sustainability

MDPI

Editorial

Open Innovation in Value Chain for Sustainability of Firms

JinHyo Joseph Yun [1,*] and Tan Yigitcanlar [2]

[1] Daegu Gyeongbuk Institute of Science and Technology (DGIST), 333 Techno Jungang Daero, Hyeonpung-Myeon, Dalseong-Gun, Daegu 711-873, Korea
[2] School of Civil Engineering and Built Environment, Queensland University of Technology (QUT), 2 George Street, Brisbane, QLD 4001, Australia; tan.yigitcanlar@qut.edu.au
* Correspondence: jhyun@dgist.ac.kr; Tel.: +82-10-6697-8355

Academic Editor: Marc A. Rosen
Received: 28 April 2017; Accepted: 29 April 2017; Published: 12 May 2017

Abstract: This piece serves as the guest editorial of the Special Issue on the 'Open Innovation in Value Chain for Sustainability of Firms'. Firstly, this editorial piece asks whether it is possible for firms to sustain their performance forever. Then, it reviews the popular literature on the value chain. Afterwards, it develops a research framework for open innovation in the value chain, and proposes five ways of open innovation taking place within it. These include user open innovation, customer open innovation, common profit community, together growth community, and inner open innovation. Lastly, this editorial introduces articles from the Special Issue that concentrate on the various open innovation perspectives for firms to achieve sustainability.

Keywords: open innovation; value chain; sustainability; sustainable development; sustainability of firms

1. Introduction

Even though some companies exist only as a name, a brand, an office building or a memory: remnants of a glorious past, a lot of companies such as Dupong, the Hudson's Bay Company, W.R. Grace and Kodak and others in North America meet van Wachem's longevity company criteria [1]. Long-lived companies were sensitive to the environment: they had built their fortunes on knowledge (such as Dupont's technological innovations) or on natural resources (such as the Hudson's Bay Company's access to the furs of Canadian forests), and they remained in harmony with the world around them [1]. Corporate longevity depends on matching cycles of autonomous and induced strategy processes to different forms of strategic dynamics, and that the role of alert strategic leadership is to appropriately balance the induced and autonomous processes throughout these cycles [2]. In addition, interfirm diversity increases organizational learning, and motivates firm longevity in global strategic alliances [3].

Firms cannot survive forever, basically because businesses of firms are embedded in market, and society, which are changing dynamically. In addition, they cannot keep up with the changing conditions and situations of the market, and society. However, if firms can perform creative destruction to meet the changed requirements of the market, or society by combining technology, and market or society continuously, they may be able to survive forever—at least theoretically [4]. How can we realize such a combination for companies to survive forever? Perhaps through open innovation—open connections between technology, the market, and open business models—we may be able to create new opportunities to link technology, market and society.

In this perspective, creative destruction should be perceived as the introduction of a new business model, or the changes happening within the existing business models. In the end, even though any

firm can maintain the firm's title, the firm can become a totally different firm after it introduces a new business model, or changes its existing business model to a new one. In order to survive forever—or a very long-time—firms should consider changing their business models continuously according to the requirements of the environment. Nevertheless, strictly speaking, the firm that changes its business model according to the requirements of the market or society is no longer the same firm.

2. Literature Review

Values chains have two different activities. These are (a) primary activities, and (b) support activities (see Figure 1). There is an obvious connection between competitive advantage and social issues. Therefore, a company's value chain inevitably affects—and is affected by—numerous societal issues. Examples of these issues include natural resource and water use, health and safety, working conditions, and equal treatment in the workplace [5]. This is to say; the value chain of any company motivates new growth of the company by building up a shared value.

