

Connecting the dots— Review of Enterprise 2.0 impact on organization structure development

Zhenyu YANG ¹

¹ BI Norwegian Business School

Abstract. Enterprise 2.0, as one of the most popular information technology (IT) innovation has attracted tremendous attention from both business managers and academic scholars. Since the invention of this term by [1] McAfee, the long-held dream of enabling knowledge workers to realize the “intangible organizational capital” [2] suddenly appears promising. From the on-going industrial phenomenon observation: distributed co-creation, featured as exploiting network capability to organize knowledge workers to collaborate at global scale and deliver round-the-clock teamwork. Further enhanced by increasingly organization flatten process, companies large and small, from traditional industries or emerging economics are ready to step forward to redesigning the organization structure and execute projects across business units and functions. Convinced the sweeping power of Enterprise 2.0 could be used to transform the organizational structure, maximize the return of human capital investment and boost organizational competitiveness [3]. Companies start to gauge the challenges and opportunities accompanied with Enterprise 2.0 enabled organization transformation. A dedicated organizational planning and evaluation process is much needed for the follow-up implementation across business units and subsequent interaction within knowledge intensive industries. To help ease the reorganization process with solid theoretical argument, this paper reviews the latest IT enabled organizational structure evolution, and attempted to shed lights on future managerial practice.

Keywords: Enterprise 2.0, Organization structure. Organization design, IT-enabled organization evolution

1. Introduction

Started in 1970s with the gradually commercialization of advanced information technologies and its application on organization. Theorists and strategists argued a need to expand the IT and organization research. “There has been little synthesis, integration, and development of theoretical explanations and that it is time for theory development and theory-guided research” [4]. This paper will first summarize the classical theory development in the field of IT and organization design research, then present the Enterprise 2.0 disruptive characteristics in organization design, a summary of four traditional and emerging organization forms are followed in the analysis, lastly the prediction of Enterprise 2.0 empowered organization form will be introduced for further discussion.

2. Antecedent IT organization design research

Since the seminal work on applying IT to organization design [5,6], scholars across backgrounds from computer science, strategy, information system, sociology etc all attempt to conduct relevant research to clarify the evolving process. It is tempting to summarize the related literature on this issue in order to have a solid ground for future research.

The classical literatures of organization are argued around the concern of how to organize and coordinate various task and workflows in the organization [7,8]. Among the classical approach, coordination of activity and supervision are the critical variable, IT with its nature of function is described as a major transformational variable to group tasks, functions and people. And become increasingly disruptive in terms of employing IT in novel ways to create ingenious organizational forms [9]. However, the basis of research between the interaction of organization and IT has invoked controversy, three shortcomings has been

identified by Markus and Robey: inattention to causal agency theory, over-reliance on variance models in theory, and failure to distinguish among micro and macro factors as levels of analysis [10]. They posit to adopt emergent rather than deterministic models of causal agency, using the logic of process theory rather than an exclusive dependence on variance formulations and linking multiple levels of analysis. Orlikowski and Robey [11] further solidify the philosophical roots of IT organization research by adopting the theory of structuration developed by Anthony Giddens [12]. to further furnish the basic assumptions of how IT is created, used and becomes institutionalized within organizations [11].

Contrast to the classical view that organization design takes a rational view of implementation technology into organizational forms, the on-going industrial trend of evolving organization requires an innovative approach in designing and implementing new IT tools into organizational structure. Besides the research focus on human, environment variable, IT will play an increasingly important role in linking mechanism, making task forces and liaison agents [9]. More specifically, a set of independent variables includes: the use of IT-assisted communication technologies, the use of IT-assisted decision-aiding technologies with proposed dependent variables includes: characteristics of organizational intelligence and decision making, aspects of organizational design associated with intelligence and decision making are identified [13].

The disruptive nature of Enterprise 2.0

What are the critical characteristics of Enterprise 2.0 technologies that might lead these new forms of technologies disruption? And how to evaluate the great impact on organizational design differentiated from the traditional information technologies? To address the concerns, it's important to retrieve the history of Enterprise 2.0 technology development and divide the general characteristics similar to most high-level IT functions with specific Enterprise 2.0 enabled organizational features.

