Evolving Internet Information & Technology as Enablers for Creating Shared Values

In Kuk Song[1] and Junchul Chun[2]
[1]Department of Management, Dankook University,
Sujil, South Korea.
[e-mail: iksong@dankook.ac.kr]
[2] Department of Computer Science, Kyonggi University,
Suwon, South Korea.
[e-mail: jcchun@kgu.ac.kr kr]
*First author : Inkuk Song, Corresponding author: Junchul Chun

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Abstract

Recently many companies began to realize their visions for the sustainable growth with the advent of CSV(Creating Shared Values). Michael E. Porter, a Harvard Professor, claims that placing social value creation at the core of business strategy has the potential to uncover big opportunities for individual companies and that shared value can play a significant role in increasing competitive advantages while fostering social prosperity. In consequence, the various researches have illustrated how to get the opportunity for competitive advantages from building a social value proposition into corporate strategy, and considerable studies have been promoted heavily from the managerial perspective. However, due to the lack of capability converging information technology with business strategy, any research effort to identify technological or Internet-related issues and to link the issues to CSV does not exist. With Korean being a Internet leading country, the demands of researches analyzing core technology, information, and service utilizing Internet are rapidly growing. The study aims to find out Internet-related enablers for CSV. This paper describes the concepts and features of CSV, identifies emerging Internet-related issues toward the opportunity for competitive advantage, and then depicts the rigorous research endeavors in the areas of Internet information, technology, and services. As a result, 11 papers presented and selected as the outstanding papers at APIC-IST 2014 handle the issues to be brought together, which include: Wireless and Sensor Network, Image Processing and HCI, Big Data and Business Intelligence, Security & Privacy in Internet, SNS & Communication, Smart-Learning and e-Learning, and Internet Business Strategy. The study finally recommends indispensible terms for substantially vitalizing CSV.

Keywords: Internet-based Technology, Internet information, Internet Service, Creating Shared Values, Societal Value, Economic Value, Internet Orientation, Comparative Advantage

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1. Introduction

Recently many companies began to realize their visions for the sustainable growth with the advent of CSV(Creating Shared Values). The concept of CSV first introduced by Michael E. Porter and Mark R. Kramer in Harvard Business Review involves programs that improve revenue and/or profit for companies while simultaneously providing benefits to the broader society [1].

Despite of the benefit from economic development for social progress, many researchers urge that it is generally not sufficient in achieving various social values. Michael E. Porter claims that placing social value creation at the core of business strategy has the potential to uncover big opportunities for individual companies and that shared value can play a significant role in increasing competitive advantages while fostering social prosperity [2].

So far, considerable studies illustrate how to get the opportunity for competitive advantages from building a social value proposition into corporate strategy. However, due to the lack of capability converging information technology with business strategy, the research efforts to identify techonological or Internet-related issues and to link the issues to CSV hardly exist.

The purpose of the paper is to find out Internet-related enablers, such as Internet information, Internet-based technology, or Internet service. The study explains the concepts and features of CSV, identifies emerging Internet-related issues toward the opportunity for competitive advantage, and finally depicts the rigorous research endeavors in the areas of Internet information, technology, and services.

2. Significance of Creating Shared Values

2.1 Concept of Creating Shared Values

Creating shared value (CSV) is a business concept first introduced in Harvard Business Review article Strategy & Society: The Link between Competitive Advantage and Corporate Social Responsibility [1]. According to Michael Porter, the central premise behind creating shared value is that the competitiveness of a company and the health of the communities around it are mutually dependent [2], as implied in **Fig. 1**.