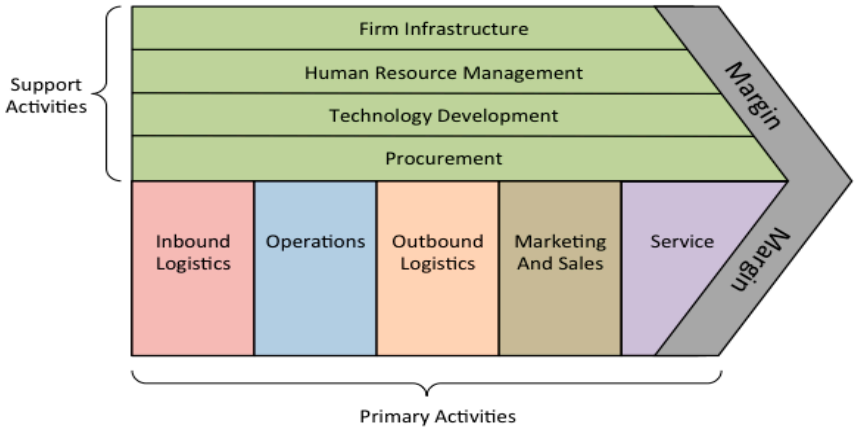

Figure 1. Michael Porter's value chain [6].

Cross-functional integration and marketing play a critical role in successful value chain or supply chain management. Frankly speaking, supply chain management (SCM) is a new way of managing the business and its relationships. Hence, a successful SCM requires a change from managing individual functions to integrating activities into the key supply chain processes [7].

From the state of any firm in the supply chain network, a firm can have two different directions. These are (a) direction of flow of demand with a raw material vendor, tier-1 suppliers, tier-2 suppliers, and (b) direction of flow of a product with distribution centers, retailers, and customer zones [8]. In addition, when companies integrate the information they capture during stages of the value chain—from inbound logistics and production through sales and marketing—they construct an information underlay of the business with the ability to see their value chains from end to end [9]. This is to say that when companies move a number of value-adding activities from one marketplace to another, they exploit a virtual value chain [9].

If we see innovation as a value chain comprising three phases—(a) idea generation, (b) conversion, and (c) diffusion—we could discover a new way of achieving a firm's sustainability. The innovation value chain consists of six linking tasks. These are internal, external, and cross-unit collaboration; idea selection; idea development; and the spread of developed ideas [10]. The value chain approach is seen to be useful in finding out new perspectives, novel and innovative ways, and creative business models for firms [11].

3. Approaches and Methods

According to the locations in the value chain, very diverse open innovations exist. These include (a) user open innovation, (b) customer open innovation, (c) common profit community, (d) together growth community, and (e) inner open innovation (see Figure 2).

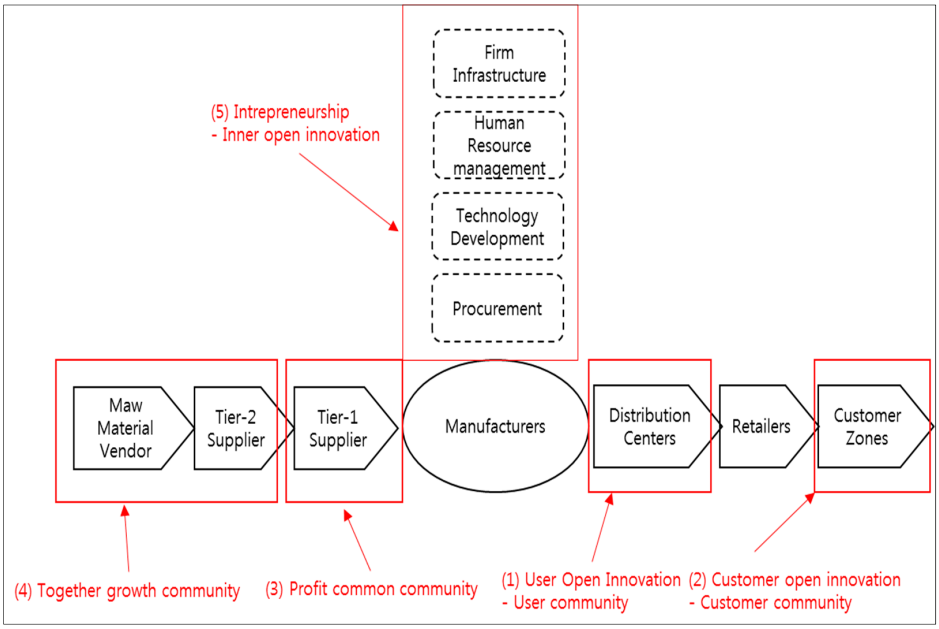

Figure 2. The framework for open innovation in the value chain.