Historically, with the boom of ubiquitous web2.0 technology penetrates the internet service, featured as intensive web application to facilitate the interactive information sharing, user-customized design and open collaboration at a global scale. Practitioners are increasingly interested to apply the web2.0 technology into corporate life. By running the same technology through organization's intranets and extranets, Enterprise 2.0 is invented since then to help unveil the black box of intangible organizational capital [2]. The fundamental difference of Enterprise 2.0 from traditional IT is that Enterprise 2.0 tends to encourage user to create organizational innovation and simultaneously adjusting itself for the evolving organizational structure prior to providing any deterministic structure as traditional IT solution delivered.

From the antecedent sociology research, the collective intelligence [14] of a group of people could possibly yield rich and more accurate information than any individual within the group possessed. One great function of Enterprise 2.0 technological structure is developed to harness the "wisdom of crowds" [15] inside the enterprise. The social software platforms installed by companies have intended to organize the employee communities. In contrast to the traditional hieratical enterprise structure, in the virtual Enterprise 2.0 communities, structures are imposed to be as flat as possible, by doing so, the empowered individuals are encouraged to heighten their ability to act autonomously and increase the information free flow, knowledge creating and further strengthen know-how learning mechanism.

More specifically, SLATES: search, links, authoring, tagging, extensions, signals are regarded as the main function to realize Enterprise 2.0 [16]. By examining the archives from the most influential Enterprise 2.0 conference (<http://www.e2conf.com/>), I strive to make generalizations about the resultant properties of Enterprise 2.0 from the context of organization design, these three properties include those facilitating cross-functional collaboration capabilities, promoting grassroots user-enabled open innovation, launching of automated big data-driven business intelligence matrix.

As stated above, Enterprise 2.0 born in a dynamic environment provides a toolbox for companies to capture the strategic asset embed in the ocean of intangible organizational capital. However, some fundamental questions remain unanswered, in the turmoil knowledge-intensive industries, firms positioned either as a market incumbent or a market entrant challenged all the times by unpredictable external market or internal organization change, what kind of organization form enabled by Enterprise 2.0 could be best served

for the corporate competitiveness? What are the managerial and organizational limits in terms of Enterprise 2.0 adoption? The discussion below is aimed to answer these questions.

The Enterprise 2.0 and organizational forms evolution

Structure follows strategy [17]. the organization's design must match the complexity of its internal and external environment and maintain the ability to keep pace with changes[18]. New units and teams have been created all the time in order to address the evolving opportunities and markets, in the meantime the integration of coordination efforts are required to maintain the organizational efficiency. Industrial development of Enterprise 2.0 platforms have generated innovative organizational forms that go beyond the explanation that current organizational theory could possibly offer. Threadless.com utilizes social media and Enterprise 2.0 toolbox to integrate production, designing, marketing from a distributed network. By carefully managing the interaction between internal employee-based community with the external customer and designer-based communities, it successfully creates an innovative crowdsourcing model [19]. in pursuit of success. Blade.org, an example of collaborative community of firms [20]; by housing the blade.org platform, IBM build a successful community of many complementary firms from vendor and user firms. They give feedback and develop product together, have developed a systematic approach in managing, sharing and generating business knowledge and facilitate collaboration at a global scale, fundamentally challenges the traditional organizational practice [20]. Even for traditional companies, Telefonica has applied the ad-hoc based user generated IT application in operational support system, greatly impact on firm's overall operation system [21]. Given the self-adjusting nature of Enterprise 2.0 enabled organizational structure evolution, it's interesting to review and compare the traditional hierarchical organizational architecture with emerging collaborative community of firms model [20].

- Hierarchical M-form

Based from Chandler's [17] observation of the organizational structure evolvement of General Motors in 1900s, the multi-divisional or M-form organization has been invented to address the trade-off of hierarchical control and effective adaption to differentiated market needs. The M-form is an efficient organization design for exploiting economics of scope for different customer demands [22], and has been regarded as the most successful organizational design in the twentieth century [23]. This organizational form has been widely applied in many traditional industries across Europe, US and Japan [24]. However, the current dynamic economic condition exposes the weakness of M-form organization in exploiting synergies across business units. Managers faced the problem of high employee costs, internal battles over resources, lack of standardization, lack of cooperation and loss of market opportunities. In the meantime there is little viable alternative to solve the structure problem in particular to address the synergies concerns [25].