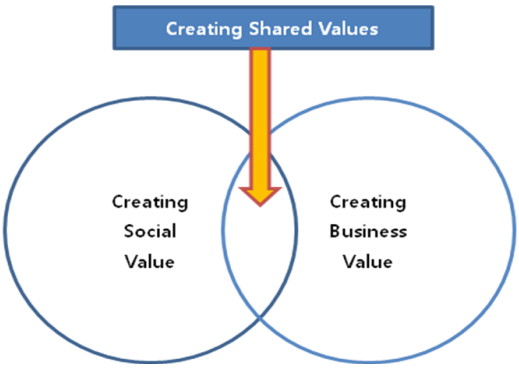

Fig. 1. CSV Converging Social and Business Value

The concept of CSV was further expanded in the January 2011 follow-up piece entitled "Creating Shared Value: Redefining Capitalism and the Role of the Corporation in Society". Prepared by Michael E. Porter and Mark R. Kramer at Harvard University, the article provides insights and relevant examples of companies that have developed deep links between their business strategies and corporate social responsibility (CSR).

In this manner, many approaches to CSR pit businesses against society, emphasizing the costs and limitations of compliance with externally imposed social and environmental standards. In contrast, the studies on CSV have a tendancy to accpet tradeoffs between short-term profitability and social or environmental goals, but focuses more on the internal opportunities for competitive advantage from building a social value proposition into corporate strategy. Michael Porter also urges that creating shared value can play a significant role in pursuit of business value fostering social prosperity. As you see, figure 1 implies that placing social value creation at the core of business strategy has the potential to uncover big opportunities for individual companies and create greater prosperity.

In short, CSR is about responsibility; CSV is about creating value. While CSR focuses more on responsibility, CSV emphasizes the necessity of creating value for both society and business [3].

2.2 Opportunity for Competitive Advantages through CSV

In response to the recent Harvard Business Review article on Creating Shared Value, Mark Kramer has believed that CSR is a different concept from creating shared value. Corporate social responsibility is widely perceived as a cost center, not a profit center.

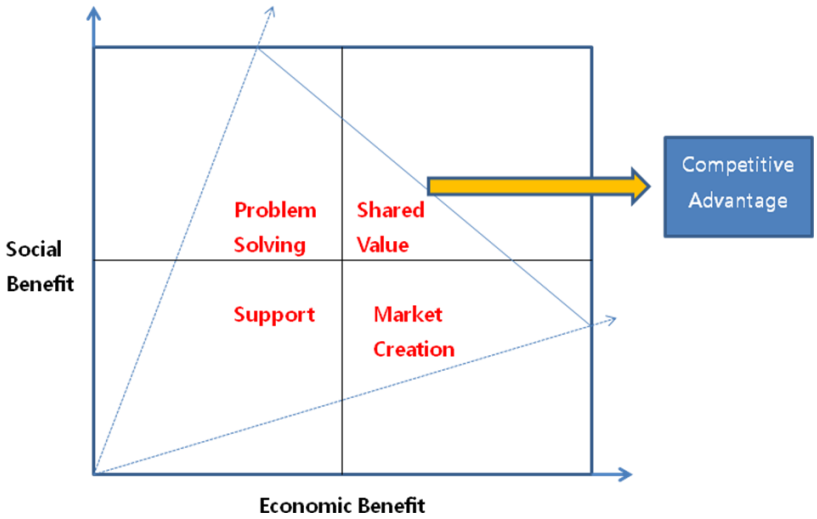

Fig. 2. Types for Driving Competitive Advantage

Meanwhile, shared value creation is about new business opportunities that create new markets, improve profitability and strengthen competitive positioning, as illustrated in **Fig. 2**. To date, considerable studies have illustrated how to get the opportunity for competitive advantages from building a social value proposition into corporate strategy. However, due to the lack of capability converging information technology with business strategy, researchers have not even tried to identify Internet-related technical issues and to link the issues to CSV.

3. Identification of Internet Information and Technology for CSV

3.1 Role of Internet Information and Technology for CSV

According to Michael Porter, CSV generally accepts tradeoffs between short-term profitability and social or environmental goals, but internally focuses more on the opportunities for competitive advantage from building a social value proposition into corporate strategy. To understand the deeper implication on CSV, companies should not only focus the business perspective, but also consider information technology as enablers for CSV. Thus the study extracts three Internet-related issues: Internet information, Internet-based technology, and Internet services & strategy. Authors developed the model in which the opportunity for competitive advantage through creating social values might be taken by converging Internet-related issues with the companies' business strategies, referred to **Internet Orientation,** as indicated in **Fig. 3**.