(1) User open innovation: When users of the products are not end users of those production lines, producers can innovate based on the opinions of organized users including user communities. Most medical instrument producers organize communities of doctors or nurses to receive innovative ideas from them systemically.

(2) Customer open innovation: Computer companies, high-end smartphone companies, or luxurious auto–bicycle companies organize customer communities, and receive customer innovation requirements, or additional innovative ideas. Open innovation from the customer's perspective is the newest connection between existing technology, and the new market. Thus, open customer innovation normally motivates market growth directly with incremental innovation.

(3) Common profit community: Toyota automotive tries to innovate by itself, or let direct suppliers innovate. If a direct supplier innovates, and Toyota makes profits from the innovation, then Toyota tries to share the benefits from the innovation with the supplier. This common profit community provides and incentive for suppliers to innovate, and gives the producer an opportunity to obtain benefits from the innovation activity. Common profit community motivates the supplier to actively innovate.

(4) Together growth community: Together growth communities are organized by Korean Hyundai Motors at the Lee Myung-Bark Presidency. If producers make any profits from innovations proposed by suppliers, then they try to distribute the benefits from the innovation to supplies in the supply chain. Together growth community can be a kind of open innovation channel in the supply chain without additional costs, if it is well organized by producers.

(5) Inner open innovation: Within the producer, any individual or group can develop a new idea about the creative connection between technology and the market; this is a kind of inner open innovation mechanism. If a producer organizes an inner open innovation system such as an inner venture system, spin-off system, or spin-out system well, then producers can continuously develop a new business model by themselves.

4. The Special Issue

This Special Issue includes selected studies that contribute to our understanding on how sustainability and open innovation capabilities in the supply chain, such as network analysis, policy analysis, corporate sustainability, and so on can lead to corporate survival and growth, and, hence, to the conditions of sustainability in its diverse aspects and dimensions. Corporate sustainability is usually accomplished with numerous factors.

The first paper analyzes policy for reducing the climate change-induced risks in urban and rural areas in Korea [12]. The purpose of this paper is to project changes in climate change-induced risks over time and to investigate policy alternatives to mitigate the risks from increases in sea level, heavy rainfall events, and heat waves in urban and rural areas. System dynamics simulation was used to build a model and conduct policy analysis for a simulation period over the years 2000–2050. The model was built with a focus on the interaction among three factors: damage restoration costs from heavy rains, heat waves, and sea level rise; the total cost of food imports due to decreases in arable land and agricultural productivity; and changes in the government budget to respond to climate change problems. The simulation results indicated an early and sufficient increase in the climate budget, especially in urban areas. In conclusion, an earlier increase in the climate change budget would be more effective than a delayed budget increase of the same amount, and allocating a larger fraction of the climate budget to urban areas could be more cost-effective than increasing the budget, if urban and rural parties could agree on the method of allocation. This study uses the green governance and green clusters approach, which is based on regional and national policies for climate change [13].

The second paper of the Special Issue analyzes the relationship between public debt and economic growth [14]. This paper focuses on the role of corruption between these two variables. This study strives to investigate the effect of corruption on the relationship between public debt and economic growth. The empirical results show that the interaction term between public debt and corruption is statistically significant. This confirms that the effect of public debt on economic growth is a function of corruption. The sign of the marginal effect is negative in corrupt countries, but public debt enhances economic growth within countries that are not corrupt, such as those that are highly transparent. This study uses the growth limits of capitalism from an open innovation perspective as the research motive [15,16].

The next paper concentrates on how human needs are reflected in the market and how several technological and political policies affect the market share of government-supported industries, as well as the satisfaction of human desires and consequent happiness [17]. We can understand the dynamics of consumer decision-making processes in relation to technology products in the market from this study. This paper presents a new marketing model based on human needs, wants, and demands, and focuses on both holistic and social perspectives. This research has shown that human-based policy dynamics and sustainable human happiness can be realized by stimulating national policies for consumer happiness in the human-needs-based sector, e.g., the healthcare industry. In this study, the innovation capability and its role in enhancing the relationship between total quality management practices and innovation performance, and the complex adaptive systems approach were used as the open innovation perspective [18,19].

