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REVIEW

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Enterprise 2.0: a boon or bane for entrepreneurial and innovative expenditures?

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Abstract

Social media's unabated and unprecedented adoption and growth among masses across the globe and fast emergence of innovative, open, cost effective, at times free of cost, and flexible Social media platforms has opened hitherto unexpected or previously unknown *vistas* for business organizations. Adoption of social media platforms in organizations coupled with the openness, collaboration, interaction, and involvement inherent in social media has led to a state that these organizations are now being termed as Enterprise 2.0. Though social media platforms are being criticized by many for unwarranted attention and importance, embracing these platforms by people worldwide has a different story to tell. This paper is an attempt in this direction to look into the potential of social media for business organizations by focusing the attention on various prospects and problems associated with the adoption of these platforms in pursuing innovative and entrepreneurial expenditures of business organizations and to suggest some ways for effective and smooth incorporation of the same in the organizations. Researchers conclude that as far as the adoption of Enterprise 2.0 technologies is concerned, the most significant issue to deal with is the approach to be adopted for incorporation of these technologies in the organization in an integrative fashion. Research may prove to be beneficial for the academicians by giving them a comprehensive view of various aspects of the Enterprise 2.0 and for the practitioners by providing them guidelines for effective incorporation of the social technologies in their organizations.

Keywords: Social media; Enterprise 2.0; Challenges; Advantages; Suggestions for implementation

Review

Introduction

According to Mayfield (2008), 'Social media is a genie that will not be disappearing back into its bottle'. Whether you like it or not, the enigmatic power of social media does not let you break away from it (Mukherjee 2014). Having human interaction as its base, it is not a new concept (Edosomwan, Prakasan, Kouame, Watson and Seymour, 2011), though the intermediation of advanced information technology platforms has led to metamorphosis of interpersonal interactions and communications globally (Edosomwan et al. 2011; Duhan and Singh 2013).

Incessant, continual, and unparalleled global expansion and intrusion of social media platforms in our day-to-day activities (Nielsen 2012; Vehr 2012; Stanley 2009; Duhan et al. 2013) are evidenced by the fact that as per an estimate of Wikipedia (<http://en.wikipedia>.

org/List_of_social_networking_websites), more than 200 thriving social communities are available to netizens (Duhan et al. 2013), out of which Facebook is a front-runner with membership exceeding 517 million across 212 countries (Internet World Stats 2013). Though interestingly, despite being such a rage, there appears to be no agreement among researchers and scholars as to what encompasses social media, and terms like Web 2.0, social media, and user-generated content (UGC) are often interchangeably used (Constantinides and Fountain 2008; Kaplan and Haenlein 2010). Nevertheless, some researchers have attempted to distinguish the three terms (Kaplan et al. 2010). As per Kaplan and Haenlein 2010:

Web 2.0 is the ideological and technical foundation based on participatory and collaborative efforts facilitated by tools such as Adobe Flash, Really Simple Syndication (RSS), and Asynchronous Java Script (AJAX).

UGC is the sum total of publicly available media content which is the resultant of creative effort of end-users outside professional realms. And social media, acting as an intermediary between the two, facilitates the creation and exchange of user-generated content by utilizing the ideological and technological foundations of Web 2.0.

On the other hand, Constantinides and Fountain (2008), even while acknowledging the emphasis on technical and social dimensions of Web 2.0 and social media, respectively, have used terms the Web 2.0 and social media interchangeably. The term Web 2.0, taken as an umbrella term, has been defined by Constantinides and Fountain (2008) as 'a collection of open-source, interactive and user controlled online applications expanding the experiences, knowledge and market power of the users as participants in business and social processes. Web 2.0 applications support the creation of informal users' networks facilitating the flow of ideas and knowledge by allowing the efficient generation, dissemination, sharing and editing / refining of informational content.' In accordance with Constantinides and Fountain (2008), for the present paper, researchers have used terms social media and Web 2.0 interchangeably.

