints are divided into themes in this section as well as to clarify what kind of constraints and possibilities the different parts of the result offers. In the introduction of this thesis the discussion in social media and the evaluations of the indigenous policy were criticizing the Chinese lack of capability to be creative and think critical. This because of the education system of the examination based type and the cultural influences of Confucius would hinder the possibilities of innovation. The results of this thesis has given enough information to understand that this is not really a large obstacle and that innovation can be nourished in the right environment. If there is enough incentives and guidelines for innovation to be created the actions and thoughts of people will change. People are therefore not stuck mentally in a social structure but can change the structure or adapt to a new environment. Therefore Gidden's theory is relevant for this analysis.

In regards to the sections of the result this paragraph will start to describe the organizational order as an important factor for an individual to be innovative. The organization of rules and resources in the different sections of creating innovation is described to be strengthened by communication between people with similar interest, so there could be a development from ideas into a product or outcome. This implies that the agent has to be in position to have access to these institutions as an employed. In the different areas there is a culture (a system of rules) of the company that must be learned, this environment of values is offered to the agent, when to be aware and adjust to the new environment. An interesting aspect of the organization is that it in different ways constraints and enables the agent by rules and at the same time increases the possibility to be innovative by offering resources. When the agent adapts to the policy of the company or the cultural values from it the knowledge-ability has increased and the agent could use his resources and have an impact on the environment, the duality of social control. There is a constrained environment for the agent but at the same time it is a possibility for the agent to develop and to improve and be more innovative. The agent is described in one section to be valuable when the right spirit is there, which could indicate that the right practical consciousness and a knowledge-ability of the structure is created. Innovation is described to be of importance to nurture, to provide the right environment and the right incentives for the agent. There is one aspect of organization to be of value for the individual of being innovative that is it depends on what kind of innovation that are expected to be created. As mentioned in the result section, disruptive innovation that changes the situation for most people, like the product of the smartphone seemed to come from people who are somewhat thinking outside the box which were related to the thought of, being outside the box. This might be the reason for innovative ideas to flourish for an agent when the rules to follow are few and the more open environment to

develop within. The practical and discursive consciousness might not be affected in the same amount and a more rebellious personality of the agent could develop to a disruptive idea. The organizational structure both enables and hinders innovation through the duality of the structure. The values within the organization have an impact on the practical and discursive consciousness on what type of innovation that is supposed to be creative.

The problems of the high turn-over rates in China for some companies could be managed by equal opportunities for everyone who is hired; therefore social inabilities to communicate with a lack of the knowledge-ability about rules, as in this case social rules and ability to be understood might create a situation of unequal treatment. This might result in that key persons leave companies and innovation might be hindered by the agent's differences in the way he communicates to be understood by others. At the same time these key persons might leak important information which might have innovation to flourish somewhere else. Social structures are built upon communication and the expectations of a mutual understanding in the recursive social activities and behavior. The challenge is here for the managers to be aware of that their role as an agent in the social structure, built upon their discursive and practical consciousness in the same way as the hired agent and the responsibility of managing an organization must be more aware of his or hers misconceptions. Then there is a dialectic control established where the hired agent of another discursive consciousness have an indirect impact of the managers ability to be more acceptant of differences and a manager who has the power of resources might have an impact of a change patterns of behavior. The duality of structure is the conditions of continuity of structures and is the reproduction of social systems.

Another aspect of what kind of innovation that is promoted by policies is that China focuses on certain sectors and clusters, where it is a top down approach to create solutions and improvements in chosen areas of political interests. In the results the focus is to establish a structure where people could develop their ideas and by their discursive and practical consciousness become a part of a structuration in a combination with what Lin Na called the international society. By using the expression of an international society in her way of describing the word is to her conception something that is relevant for the communication from different agents towards a global interest of reducing the constraints on the environment. The structure has an impact for the agent's ability to be innovative in certain ways, which are affected by the social control. This is according to my interpretation of Giddens structuration theory an agency of structure that has evolved through time and space and has come to create new rules of impact on society and new patterns of consciousness and policy making that has evolved through that consciousness. Lin Na describes the process of policy making to learn from other countries which is to create a system of laws, to push for a change or put it in motion, to create a discursive – and a practical consciousness that through rationalization of actions becomes the change towards a new structure that people could act and react upon.