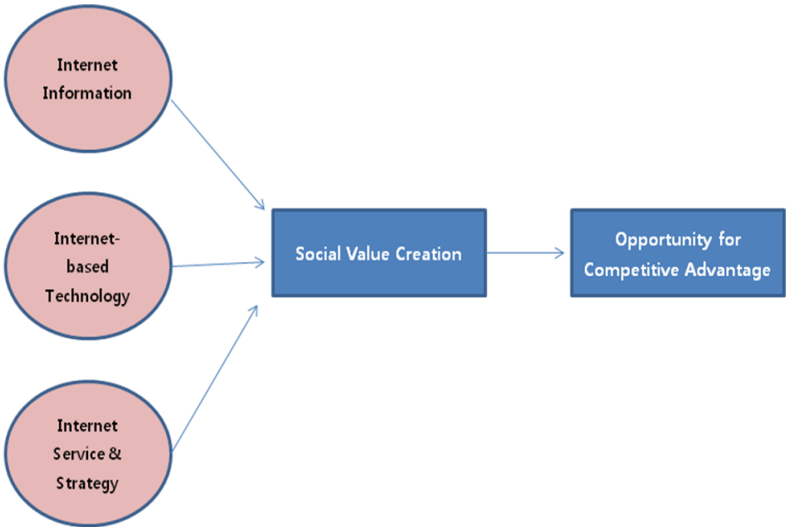

Fig. 3. Internet Orientation

3.2 Link between Specific Tracks with Internet Information & Technology

With Korean being a Internet leading country, the study analyzes core technology, information, and service utilizing Internet and classifies them as followings:

- Track 1: Wireless and Sensor Network
- Track 2: Multimedia/Image Processing/HCI/
- Track 3: Data Mining / Big Data / Business Intelligence
- Track 4: Security & Privacy in Internet
- Track 5: SNS(Social Network Services) and Communication
- Track 6: Smart Learning / e-Learning
- Track 7: Management of Internet Application/Internet Business Strategy
- Track 8: Software Engineering & Architecture / Cloud Computing

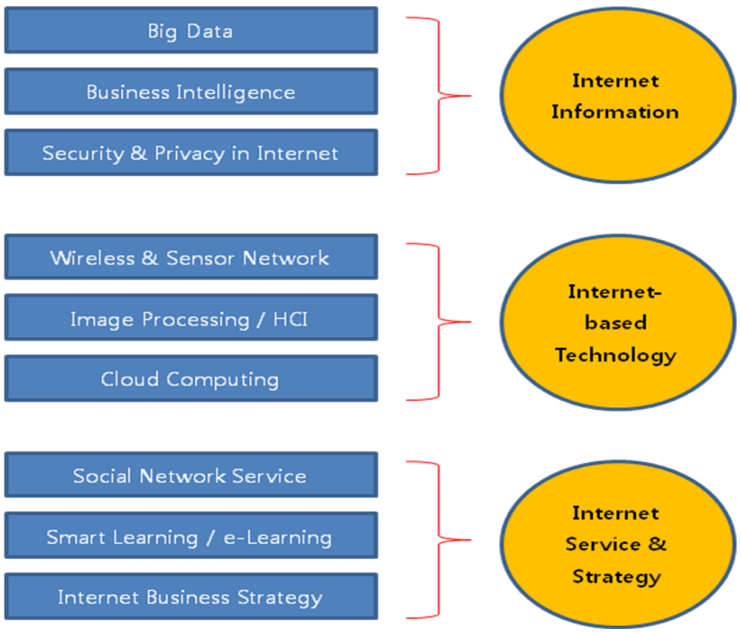

Fig. 4. Classification of Internet-related Issues

Consequently, evolving information, technology, and service on Itnernet can be classified into three groups, as shown in **Fig. 4**. The figure accomodates Internet information, Internet-based technology, and Internet service & strategy, as potential enablers for CSV.