The fourth paper proposes a systematic approach to find new business items that help the prospective small and medium sized enterprises develop, evaluate, and select viable business items to survive the competitive environment [20]. The proposed approach comprises two stages: (a) the classification of diversification of small and medium sized enterprises; and (b) the searching and screening of business items. In the first stage, small and medium sized enterprises are allocated to five groups, based on their internal technological competency and external market conditions. In the second stage, based on the types of small and medium sized enterprises identified in the first stage, a set of alternative business items is derived by combining the results of portfolio analysis and benchmarking analysis. After deriving new business items, a market and technology-driven matrix analysis is utilized to screen suitable business items, and the Bruce Merrifield-Ohe method is used

to categorize and identify prospective items based on market attractiveness and internal capability. In order to illustrate the applicability of the proposed approach, a case study is presented. This study focuses on the dynamics from open innovation to evolutionary change [16].

The fifth paper challenges the view that technology transfer from big companies to small and medium sized enterprises helps small and medium sized enterprises to prosper. With a large dataset of small and medium sized enterprises in Korea, we utilize the stochastic production frontier model to examine the productivity of inputs and the generalized linear model to compare business performance between two groups of small and medium sized enterprises: small and medium sized enterprises that receive technology transfer and those that do not receive technology transfer from big companies. The empirical results demonstrate that the transfer of technology from big companies to small and medium sized enterprises helps small and medium sized enterprises to enjoy productivity of capital. Nonetheless, small and medium sized enterprises receiving technology transfer were found to underperform in terms of labor productivity and profit margin compared to their counterparts. By identifying the negative rather than the conventionally assumed positive effect of technology transfer, this paper contributes to the literature on the relationship between technology transfer and small and medium sized enterprises' prosperity in the case of Korea. The findings of the study have important implications for how small and medium sized enterprises should strategize and rethink the clauses embedded in the transfer of technology that they receive from big companies because technology transfer acts as a barrier to their prosperity. This study received research motives from the open innovation approach to conquer the growth limits of capitalism, and the chief executive officer characteristics for management of public art performance [15,21,22].

The next paper analyzes the diffusion patterns in convergence among high-technology industries [23]. This paper explores these issues by investigating industry convergence in the U.S. high-technology industries, using a large set of newspaper articles from 1987 to 2012. Authors perform a co-occurrence-based analysis to obtain information on industry convergence and estimate its diffusion patterns using an internal-influence logistic model. The study finds heterogeneous diffusion patterns, depending on convergent-industry pairs and their wide dispersion. In addition, we find that the potential degree of industry convergence is significantly negatively associated with its growth rate, which indicates that a great deal of time will be required for industry convergence between high-technology industries with this great potential to achieve a high degree of convergence. This paper uses the dynamics of open innovation, the moderating effects of government approach, and the demand articulation in the open innovation paradigm [16,22,24].

The seventh paper examines the technology for production scheduling of jobs for open innovation and sustainability with fixed processing property on parallel machines [25]. In this paper, a technology for production scheduling is addressed for the sustainability and open innovation in a manufacturing business. Methodologies for scheduling jobs on parallel machines with the fixed processing property are devised. The fixed processing property, in which a group of specific jobs can be processed on the predetermined machine, can be found in most manufacturing systems due to the quality issues. Several heuristic algorithms are devised for solving the problem; and to evaluate the performance of the suggested algorithms, a series of computational experiments is performed. Results show that the suggested algorithms obtain better solutions in a reasonable amount of computation time. That is, if the proposed technology is applied to the production scheduling system of a real manufacturing business, then it can be expected that the quantity and quality of the product will be enhanced since the production scheduling influences them. This study uses open innovation perspectives such as (a) the innovation capability and its role in enhancing the relationship between TQM practices and innovation performance; (b) the Schumpeterian Dynamics of open innovation, and the dynamics from open innovation to evolutionary change [15,16,18].