However, the multiplicity of social media platforms coupled with their interactive nature, collective wisdom, content creation feature, and easy access (Chaffey et al. 2006; Duhan et al. 2013) has led marketers to embrace social media or Web 2.0. Marketers use social media platforms as advertising medium, direct-response medium, sales transaction platform, a lead generation medium, distribution channel, customer service platform, and relationship-building platform (Chaffey et al. 2006). These platforms are being utilized for a variety of purposes such as to increment brand awareness, brand building, brand exposure, and brand reinforcement. In addition, these platforms are helping organizations in increasing traffic, in gaining marketplace intelligence, in developing loyal fans and in attracting more customers and employees to the organization. Customer service, customer support and productivity improvement are some other areas where these platforms are being taken help of (Mangold and Faulds 2009; Edosomwan et al. 2011; Stelzner 2013; Jagongo and Kinyua 2013). All of these activities of the organizations are leading to positive results like improved sales, increased exposure, more business partnerships, increased lead generation, reduced marketing and communication expenses, improved search rankings, increased traffic, better market insights and business intelligence, increased effectiveness of marketing, increased speed of access to knowledge, enhanced customer satisfaction, and increased brand reputation and loyal fan base (Buytendijk et al. 2008; Almeida 2012; Stelzner 2013).

The very characteristics of the socio-digital platforms, *viz* connectivity, convergence, collaboration, and transparency, (Duhan et al. 2013) have transformed the business

environment and have helped businesses to increase their worthiness, cultivate strategic partnerships, and increase their contact with customers and suppliers (Jagongo et al. 2013). The statement of the former director of the National Intelligence, USA, Mike McConnell (as cited in Booz, Allen and Hamilton 2010) states that survival and effectiveness of the organization are dependent on the comprehension of the functioning of blogs and wikis. This statement once again emphasizes the importance of social media or Web 2.0 for the businesses. Collective information sharing and collaboration at both inter- and intra-organizational levels can lead to making an organization more powerful (Booz et al. 2010). Accordingly, the induction of Web 2.0 technologies at the work place has given rise to a new business lexicon Enterprise 2.0 or E 2.0 as shown in Figure 1.

Literature review

McAfee (2006), hailed as the architect of the term Enterprise 2.0, defined and explained the concept with the help of search, links, authoring, tags, extensions, and signals (SLATES), an acronym used for the building blocks or components of E 2.0. The article talked about the ground rules and the role of managers for effectively contesting the accompanied challenges and taking advantage of the opportunities in implementation of E 2.0.

Matuszak (2007) cited the real-life usage of E 2.0 in knowledge sharing and management, problem solving, innovation, and collaboration along with the challenges encountered by the organizations while adopting these technologies.

The Economist Intelligence Unit (2007) surveyed 406 executives working in diverse industries including financial and professional services, life sciences, IT/telecoms, and media across the world and found that the main reasons for the adoption of Web 2.0 technologies include the desire to cut costs and increase revenue, growth, and profitability. Ten tips were propounded in the report to combat the challenges encountered by organizations and to ensure success.

Mazumder (2008) stressed the necessity of adopting the next paradigm of web computing in organizations and defined it as Enterprise 2.0 as it caters to the communicating, collaborating, contributing, and participating needs of various internal and external