4. Research Endeavors

In the previous section, the paper described the significance of CSV and identified evolving Internet-based information, technologies, and various services, as potential enablers for CSV. This section is allocated to introduce rigorous research endeavors in each track proposed earlier. In substance, creative and feasible researches on both technical and managerial issues for CSV should be constantly conducted and shared. As part of an ongoing effort, many outstanding studies were presented in APIC-IST 2014, as listed in Table 1.

The section focuses innovative knowledge, advances in Internet-related information & technology for CSV. Its targets are to facilitate and support research associated to Internet-based information processing, emerging network technology, and various services which enable the companies to internally promote CSV. This issue brings revised and suggestively extended versions of eleven papers selected as outstanding research and presented at The Asia Pacific International Conference on Information Science and Technology (APIC-IST 2014). APIC-IST 2014 was the 9th International Conference with wider participation and providing researchers and practitioners from both academia and industry, to advance the state-of-the-art of Internet-related information & technology for CSV. APIC-IST 2014 was hosted in Kathmandu, the capital and largest urban agglomerate of Nepal on July 14-18, 2014.

In the area of Internet-based technology, the paper titled “An Accelerometer-Assisted Power Management for Wearable Sensor Systems” by Woosik Lee et al. has proposed a new TPC algorithm that uses an accelerometer to directly measure the current channel condition.

Based on the directly measured channel condition, the proposed algorithm adaptively adjusts the transmission interval of control packets for updating the transmission power level (TPL) [4]. The paper implements the proposed algorithm in real sensor devices and compares its performance against diverse TPL algorithms.

Table 1. Studies of Evolving Internet Information, Technology & Service

Area	Track	Outstanding Studies
Internet-based Technology	Wireless and Sensor Network	An Accelerometer-Assisted Power Management for Wearable Sensor Systems
		A Distributed Medium Access Control Protocol for Cognitive Radio Ad Hoc Networks
		A Handover Management Scheme Based on User-Preferences and Network-Centric Approach
	Image Processing Multimedia / HCI	Triangulation Based Skeletonization and Trajectory Recovery for Handwritten Character Patterns
		Implementation of Gesture Interface for Projected Surfaces
Internet Information	Data Mining / Big Data / Business Intelligence	Opinion-Mining Methodology for Social Media Analytics
		Building a Business Knowledge Base by a Supervised Learning and Rule-Based Method
	Security & Privacy in Internet	Malware Containment Using Weight based on Incremental PageRank in Dynamic Social Networks
Internet Service & Strategy	SNS and Communication	When Do People Post a Comment to a News Story on the Internet?
	Smart Learning / e-Learning	Interaction-based Collaborative Recommendation: A Personalized Learning Environment (PLE) Perspective
	Internet Business Strategy	Breaking the Myths of the IT Productivity Paradox

Gyanendra Prasad Joshi et al. have underlined a distributed medium access control protocol for cognitive radio networks to opportunistically utilize multiple channels. Under the proposed protocol, cognitive radio nodes forecast and rank channel availability observing primary users' activities on the channels for a period of time by time series analyzing using smoothing models for seasonal data by Winters' method[5] in their paper entitled "A Distributed Medium Access Control Protocol for Cognitive Radio Ad Hoc Networks". The paper simulates and compares the proposed protocol with the existing protocol.

The article by Murad Khan et al. entitled "A Handover Management Scheme Based on User-Preferences and Network-Centric Approach" has introduced a user-centric and user-perspective based network selection mechanism for fast handover management in heterogeneous wireless networks. The proposed scheme is based on a survey for network selection and its implementation in C programming language to validate its performance and accuracy [6]. The paper examines that the proposed scheme performs superior then the schemes present in the current literature.

Dung Phan et al. in their paper "Triangulation Based Skeletonization and Trajectory Recovery for Handwritten Character Patterns" have compared both the performance and the processing time for both the skeletonization stage and the trajectory recovery stage. The paper proposes a novel approach for trajectory recovery, which uses a triangulation procedure for skeletonization and graph theory to extract the trajectory [7].