The eighth paper of the Special Issue analyzes the patent-enhancing strategies in Korea by using a data envelopment analysis [25]. The purposes of this study were to identify which industries in South Korea are strong or weak in terms of patent applications and to identify some strategies to

enable weak industries to become strong. For this, authors gathered statistics on seven variables, as follows: number of businesses, number of employees, research and development investment, number of full-time equivalent researchers, number of research institutions, domestic market size, and number of patent applications. Especially, to compare the ratio of patent applications and the ratio of domestic market size across industries, the industries were classified into the following three categories: strong-, weak-, and no-patent. Furthermore, data envelopment analysis suggested some strategies to strengthen patent applications for each industry. In the data envelopment analysis, the number of patent applications was used as the output variable and the other six variables were used as input variables. Our study will particularly assist industries where protection by patents is an important aspect of their businesses. This study uses several open innovation perspectives such as the demand articulation in the open innovation paradigm; the historical review on the patterns of open innovation at the national level; the innovation capability approach; the open innovation of knowledge city; and the effect of service innovation on R&D [16,18,26–28].

The next paper investigates the impact of early adoption of an innovative analytics approach on organizational analytics maturity and sustainability. A pharmaceutical company headquartered in the U.S. championed this initial research in 2005 and became the first major firm to implement the recommendations. The company improved its profitability by 12% when piloted to a sales district with 481 physicians; then, it launched this approach nationally. In 2014, the firm again gave us its data, performance of the analytical approach and access to key stakeholders to better understand the changes in the pharmaceutical sales operations landscape, the firm's analytics maturity and sustainability of analytics. Results suggest that being the early adopter of innovation doubled the firm's technology utilization from 2005 to 2014, as well as doubling the firm's ability to continuously improve the sales operations process; it outperformed the standard industry practice by 23%. This study is based on several open innovation perspectives such as the innovation capability approach, the customer involvement approach, the public space design approach, the global R&D open innovation approach, the dynamic open innovation approach, and the historical review of open innovation approach [16–18,27,29,30].

The tenth paper develops a learning model of open innovation; that is to say, 'not deep learning but autonomous learning of open innovation for sustainable artificial intelligence' [29]. This paper develops the interaction model between direct and autonomous learning from the human's cognitive learning process and the firms' open innovation process. It conceptually establishes a direct and autonomous learning interaction model. The key factor of this model is that the process to respond to entries from external environments through interactions between autonomous learning and direct learning as well as to rearrange internal knowledge is incessant. At the core of the interaction model between direct and autonomous learning is the variability of the boundary between proven knowledge and hypothetical knowledge, limitations in knowledge accumulation, as well as complementarity and conflict between direct and autonomous learning. Therefore, these should be considered when introducing the interaction model between direct and autonomous learning into navigations, cleaning robots, search engines, etc. In addition, we should consider the relationship between direct learning and autonomous learning when developing open innovation strategies and policies. This study is based on several open innovation perspectives such as the historical review on the patterns of open innovation, the promotion of university students' collaborative skill in open innovation environment, the dynamics of open innovation, and the demand articulation in the open innovation paradigm [17,26–29,31].

The next paper conducts a network analysis of open innovation [32]. Why and how do firms perform open innovation? Firms' open innovation is measured through their joint levels of patent applications. The authors analyze the network structures and characteristics of firms' joint patent applications such as betweenness and degree centrality, structure hole, and closure. From this research, the authors drew the following conclusions. Firstly, the structure of collaboration networks has both direct and indirect effects on firms' innovative performance. Secondly, in the process of joint patent applications, there is a long tail phenomenon in networks of joint patent applications. Thirdly, the

number of patents and international patent classification subclasses together constitute a meaningful measure of the innovation performance of firms. This study uses the demand articulation in the open innovation paradigm [23,33–36].

The last two papers do not have a direct focus on open innovation and value chain topics. The twelfth paper of the Special Issue undertakes a cross-cultural study of college students from China and the USA about their perception of time, creative attitudes, and adoption of innovations [37]. The final paper of the Special Issue concentrates on analyzing the empirical relationships among technological characteristics, global orientation, and internationalization of new ventures in South Korea [38].

Acknowledgments: This research work was supported by the DGIST R&D Program of the Ministry of Science, ICT and Future Planning, Korea.