Max is critical to this kind of enforcement to change, where he uses the expression “you cannot push a rope forwards”, it might be moving but not to be for sure in the right

direction. The implication of creating a new policy to promote a certain discursive consciousness is that it takes a lot of time and people have different abilities to be able to adapt and be in a position where it is beneficial for them and their situation. Time and space dimension could here be of value to interpret the complications with making policies to be adapted for a large area of agents in a time of rapid development.. Market expansion rather than a replacement market could also be structural constraints towards specific sectors in regards to innovation where the discursive and practical consciousness to the companies as an institution of profit that are of importance to keep the organization running. For the sectors where a market replacement is more of value for profit for the company's ability to stand in the frontline, innovation might be more beneficial, so the structure of the market demands and ability to create new demands is definitely a social structure that enables and constrains innovation to be happening. The demand or the need of future customers is described to be of value for both Atlas Copco and IKEA. In their institutions specific agents are described to do a market investigation where social needs is to be captured. The reproduction or recreation of people's values and needs are highly relevant as a discursive- and practical- consciousness for the intuitions. As their marketing experts are of social theorist character with the purpose to improve the capability of the institution (development centers) as a whole. For the individual here to be a hinder of a cultural constraint is not according to some of the interviewees the most hindering factor. From the individuals point of view innovation is mostly enabled by belonging to a sector where there is an organized structure of rules of how to be innovative through existing resources of agents, agency and structure.

The lack of enabling risk capitalists is explained to be of importance for future innovation. The anonymous interviewee explained that people need incentives to get rich, even so the risk capitalist that are an important part of investing in innovative ideas for the outcome of economical profits. The need of a structural change that would enable risk capitalists role as an investor is here described to be of value for the whole system in itself. As mentioned already, economy is a part of the system, to be created of agents to reproduce social actions into the structure. Money is a social construction which is based on people's faith and acceptance of it. So by the possibility to increase economic profit for the agents, a more innovative structure is established. The law of intellectual property right is another important factor where innovative ideas are explained to be of hinder for the individual. To put this in perspective of structural constraints is the lack of a legitimized view from society which Max explained comparing it to a prisoner's dilemma, where he actually used the words; rules to be cheated. Here is an interesting aspect of the duality of structure, where Max's argument goes to the possibility for one individual to benefit from cheating the system but at the same time create this discursive and practical consciousness for the individual to not put an effort into creating something new, to make a patent, because that will not be beneficial as someone else might steel and copy the idea. The words Max used for society as a whole was that there is a need for a consensus and acceptance to follow the rules and not to steel resources from other individuals. The system of intellectual property rights seems to lack consensus, which shapes the values of rules on a normative level as well. The anonymous interviewee also

touches upon the topic and explains that this is a problem for the domestic companies in China where protection is lacking for them to be able to protect their possible innovations. The agents within the structure have a problem with the system which makes the ability to create innovative ideas hindered by lack of protection.

Education as an institution within the system is designed to educate people to follow rules and the use of resources. The education system has the purpose of agents within the institution that has access to resources and power over the other agents (the students). The rules and resources are according to Max to be of hinder for the student in the system to be independent. It is a structural constraint that shapes the individual to adapt to rules which is reinforced by the teachers. The cultural aspect of this institution does Max believe comes from Confucian values where there is a hierarchical difference between the student and the teacher. The student as an agent he described to be hindered to become more creative. The streamlining is access to information of value for discursive- and practical consciousness that has an impact of how agents by this consciousness are able to reproduce rules of society by their actions in the institution of education. A recurrent theme from the interviewees were the difference of the agents as students or employees who has spent time in another country, described to be more mature or open to changes and flexibility, rules, system and structure. Discursive and practical consciousness might here be learned by these agents who could use their sociological knowledge's about social systems to adjust to different social systems. The childhood for many Chinese children are different according to Charlottes experience, where children are not in the same amount allowed to play and are early on told by their parents what to do and what to study, and personal interest is not valued as much as success and the future ability to find a job, which might constrain individual creativity. Even though many different approaches and angles of the constraint for agents to be creative, the differences between Chinese agents who has spent some time abroad or not is clear for the most interviewees which might imply human ability to develop their discursive and practical consciousness and adapt to new rules. The agent is through many different institutions enabled and constrained to become more or less innovative.