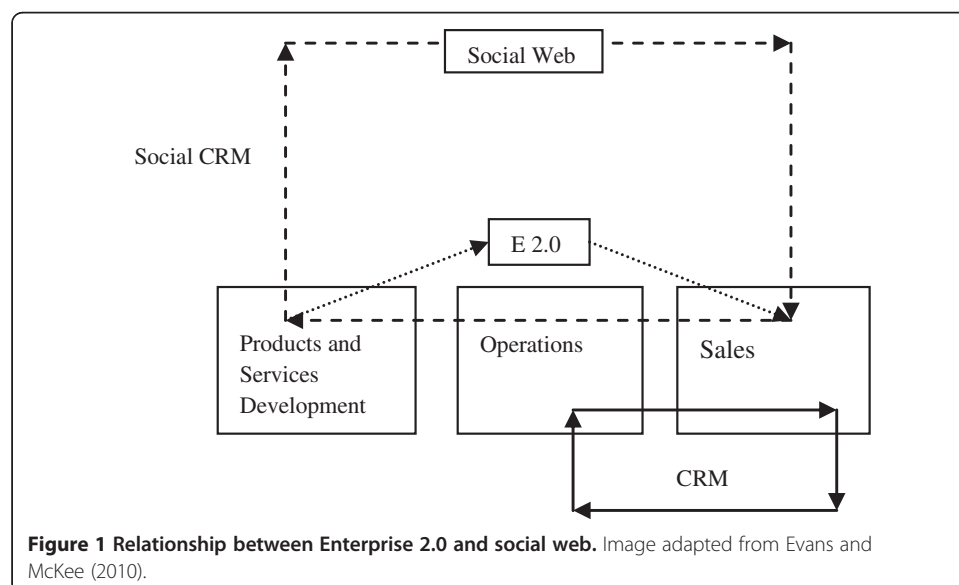


Figure 1 Relationship between Enterprise 2.0 and social web. Image adapted from Evans and McKee (2010).

stakeholders. Mazumder (2008) sensing the paucity of ideas to combat with and guide the organizations to deal with attendant challenges resulting due to formative nature of Web 2.0 and immeasurable benefits of its adoption in organizations, put forward an iterative adoption model comprising of four stages (identify, analyze, plan, and implement) for successful adoption of the same.

Terming Enterprise 2.0 as a dynamic journey, an integrative business strategy that is imperative reality to be faced and adjusted to, Buytendijk et al. (2008) define E 2.0 as the creation of competitive advantage through interactive, collaborative business models, which lead to organizational effectiveness and drive profitability. Citing the demographic changes and business changes as the main drivers metamorphosing organizations, the paper discusses an Enterprise 2.0 platform offered by the Oracle.

Fuchs-kittowski et al. (2009) did a comparative analysis of ten quantitative studies conducted during 2007 to 2008 in Germany. The study reported the diffusion, benefits, barriers, and potential of Web 2.0 technologies in an organization.

Chui et al. (2009), after surveying a range of executives, who have adopted Web 2.0 tools for their internal operations, suggested that incorporation of Web 2.0 technologies may result in content generation (mass internal content generation, broadcast solution sourcing, external collaborative contribution), community building such as participatory marketing and decision-support by harnessing information markets. However, in order to realize the same, management must undertake cultural transformation, incorporate technologies in workflow, let users decide the uses, ensure right participation such as by targeting tech savvy and respected opinion leaders, and strike the right balance of freedom and control.

Lennon (2009), building upon the concept of Enterprise 2.0 as proposed by Andrew McAfee, discussed various features and tools of social software, which are being utilized or can be utilized by organizations to facilitate collaboration and contribution of external and internal stakeholders of the organizations. Researcher brought to the fore potential advantages (*viz* information access, instant notification, simplicity, and cost effectiveness) and pitfalls (*viz* security, lack of adoption by staff, and loss of productivity) associated with the implementation of E 2.0. Lennon (2009) attributes the slow espousal of Enterprise 2.0 to the dynamic and formative nature of Web 2.0 technologies and to the reluctance of managers to adopt tools and services propounded by relatively new and inexperienced software companies to run their organizations.

Hughes (2010) distinguished between 'enterprise portals', 'consumer social media', and 'enterprise social networking' (termed as application of social networking techniques and technologies to businesses and 'consumerization of the enterprise'). Researcher asserted that despite some evils associated with the use of social networking, it has potential for delivering productivity benefits, in coexistence with the organizational portals, to the organizations due to its people-centric approach around the content.

Stobbe (2010) recognized the superiority of Web 2.0 over Web 1.0 in communication and knowledge management arena in conventional industries and termed the incorporation of Web 2.0 tools in these as the corporate reality. The attendant benefits of Web 2.0 tools in the area of communication, marketing, innovation, and collaboration establish their need and supremacy, but for successful implementation, cultural changes, clear targets, choice of appropriate Web 2.0 tools, and evaluation parameters need to be taken cared of.