Author Contributions: JinHyo Joseph Yun prepared the full draft of the editorial and Tan Yigitcanlar formatted and language edited the piece.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Geus, A. *The Living Company: Growth, Learning and Longevity in Business*; Nicholas Brealey Publishing: London, UK, 2011.
2. Burgelman, R.A.; Grove, A.S. Let chaos reign, then rein in chaos—Repeatedly: Managing strategic dynamics for corporate longevity. *Strateg. Manag. J.* **2007**, *28*, 965–979. [CrossRef]
3. Parkhe, A. Interfirm diversity, organizational learning, and longevity in global strategic alliances. *J. Int. Bus. Stud.* **1991**, *22*, 579–601. [CrossRef]
4. Schumpeter, J.A. *Capitalism, Socialism and Democracy*; Routledge: Abingdon-on-Thames, UK, 1942.
5. Kramer, M.R.; Porter, M. Creating shared value. *Harv. Bus. Rev.* **2011**, *89*, 62–77.
6. Porter, M.E. *Competitive Advantage: Creating and Sustaining Superior Performance*; Free Press: New York, NY, USA, 1985.
7. Lambert, D.M.; Cooper, M.C. Issues in supply chain management. *Ind. Mark. Manag.* **2000**, *29*, 65–83. [CrossRef]
8. Swaminathan, J.M.; Smith, S.F.; Sadeh, N.M. Modeling supply chain dynamics: A multiagent approach. *Decis. Sci.* **1998**, *29*, 607–632. [CrossRef]
9. Rayport, J.F.; Sviokla, J.J. Exploiting the virtual value chain. *Harv. Bus. Rev.* **1995**, *73*, 75.
10. Hansen, M.T.; Birkinshaw, J. The innovation value chain. *Harv. Bus. Rev.* **2007**, *85*, 121. [PubMed]
11. Kaplinsky, R. Globalisation and unequalisation: What can be learned from value chain analysis? *J. Dev. Stud.* **2000**, *37*, 117–146. [CrossRef]
12. Moon, T.H.; Kim, D.-H.; Park, C.S.; Lee, D.-S. Policy Analysis to Reduce Climate Change-Induced Risks in Urban and Rural Areas in Korea. *Sustainability* **2017**, *9*, 524. [CrossRef]
13. Cooke, P. Green governance and green clusters: Regional & national policies for the climate change challenge of Central & Eastern Europe. *J. Open Innov. Technol. Mark. Complex.* **2015**, *1*, 1.
14. Kim, E.; Ha, Y.; Kim, S. Public Debt, Corruption and Sustainable Economic Growth. *Sustainability* **2017**, *9*, 433. [CrossRef]
15. Shim, S.-O.; Park, K. Technology for Production Scheduling of Jobs for Open Innovation and Sustainability with Fixed Processing Property on Parallel Machines. *Sustainability* **2016**, *8*, 904. [CrossRef]
16. Yun, J.J. How do we conquer the growth limits of capitalism? Schumpeterian Dynamics of Open Innovation. *J. Open Innov. Technol. Mark. Complex.* **2015**, *1*, 17. [CrossRef]
17. Lim, J.-Y.; Yoo, S.H.; Won, D. A Human-Needs-Based Dynamics to Simulate Technology Policy and Its Effects on Both Business Success and Human Happiness. *Sustainability* **2016**, *8*, 1225. [CrossRef]
18. Yun, J.J.; Cooke, P.; Kodama, F.; Phillips, F.; Gupta, A.K.; Gamboa, F.J.C.; Krishna, V.; Lee, K.; Lee, K.R.; Witt, U.; et al. *An Open Letter to Mr. Secretary General of the United Nations to Propose Setting up Global Standards for Conquering Growth Limits of Capitalism*; Springer: Berlin, Germany, 2016.
19. Won, D.; Yoo, S.; Yoo, H.; Lim, J. Complex adaptive systems approach to sewol ferry disaster in Korea. *J. Open Innov. Technol. Mark. Complex.* **2015**, *1*, 22. [CrossRef]