## **7. Concluding Discussion**

The purpose of this research to provide a further understanding on the topic of innovation in China through the experiences from people working towards innovative solutions has been successful. The results of the research questions has been analyzed through the sociological lens of structuration theory. The results and the analysis explains how the education system doesn't necessarily hinder the ability to become innovative. The right organization can foster innovativeness where the organizational structure is promoting that type of social behavior and thinking. The important conclusion of this study is the low impact the Chinese education system was described to have on possibilities for the Chinese people to become innovative. But the education system in China was criticized to be harmful for a development towards an innovative society, (Dello-Iacovo 2009: 242) (Xie, Wei & Li-Hua 2008: 12). Even though a reform was implemented the examination based teaching continues, (Zhu 2010: 2), (Dello-Iacovo 2008: 244-246). The examination based system do not promote individual creativity, which is to be at the heart of innovation, (Xie, Wei & Li-Hua 2008: 12). Successful students within education that have experienced high pressure have been evaluated to lack social skills and adaptability, (Dello-Iacovo 2009: 242). Research has also shown that children in China were raised to be more modest, were given more protection and directives, (Wu, Robinson, Yang, Hart, Olsen, Porter, & Wu 2002: 488). Which can be interpreted through the effects of changes in society and as a result of the one child policy. The one child is the supporter of two parents and four grandparents which will have an impact on parents to be very involved in the educational path of the youth. To become accepted into a good university the students must have good results on their examinations and as the competition to get in is fierce it is not really that weird that many teachers continues with their methods. Research has also shown that there is a desire for a greater autonomy, independence and freedom to reject and refuse to be obedient to authority, (Helwig, Arnold, Tan & Boyd 2003: 794, 795). (Lau, Lew, Hau, Cheung & Berndt, 1990: 666). Which might explain the fast adaption towards more independent thinking and creativeness when studying abroad. The results agree to these statements too. The students in this research were described to be streamlined and focused on directions from the professors. All of the interviewees could tell a difference between the students that had spent a few years overseas and those that had not. The students that had studied abroad were more independent and more creative and often described as a very valuable source in that they had a lot of knowledge and skills. The combined resources of knowledge and increased capacity to use the knowledge independently was valued highly from the interviewees. China has expanded their university education and their investments in science and technology to become the world's largest workforce of scientist and engineers, (Jakobsson 2007: 1). This can be very positive for the development of more innovations. Especially if innovation can be nurtured through different types of organizations. It would of course be valuable if the education system would promote independency and creativity rather than the contemporary examination based root learning system. However, the effects of social policies and the demands from the universities to get accepted are not likely to change in the near future.

For many industries in the Chinese market there is not enough incentives yet to develop innovations. Many markets in China is not yet saturated and the focus from R&D goes to sales and marketing instead of new innovations. When the markets are saturated there will be a need to become innovative but as long as there is profits to be made from already established products, services there is no incentives to put a lot of money to make something new. China is investing a lot of money in R&D for the purpose to promote innovation but it is not necessary that these investments really goes to that purpose. R&D is more suitable in a replacement- market where new products has to replace the old. The Chinese companies that has moved towards the global market are the ones that have to be innovative to be successful. The market is a great driver of innovations because it creates a lot of incentives for it to happen. Therefore innovation in China will not be flourishing until the markets within the nation is saturated and there is enough demands for change. It makes a lot of sense when the Chinese market has so many consumers and has almost a third of the world population. The problem is that innovation is needed before that. This problem has created focus on specific areas that are covered within the national indigenous innovation policy. Public policy is trying to create incentives to create innovations, to hinder and develop innovations before markets demands it because of the rapid need of these. The last decades of rapid development has caused problems not only regarding socioeconomic issues but also the increasing growth of environmental problems and pollution, (Ernst 2011: 3), (Feenstra & Wei 2010:432), (Jakobson 2007: 4). China has also expanded their university education and their investments in science and technology to become the world's largest workforce of scientist and engineers, (Jakobsson 2007: 16). China is known for its investments in R&D which promotes informal networks with universities, scientific communities, development of human resources and establishment of strategic partnerships, (Rein 2014: 3) (Altenburg, Schmitz & Stamm 2008: 326, 338), (Hu & Mathews 2008: 1466, 1469), (Huang et al. 2004: 377). All of these areas are funded within the national innovation policy. The infrastructure is in place in China for innovation to develop. The organizational structure within these is of value for how well people's skills and ideas are valued, captured and developed. One of the major problems with innovation in China is the lack of protected intellectual property rights. It is not and will not be beneficial for someone to be creative when the idea is not protected. There has to be more protection for individuals to have the incentives to be innovative. If there is a consensus on respecting intellectual property rights it would be more beneficial for the society as a whole.