The next article "Implementation of Gesture Interface for Projected Surfaces" by Yong-Suk Park et al. has focused an effective hand detection method based on the depth information from a depth image camera is presented to be used as gesture interface for projected surfaces. The proposed method can be used to turn any smooth surface into an interactive workspace without compromising performance due to environmental conditions [8]. The authors evaluate a touch interface for the projected surface, based on the proposed method.

In the area of Internet information, the article by Yoosin Kim et al. entitled "Opinion-Mining Methodology for Social Media Analytics" has made efforts to formulate a more comprehensive and practical methodology to conduct social media opinion mining and apply their methodology to a case study of the oldest instant noodle product in Korea [9]. The paper presents graphical tools and visualized outputs that include volume and sentiment graphs, time-series graphs, a topic word cloud, a heat map, and a valence tree map with a classification.

Sungho Shin et al. in their paper "Building a Business Knowledge Base by a Supervised Learning and Rule-Based Method" have highlighted on building a computerized knowledge base for business using a supervised learning and rule-based method. The method proposed in the paper is based on information extraction, but it has been specialized and modified to extract information related only to a business [10].

The article by Jong-Hwan Kong et al. entitled "Malware Containment Using Weight based on Incremental PageRank in Dynamic Social Networks" has introduced an effective patch strategy to deal with malicious worms based on social networks. They analyze the structure of a social network, and subgroups are formed in the graph for the distributed patch strategy [11].

In the area of Internet service & strategy, the paper titled "When Do People Post a Comment to a News Story on the Internet?" by Mina Lee et al. has investigated psychological factors which affect the likelihood of posting a comment to a news story online. The paper considers three factors: communication efficacy, the perception of public opinion, the tone of existing comments [12].

Syed Mubarak Ali et al. has the implemented a novel interaction-based approach which improves the recommendation accuracy for the new-user cold-start problem by integrating preferences profile and tagging recommendation and utilizing the interaction among users and system. The paper "Interaction-based Collaborative Recommendation: A Personalized Learning Environment (PLE) Perspective" takes leverage of the interaction of a new user with the PLE system and generates recommendation for the new user, both implicitly and explicitly, thus solving new-user cold-start problem [13].

The final article "Breaking the Myths of the IT Productivity Paradox" by Jong-Sung Hwang et al. has focuses on verifying the influence of IT type, rather than IT capabilities, on IT productivity. By classifying IT into six categories, computer usage, Internet usage, e-commerce (purchase or sale), possession of the website, cloud computing, and open source software, they verify the different influences on IT productivity based on the IT type, and maximize the accuracy of research findings [14].

5. Conclusion

The study aimed to find out Internet-related enablers for creating shared values. Thus the paper described the concepts and features of CSV, identified emerging Internet-related issues toward the opportunity for competitive advantage, and finally depicted the rigorous research endeavors in the areas of Internet information, technology, and services.

As a result, the authors developed the **Internet Orientation**, in which Internet-related issues were linked to companies' competitive advantages to promoting CSV. Internet Orientation may provide not only researchers with research direction in explaining the role of Internet information & technology, but also top management with practical guideline in establishing their business strategy for CSV.

In addition, the study recommends indispensible terms for substantially vitalizing CSV. First of all, creative and feasible researches on both technical and managerial issues for CSV should be constantly conducted and shared. As part of an ongoing effort, many outstanding studies were introduced in the previous section. Another crucial factor in promoting CSV is to establish the potential schemes in solving various societal problems. Finally, the authors insist that the companies should not only focus the managerial approaches to CSV, but also consider creatively evolving information technology as potential enablers for CSV.

References

[1] Porter, Michael and Kramer, Mark, "Creating Shared Value," *Harvard Business Review*, Vol. 89 Issue 1/2, pp.62-77, Jan/Feb 2011.

[2] London, T., Anupindi, R. and Sateen, S., "Creating mutual value: Lessons learned from ventures serving base of the pyramid," *Journal of Business Research 63*, pp.582–594, 2010.

[3] Beschorner, Thomas, "Creating Shared Value: The One-Trick Pony," *Business Ethics Journal Review 17*, No. 1, pp.106-112, 2013.