Turban et al. (2011) developed a framework to deal with the issues related to the amalgamation of social networking in the work places. Based on the analysis of potential risks and opportunities of enterprise social networking, researchers proposed a six-step fit-viability model to guide organizations with the institutionalization of the enterprise social networking.

Schueler (2011) investigated the social and organizational uses and effects of E2.0 technologies.

Bughin and Chui (2011) evidenced the benefits bestowed upon the organizations by integrating social technologies with their workflows - external as well as internal. Terming such organizations as internally networked, externally networked, or fully networked enterprises, depending upon the extent of usage of social technologies in an organization, the research demonstrated measurable business benefits such as market share gains, operating profits, and market leadership accruing to the networked organizations across a range of regions, industries, and functional areas. Researchers stressed the need for creating fully networked enterprises by integrating the Web 2.0 technologies into employees' day-to-day work activities as well as using these to collaborate with customers, business partners, and suppliers, via continuing adoption and by removing the organizational barriers resisting the change.

Almeida (2012) while stressing the need and importance of fast inclusion of web 2.0 systems in the organizations also highlighted the accompanied security threats such as losses in productivity, loss of company reputation, client confidence, vulnerabilities to data leaks, and inherent increased security risks. As blocking access to these new platforms is neither feasible nor sustainable, organizations must adopt a balanced and novel approach to deal with these attack vectors. Some of the solutions to deal with the problem could be the formulation, implementation, and compliance to Web 2.0 policy/IT policy along with the other IT initiatives such as highly customized browse settings, installation of anti-malware software, adoption of strong authentication mechanisms, and establishment of a data loss protection solution.

Leonardi et al. (2013) termed the use of social media in organizations as enterprise social media (ESM) and discussed the advantages and disadvantages associated with the incorporation of social media in organizations in specific context of communicative activities. As ESM operates as platform for social interaction and lends the visibility and persistence to communicative actions, more opportunities are accorded to the employees for social learning through instrumental knowledge and metaknowledge. Researchers critically analyzed the implications of ESM for four organizational processes, *viz* social capital formation, boundary work, attention allocation, and social analytics by assigning three metaphors, *viz* leaky pipe, echo chamber, and social lubricant to ESM. The paper attempted to bring to the fore the implications of introduction of social technologies for communicative activities inside the organization.

Booz et al. (2010) elaborating on the concept of E 2.0 and its importance propose a structured E 2.0 approach, comprising of two complimentary and integrated service offerings, for quick and successful implementation of E 2.0.

Kopae and Uppal (2011) talked about the paradigm shifts effected by social media technologies in organizations. Authors, while stressing the importance of inclusion of these technologies, do not see the phenomenon as an opportunity in the foreseeable future rather mandate it to keep pace with the competitors. Paper enumerated the potential benefits of social media for various functional areas, antecedent on the very characteristics features of social media fostering collaboration, creativity, innovation, communication, and relationships,

alongside attendant risks. A well thought strategic plan, comprising of four iterative steps, has been recommended for intelligent risk management in E 2.0.

Literature review evidences that it is extremely difficult to conjure up an accurate picture of the usage of Enterprise 2.0 due to the dynamic nature of the Web 2.0 coupled with the reluctance of the researchers to differentiate between internal and external usage of Web 2.0 tools. At best, what can be done is to have a cross-sectional view of the situation (Stobbe 2010). In addition, most of the researches have been conducted in the field of computer-supported cooperative work (CSCW) and human computer-interaction (HCI) communities. The focus of these researches is on specific technologies and their usage by people in organizational settings. The implications for enterprise social media use for organizational actions for internal communication have largely been ignored, and scholars in management and organization studies have not yet begin to explore enterprise social media use (Leonardi et al. 2013). In addition, the existing research is quite fragmented as most of the researchers have either catered to specific social media tools, particularly wikis and blogs, (Turban et al. 2011) or have reported only a few of the opportunities/risks/solutions as applicable to the situation being analyzed. The solutions propounded also are quite varied and contextual in nature as substantiated by literature review. Hence, the present study has been proposed in order to have a comprehensive coverage of the advantages, challenges, and suggestions with reference to incorporation of Web 2.0 technologies in the organizations and thereby to fill the research gap.