- Matrix design form

To accompany the advancing of technologies in a wide of fields in post-industry period, the matrix form of organizing in which downstream operating units could draw on various upstream capabilities in the operation of existing business and in developing and delivering new products and services for new customers [24], has been introduced to complement hierarchical M-form with hybrid structure and distinct hierarchies [26]. Matrix form is intent to capture both the efficiency and specialization of hierarchy form could provide, however, the price of such design is paid by the complicating of organization structure.

- Multidimensional organization

Since the publication of the seminal work on Multidimensional Organization [27], this organization form is widely implemented to catering the tech-savvy generation of workforce and customers [28]. To address the internal variety [18]requirement, it transcends the organizational restrictions by putting customer as the profit center coupled with collective responsibilities distributed among managers, the overall performance is evaluated simultaneously on multiple dimensions and consequently provide timely feedback on resource allocation and contribution analysis. This form is believed to be the representative in times of evolution from resource centric industrial economy to a customer centric service economy. Knowledge-intensive firms IBM and PwC are the examples of this organization structure [29].

- Collaborative community of firms model

In the current knowledge-explosive economics, the source of competitive advantage is increasingly transforming from tangible resource to intangible resource [29]. In particular for knowledge-intensive industries, the organization form is critical in terms of corporate knowledge management and individual knowledge worker's productivity enhancement. The increasing complicated product and service development requires cross-functional collaboration support, and creating open innovation culture to exploit internal and external intangible capitals. For technology-driven firms, multi-sided market model [30]. is also expanding as a mainstream revenue model. However, none of those criteria for future enterprise are well met by multidimensional form logic. Following the evolution of community in technology innovation, and observing the IBM initialed complementary community of firms, the collaborative community of firms scheme has been introduced by Snow, Fjeldstad et al [20]to address the product development, technology innovation need from a complementary community of firms whose respective capability can be leveraged for the common goal. Such organization form fosters the product development process while subsequently cut the time to market. By provisioning the authority of participating partners, companies with different expertise could engage and contribute at most appropriate manner. According to Snow, Fjeldstad et al [20],the collaborative community form model offers a common platform across the firm's boundary, common knowledge and intern-firm trust is established during the product development process, with the accumulation of shared knowledge, the community structure becomes an efficient way to promote innovation and increase productivity and creativity for each participating parties.

3. Summary

By examining through the theoretical lenses of the industrial evolution and available organization design and innovation literature, the paper presents a short summary in analyzing organization evolution and Enterprise 2.0 impact, such review helps to fill the gap between general IT innovation with specific new criteria for Enterprise 2.0 adoption and associated organizational impact. Enterprise 2.0 enabled organizational characteristics are identified for future research. Further research is required to validate the conjectures with empirical evidence; the design of a confirmatory multisite case study [31] will be the next step of this study.

There are several managerial implication can benefit from this work. First, senior executive should be aware of such organizational disruption potential powered by Enterprise 2.0 platforms; such strategic decision for internal reorganizing can be overwhelming and require bold leadership. Also, managers should develop a solid measurement method beforehand to evaluate the implementation and modeling associated opportunity cost in such transformation. This study paves the path for future empirical study that can further accompany the industrial development of Enterprise 2.0 and its implementation in a variety of knowledge-intensive industries. Future work should investigate a longitudinal case study that looks into every implementation steps and subsequent organizational transformation happened in different sectors of the adopting company overtime, such empirical study deem to generate new discovery and abnormality discussion that will help further develop the established model.