[4] W.S Lee, M. Choi, and N. Kim, "Experimental link channel characteristics in wireless body sensor systems," in *Proc. of ICOIN 2012*, pp. 374-378, Feb. 2012. Article (CrossRef Link).

[5] M. Timmers, et al., "A distributed multichannel MAC protocol for multihop cognitive radio networks," *IEEE Transactions on Vehicular Technology*, vol. 59, no.1, pp. 446-459, January, 2010. Article (CrossRef Link).

[6] S. Jadhav, H. Zhang, and Z. Huang, "MOS-based Handover Protocol for Next Generation Wireless Networks," in *Proc. of IEEE 26th International Conference on Advanced Information Networking and Applications (AINA)*, Fukuoka, 2012, pp. 479-486. Article (CrossRef Link).

[7] S. Lee and J. C. Pan, "Offline Tracing and Representation of Signatures," *IEEE Trans. Systems, Man, and Cybernetics*, 22(4), 755–771, 1992. Article (CrossRef Link).

[8] J. Dai and C. R. Chung, "Touchscreen everywhere: on transferring a normal planar surface to a touch-sensitive display," *IEEE Trans. on Cybernetics*, pp. 1383-1396, vol. 44, no. 8, August, 2014. Article (CrossRef Link).

[9] H. Chen, "Business and Market Intelligence 2.0, Part 2," *IEEE Intell. Syst.*, vol. 25, no. 2, pp. 2–5, Mar. 2010. Article (CrossRef Link).

[10] C. N. Seon, J. H. Yoo, H. Kim, J. H. Kim and J. Seo, "Lightweight Named Entity Extraction for Korean Short Message Service Text," *KSII Transactions on Internet & Information Systems*, vol. 5, no. 3, pp. 560-574, 2011. Article (CrossRef Link).

[11] Nam P. Nguyen, *et al*. "A Novel Method for Worm Containment on Dynamic Social Networks," in *Proc. of The 2010 Military Communications Conference*, 2010. Article (CrossRef Link).

[12] P. J. Boczkowski and E. Mitchelstein, "How Users Take Advantage of Different Forms of Interactivity on Online News Sites: Clicking, E-Mailing, and Commenting", *Human Communication Research*, Vol. 38, No. 1, pp. 1-22, 2012. Article (CrossRef Link).

[13] R. Burke, "Hybrid Recommender Systems: Survey and Experiments," *User Modeling and User-Adapted Interaction*, vol. 12, pp. 331-370, 2002. Article (CrossRef Link).

[14] Erik Brynjolfsson and Lorin M. Hitt. "Computing Productivity: Firm-Level Evidence," *Review of Economics and Statistics*, vol. 85, no. 4, pp. 793-808, November, 2003. Article (CrossRef Link).

In Kuk Song is a professor in the Department of Management at Dankook University, Suji, South Korea. He has received a B.S. degree, majoring in Computer Science at University of Tennessee. He was also conferred M.S. and D.S. degrees in the field of Information & System Management at George Washington University. His current research interests include Information Strategy, Big Data, and u-Health Services & Strategy. He also served the APIC-IST 2014 hosted by the Korean Society of Internet Information, as the program chair.

Junchul Chun is currently a professor in the department of computer science and a principal investigator in the Graphics and Image Processing Research Laboratory at Kyonggi University, Suwon South Korea. He received a B.S. degree from Chung-Ang University majoring in computer science. He also received M.S. and Ph.D. degrees from the department of computer science and engineering at the University of Connecticut, CT., U.S.A, in 1992 and 1995, respectively. He was a visiting research scholar in PRIP (Pattern Recognition and Image Processing) at Michigan State University and University of Colorado at Boulder, 2001 and 2009 respectively. He is currently a chief director of CCSRC (Contents Convergence Software Research Center) at Kyonggi University. His major research fields are augmented reality, vision-based animation, and human computer interaction. He also served the APIC-IST 2014 hosted by the Korean Society of Internet Information, as the conference chair.