The present paper is an attempt by the authors to explore the term 'Enterprise 2.0' and the associated advantages and challenges posed to the businesses with the adoption of Web 2.0 technologies in the organizations. An attempt has also been made to suggest some ways to reduce or remove some of the attendant challenges of Web 2.0 technologies, so that organizations can become more effective in their pursuit of innovative and entrepreneurial expenditures. Accordingly, researchers propose the following objectives:

1. To review the concept of Enterprise 2.0.
2. To identify the opportunities and challenges posed by induction of Web 2.0 technologies in organizations.
3. To suggest the ways for effective incorporation of Web 2.0 technologies in organizations in pursuit of innovative and organizational expenditures.

Originality/value

The paper offers an accessible review of the concept of Enterprise 2.0 along with its attendant value and challenges to the business organizations. The paper will definitely bring to the fore various core issues pertaining to the adoption of techno-social platforms available in the form of Web 2.0 or social media in business organizations. It will create the interest in academicians working in business management and information technology departments in universities and colleges and students studying in these disciplines as well as in the professionals working in diverse functional groups of the organizations.

Methodology

The paper is based on the secondary literature collected from diverse in-house and proprietary sources available at their websites. Alongside it, various relevant books, journal

research papers, and other articles published by news agencies etc. have been taken help of. Information so gathered was suitably analyzed, validated, and adapted as per the requirements of the study.

Rationale

The characteristics of social media, *viz* connectivity, convergence, collaboration, and transparency are responsible for the fast and global adoption by people and for the transformation of business environment. These developments have prompted the authors to analyze the attendant opportunities and challenges of these social-digital platforms in the metamorphosis of organizations into Enterprise 2.0 and to suggest the ways for effective implementation of Web 2.0 for innovative and entrepreneurial pursuits.

The paper has been organized around five sections. The first section provides a peep into development of the concept of Enterprise 2.0 to the readers. In the second and third sections, the opportunities and challenges posed by induction of Web 2.0 technologies in organizations has been elaborated. The fourth section encompasses the ways for effective incorporation of Web 2.0 technologies in organizations in their pursuit of innovative and organizational expenditures. The concluding remarks emphasizing the major findings regarding the incorporation of Web 2.0 technologies have been given in the final section of the paper.

What is Enterprise 2.0?

The term 'Enterprise 2.0' or 'E 2.0', introduced in the business lexicon by Andrew McAfee, Associate Professor, Harvard Business School, in March 2006 (McAfee 2006; Frappaolo and Keldsen 2008; Janssen, n.d.), is still shrouded in considerable mystery as far as the meaning of the term is concerned (Frappaolo and Keldsen 2008). In a study carried out by Frappaolo et al. (2008), respondents attributed twelve different meanings to E 2.0 concept. These concepts ranged from application of Web 2.0 technologies/new set of technologies/evolving social software platforms in organizations for collaboration, for formation of online communities, for business agility, for democratization of information, and for content-centric systems to the next generation of collaboration/enterprise content management or knowledge management.

McAfee (2006) realizing the importance of collaboration of the external efforts with internal efforts for the realization of core organizational goals, put forward the term Enterprise 2.0 to 'focus only on those platforms that companies can buy or build in order to make visible the practices and outputs of their knowledge workers.'

Frappaolo and Keldsen (2008) define Enterprise 2.0 as 'a system of Web-based technologies that provide rapid and agile collaboration, information sharing, emergence, and integration capabilities in the extended enterprise.'

The definition highlights that Enterprise 2.0:

- is a collection, not a single entity or tool.
- leverages Web-based technologies.
- needs an (eco)system to thrive.
- has low barriers and dynamic nature.

- adds value in the shape of collaboration, information sharing, emergence, and integration of capabilities.
- positions the functionality within an enterprise setting but encompasses the ‘companies, or between companies and their partners or customers’ (Frappaolo et al. 2008).