The right structure of an organization is according to the results a good way of nurturing innovation. Creativity which is related to innovations can be produced by organizations formational operation, (Phan, Zhou & Abrahamson 2010: 181). Access to people and resources is important for innovative development. Shared information increases the possibilities for innovation where a platform is of value for people to meet discuss and exchange ideas and reach mutual learning. Organizational learning enhances competitive advantage as well as innovation. Organizational learning is when internal communication between people within an organization communicates about their common experiences, (Jiménez-Jiménez & Sanz-Valle 2011:409). If someone already has a developed idea or

product this area of communication might bring opportunities of meeting people who can help promote the innovation forward. The organization should set up an environment where everybody will have the same opportunities to develop. There should be an arena for equal treatment of opportunities for the employees. This is especially important for organizations with a global strategy. Both global and local knowledge is of importance to capture. If innovation is the goal, the way there needs to be divided into different steps and people with the right capabilities. A variety among different specialists makes the knowledge base become broader and will therefore bring a variety and complexity of new ideas, (Damanpour 1991: 558). Role expectations from the leadership will influence behavior and produce more creative performance among employees, (Jung, Chow & Wu 2003: 528). In the beginning of the process of innovation within an organization the creative types of people do their part. Engineers with different interests and experiences are of value for innovative ideas. The many areas of expertise available can predict if an innovative idea is going to be manageable to create. In the second step there needs to be someone in place to be able to recognize a good idea and can nurture it. These organizations can be created through clear information and expectations of IP policy and promotions through rewards as patents on inventions, (Rein 2014: 76). The organization can also increase the chances for innovation to happen by creating a culture of the right values. This can be done by individual training for development of individual skills. The importance of the right attitude towards innovation is also of importance as access to technical knowledge resources and a large proportion of managers who are responsible and can facilitate innovation, (Damanpour 1991: 558). Innovation needs to be promoted, searched for and should be encouraged by the leadership. This can be implemented by an open space in a lab where engineers can test out new ideas on their own as well as in a team. Individual promotions as well as collective promotions within an organization can also promote a culture toward innovativeness. The third step should involve someone who can plan the budget, do a market evaluation and create a business plan. If the right people with great capabilities have these positions innovation might be developed. Innovation does only become an innovation when it reaches the markets. If the wrong people are in place a great innovative idea might never be able to be developed. The organization of employees is therefore of relevance for the level of success. The philosophy of Confucius has still an impact on Chinese thought and character and how Chinese organizations function where a strong leadership is of importance (Someren & Someren Wang 2013: 40). If all the steps above are implemented within an organization the leadership and routines are well established to create an arena to promote innovation.

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## **Appendix**

### **Information provided**

The purpose with this interview is to gather experience and interpretation from peoples own perspectives. The result from this study won't be used to generalize or claim a certain truth but rather to create a further understanding and a broader perspective from people with knowledge and experience about innovation in China. It will also try to create a framework for what factors that is crucial for a creative climate. My thesis will have a qualitative focus where experiences and values from people who are actually working with innovation in China to tell their story.

Innovation a definition used for my thesis: According to Oxfords dictionary Innovation is defined as crucial for an organization to continuing of success, ([Link: Dictionary](#)). This definition needs to be further explained but the essence is obvious. Innovation is crucial for an organization to be successful wheatear the organization is a business or a government. The more developed definition of Innovation is clearly stated in the Oslo manual 1992. Innovation is described to be the implementation of a new product or a significant improved one, (OECD 1992: 46). Innovation does not only involve products but also goods, service, a process, marketing method, new organization business practice, and workplace organizational.

### **Interview guide**

These questions are similar to the one being used for the interviews. The questions were depending on the interviewee's workplace and depending on the conversation carried out. This guide has not been used in the research process but should work as a guide on what type of questions that were carried out.

### **Interview Questions**

Current occupation?

Experiences working with Innovation in China?

Experiences from working with innovation overall?

How does your workplace promote innovation?

According to your experiences in China have you experienced innovation being hindered?

According to your overall working experience in China how do you perceive the different factors that promotes or hinders innovation?

Other aspects that might influence the individual to become more or less innovative?

Is a planned Innovation policy something that might increase or encourage innovation for your workplace?

The education system in China is that something that can have effect on the people's capability to become innovative or encourages innovation?