4. References

- [1] McAfee, A. (2006). "Enterprise 2.0: The dawn of emergent collaboration." MIT Sloan Management Review 47(3): 21.
- [2] Brynjolfsson, E. and A. Saunders (2009). *Wired for innovation: how information technology is reshaping the economy*, Mit Pr.
- [3] Chui, J. B. a. M. (2010). "The rise of the networked enterprise: Web 2.0 finds its payday." Mckinsey Quarterly Dec.
- [4] Steinfield, C. and J. Fulk (1987). "On the role of theory in research on information technologies in organizations." *Communication Research* 14(5): 479
- [5] Leavitt, H. and T. Whisler (1958). "Management in the 80s." *Harvard Business Review* 36(6): 41-48.
- [6] Simon, H. (1973). "Applying information technology to organization design." *Public Administration Review* 33(3): 268-278.
- [7] March, J. and H. Simon (1958). *Organizations*. Ny, Wiley.

- [8] Mintzberg, H. (1979). "The structuring of organizations." Englewood Cliffs.
- [9] Lucas Jr, H. and J. Baroudi (1994). "The role of information technology in organization design." *Journal of Management Information Systems* 10(4): 23.
- [10] Markus, M. and D. Robey (1988). "Information technology and organizational change: causal structure in theory and research." *Management science*: 583-598.
- [11] Orlikowski, W. and D. Robey (1991). "Information technology and the structuring of organizations." Working paper (Sloan School of Management); 3284-91.
- [12] Giddens, A. (1976). *New rules of sociological method*, Hutchinson London.
- [13] Huber, G. (1990). "A theory of the effects of advanced information technologies on organizational design, intelligence, and decision making." *Academy of management review* 15(1): 47-71.
- [14] Malone, T. (2008). "What is collective intelligence and what will we do about it." *Collective Intelligence: Creating a Prosperous World at Peace*, Earth Intelligence Network, Oakton, Virginia: 1-4.
- [15] Surowiecki, J. (2004). *The wisdom of crowds: Why the many are smarter than the few and how collective wisdom shapes business, economies, societies, and nations*, Doubleday Books.
- [16] McAfee, A. (2009). *Enterprise 2.0: New Collaborative Tools for Your Organization's Toughest Challenges*, Harvard Business School Press.
- [17] Chandler, A. (1962). *Strategy and structure*, MIT press Cambridge, MA.
- [18] Ashby, W. (1956). *An introduction to cybernetics*, Chapman & Hall London.
- [19] Brabham, D. (2008). "Crowdsourcing as a model for problem solving." *Convergence: The International Journal of Research into New Media Technologies* 14(1): 75.
- [20] Snow, C. C., Ø. D. Fjeldstad, et al. (2011). "Organizing Continuous Product Development and Commercialization: The Collaborative Community of Firms Model." *Journal of Product Innovation Management* 28(1): 3-16.
- [21] Soriano, J., D. Lizcano, et al. (2007). "Fostering innovation in a mashup-oriented enterprise 2.0 collaboration environment." *UK, sai: sijn* 24: 62-68.
- [22] Teece, D. (1980). "Economies of scope and the scope of the enterprise." *Journal of Economic Behavior & Organization* 1(3): 223-247.
- [23] Williamson, O. (1985). "The Economic Institutions of Capitalism: Firms." *Markets, Relational Contracting*, New York.
- [24] Miles, R. E., C. C. Snow, et al. (2010). "Designing Organizations to Meet 21st-Century Opportunities and Challenges." *Organizational Dynamics* 39(2): 93-103.
- [25] Strikwerda, J. and J. Stoelhorst (2009). "The emergence and evolution of the multidimensional organization." *California Management Review* 51(4): 11-31.
- [26] Davis, S. and P. Lawrence (1979). "Problems of matrix organizations." *Matrix organization and project management* 64: 134-151.
- [27] Prahalad, C. and G. Hamel (1980). "The Concept and Potential of Multidimensional Organizations." *Managing Managers*. Eindhoven: NV Philips' Gloeilampenfabrieken.
- [28] Beck, J. and M. Wade (2006). *The kids are alright: How the gamer generation is changing the workplace*, Harvard Business Press.
- [29] Strikwerda, J. and J. Stoelhorst (2009). "The emergence and evolution of the multidimensional organization." *California Management Review* 51(4): 11-31.
- [30] Anderson, C. (2008). "Free! Why \$0.00 is the future of business." *Wired Magazine* 16: 25.
- [31] Yin, R. (2003). *Applications of case study research*, Sage Publications, Inc.