Enterprise 2.0 is the intersection of technology, social interaction, and content development/management to improve an organization’s business processes. The five capability areas for Enterprise 2.0 are communication, collaboration, community, construction, and search as per Booz et al. (2010).

Enterprise 2.0 makes use of social software features such as social bookmarking and linking, tagging, rating, user commenting and discussion, open creation and editing policies, and syndication via RSS feeds (Lennon 2009). The supremacy and the importance of these new technologies in dissemination of knowledge work widely and permanently in organizations can be highlighted by citing an example of Dresdner Kleinwort Wasserstein (DrKW) European investment bank. DrKW bank incorporated and implemented ‘presence display’ feature, in the intraorganizational wiki environment of the bank within just 64 minutes (from concept to implementation) without any project definition or planning (McAfee 2006).

The above discussion evidences that technical aspect of Web 2.0 provides the technological base for Enterprise 2.0 processes and social aspect supports the outreach/culture change required to implement Enterprise 2.0 (Booz et al. 2010). E 2.0 is the incorporation and ingraining of modern collaborative capabilities into various facets of an organization (Janssen 2014; Booz et al. 2010). It is not just a new set of tools but it embodies the commencement and embracing of a new culture, new approach, and new philosophy of conducting business (Booz et al. 2010; Frappaolo et al. 2008). Capacities of newer technologies, known as Web 2.0 (also termed as Enterprise 2.0 technologies) technologies, in knowledge capturing and dissemination, in increasing the visibility of knowledge practices and output to others and to knit together the organization, have endeared these to the organizations (McAfee, 2006).

Building blocks of E 2.0

This endearment is the result of six building blocks of the Enterprises 2.0 technologies *viz* SLATES (Search, Links, Authoring, Tags, Extensions, and Signals).

- 1 Search: refers to the discoverability aspect of the E 2.0 content implying that users should be able to find out what they are looking for. Inherent in this aspect is ability of the collaboration of the content and incorporation of it into other work processes and intellectual endeavors taking place in the organization (McAfee 2006; Frappaolo et al. 2008)
- 2 Links: in the form of mash-ups and pointers, guide to what is important and provide structure to online content by providing interconnections between content. Dense link structures (continuously updated and reflecting the opinions of many participants) lead to better search output and help in getting more value from the content (McAfee 2006; Frappaolo et al. 2008).
- 3 Authoring: is the opportunity provided to the people in the form of blogs (cumulative content creation) and wikis (iterative content creation) in order to elicit

their contributions in the shape of insight, experience, comment, fact, edit, link, etc. It refers to the usability and low barrier interactional aspect of the E 2.0 (McAfee, 2006; Frappaolo et al. 2008).

- 4 Tags: refers to the use of metatags (Frappaolo et al. 2008). Metatags are simple, one word descriptions, accorded to online content which help in its categorization and building of 'folksonomies' (categorization system developed over time by folks) (term popularized by Thomas Vander Wal as cited in McAfee 2006). Tagging paves the way to make the patterns and processes taking place in the knowledge world more visible (McAfee 2006) by capturing the individual and collective opinions on the value of the content (Frappaolo et al. 2008).
- 5 Extensions: refers to the use of technology to get an insight into user activity patterns and then based on the user search behavior automatically extending the search into other related areas. Use of algorithms automates the some of the work of categorization and pattern making. It is like saying to the user 'if you liked that, then by extension you'll like this' (McAfee 2006; Frappaolo et al. 2008).
- 6 Signals: make the E 2.0 proactively collaborative by pushing newly updated content to interested parties thus saving users from onerous task of checking updates all the time for the new content of interest on sites. RSS is an excellent example of the signals (McAfee 2006; Frappaolo et al. 2008).
Dion Hinchcliffe in 2007 coined a new mnemonic FLATNESSES (freeform, links, authorship, tagging, network-oriented, extensions, search, social, emergence and signals) by extending McAfee's SLATES and incorporating four additional key characteristics *viz* freeform, network-oriented, social and emergence to Enterprise 2.0 (Frappaolo et al. 2008).
- 7 Freeform: talks about the freedom from all restrictions and barriers in authoring, signals and integration, and interfaces to functionality. Dion (2007) emphasizes the need for 'no barrier' over 'low-barrier' as envisaged in SLATES (Frappaolo et al. 2008).
- 8 Network-oriented: talks about the Web-addressability of the entire E 2.0 content along with the technology platform and proposes the potential development of a blogosphere within the enterprise (Frappaolo et al. 2008).
- 9 Social: dimension emphasizes the importance of incorporation of the transparency (to access), diversity (in content and community members), and openness (to structure) as the core cultural values in the Enterprise 2.0 environment (Frappaolo et al. 2008).
- 10 Emergence: stresses the detection and leveraging of the collective wisdom of the community (Frappaolo et al. 2008).