20. Yusr, M.M. Innovation capability and its role in enhancing the relationship between TQM practices and innovation performance. *J. Open Innov. Technol. Mark. Complex.* **2016**, *2*, 6. [CrossRef]
21. Jeong, S.; Han, J.; Kim, J. A Systematic Approach to Identify Promising New Items for Small to Medium Enterprises: A Case Study. *Sustainability* **2016**, *8*, 1158. [CrossRef]
22. Yun, J.J.; Jeong, E.; Yang, J. Open innovation of knowledge cities. *J. Open Innov. Technol. Mark. Complex.* **2015**, *1*, 16. [CrossRef]
23. Kim, J.-H.; Jung, S.-H. Study on CEO characteristics for management of public art performance centers. *J. Open Innov. Technol. Mark. Complex.* **2015**, *1*, 5. [CrossRef]
24. Lee, S.-H.; Workman, J.; Jung, K. Perception of Time, Creative Attitudes, and Adoption of Innovations: A Cross-Cultural Study from Chinese and US College Students. *Sustainability* **2016**, *8*, 1193. [CrossRef]
25. Kodama, F.; Shibata, T. Demand articulation in the open-innovation paradigm. *J. Open Innov. Technol. Mark. Complex.* **2015**, *1*, 2. [CrossRef]
26. Lee, H.; Kim, N.; Kwak, K.; Kim, W.; Soh, H.; Park, K. Diffusion Patterns in Convergence among High-Technology Industries: A Co-Occurrence-Based Analysis of Newspaper Article Data. *Sustainability* **2016**, *8*, 1029. [CrossRef]
27. Della Corte, V.; Iavazzi, A.; D'Andrea, C. Customer involvement through social media: The cases of some telecommunication firms. *J. Open Innov. Technol. Mark. Complex.* **2015**, *1*, 10. [CrossRef]
28. Lara, A.; Costa, E.; Furlani, T.; Yigitcanlar, T. Smartness that matters: Comprehensive and human-centred characterisation of smart cities. *J. Open Innov. Technol. Mark. Complex.* **2016**, *2*, 1–13. [CrossRef]
29. Pancholi, S.; Yigitcanlar, T.; Guaralda, M. Public space design of knowledge and innovation spaces: Learnings from Kelvin Grove Urban Village, Brisbane. *J. Open Innov. Technol. Mark. Complex.* **2015**, *1*, 13. [CrossRef]
30. Patra, S.K.; Krishna, V.V. Globalization of R&D and open innovation: Linkages of foreign R&D centers in India. *J. Open Innov. Technol. Mark. Complex.* **2015**, *1*, 7.
31. Yun, J.J.; Lee, D.; Ahn, H.; Park, K.; Yigitcanlar, T. Not deep learning but autonomous learning of open innovation for sustainable artificial intelligence. *Sustainability* **2016**, *8*, 797. [CrossRef]
32. Yun, J.J.; Won, D.; Park, K. Dynamics from open innovation to evolutionary change. *J. Open Innov. Technol. Mark. Complex.* **2016**, *2*, 7. [CrossRef]
33. Yun, J.J.; Jeong, E.; Park, J. Network Analysis of Open Innovation. *Sustainability* **2016**, *8*, 729. [CrossRef]
34. Yoon, J.; Kim, D.-S. Empirical Relationships among Technological Characteristics, Global Orientation, and Internationalisation of South Korean New Ventures. *Sustainability* **2016**, *8*, 1254. [CrossRef]
35. Lee, B.; Won, D.; Park, J.-H.; Kwon, L.; Moon, Y.-H.; Kim, H.-J. Patent-Enhancing Strategies by Industry in Korea Using a Data Envelopment Analysis. *Sustainability* **2016**, *8*, 901. [CrossRef]
36. Jeon, J.-H.; Kim, S.-K.; Koh, J.-H. Historical review on the patterns of open innovation at the national level: The case of the Roman period. *J. Open Innov. Technol. Mark. Complex.* **2015**, *1*, 20. [CrossRef]
37. Kim, S.-J.; Kim, E.-M.; Suh, Y.; Zheng, Z. The effect of service innovation on R&D activities and government support systems: The moderating role of government support systems in Korea. *J. Open Innov. Technol. Mark. Complex.* **2016**, *2*, 5. [CrossRef]
38. Oganisjana, K. Promotion of university students' collaborative skills in open innovation environment. *J. Open Innov. Technol. Mark. Complex.* **2015**, *1*, 18. [CrossRef]