Although, the collaboration, open access, or collective wisdom predates Enterprise 2.0 and was in use in the past as well, the Enterprise 2.0 enables all this to happen in a far more rapid and agile fashion (Frappaolo et al. 2008) due to the availability of the technical platforms of Web 2.0. The characteristics of Enterprise 2.0 enumerated above in the SLATES and FLATNESSES frameworks bring to the fore the key value proposition of Enterprise 2.0 evidenced in the example of DrKW bank (McAfee 2006). The collaborative environments and projects requiring high level of technical know-how and effort are now being effected in hours or minutes. But, simultaneously, a conducive cultural environment is a prerequisite for open and agile sharing, cooperative thinking and development, lest Enterprise 2.0 should result in faster development of ineffective platforms (Frappaolo et al. 2008).

Advantages of Enterprise 2.0

Web 2.0 technologies are no longer another 'new media' platforms rather these have turned into vital business tools having wide-ranging capabilities (Chui et al. 2012). These technologies are being used for diverse array of activities in the organizations ranging from IT to marketing to sales to customer service to public relations to human resources. It is believed that these technologies are poised to become the preferred mode of interpersonal communications in the organizations (Almeida 2012) as more and more digital consumers enter the work force (Buytendijk et al. 2008). Given below are some of the advantages of Enterprise 2.0, which have accrued because of the inclusion of these social technologies in the organizations.

- 1 Improved and flexible organization structure: E 2.0 results in a transparent and flatter organization with lesser bureaucratic processes as it does away with the size and complexity of the earlier system (Miller 2007; Booz et al. 2010; Janssen 2014; Chui et al. 2012). Reduced size and lessened complexity enables an organization to be more agile and responsive to various environmental changes (Gupta et al. 2013).
- 2 Inclusion of distributed workforce: Enterprise 2.0 facilitates the better and enhanced inclusion of distributed workforce especially the remote and 'telework' staff (Booz et al. 2010).
- 3 Collaborative decision-making: Enterprise 2.0 results in perpetual, diverse, updated, relevant, efficient, and timely intellectual capital for effective and fast decision-making (Booz et al. 2010). It helps in 'crowdsourcing' the product ideas and thereby makes the concept of co-creation viable in the organizations, e.g., customers being motivated to upload homemade commercials to YouTube. Collaborations to co-develop a new product or service across different industries (like Nike⁺ from Nike and Apple and sports shoes with special soles from Adidas and Goodyear) and across competing companies (like Oneworld, SkyTeam, and Star Alliance, the airline industry alliances) are becoming the norm of the day (Buytendijk et al. 2008).
- 4 Enhanced searchability and information access: Enterprise 2.0 makes the information more searchable by enabling the various stakeholders to access relevant, timely, and updated information anytime and anywhere with internet enabled devices leading to time saving and enhanced productivity (Lennon 2009; Fuchs-kittowski et al. 2009; Bughin et al. 2011; Chui et al. 2012).
- 5 Instant updates notification: RSS subscriptions enable the subscribers to get the instantaneous notification about any website updates saving them lot of time and effort (Lennon 2009).
- 6 Simplicity and cost effectiveness: Collaboration, information sharing and communication become simpler and cost effective in Enterprise 2.0 environment due to the Web 2.0 technologies that are simple to set up and use and have open access or are available at nominal prices (Lennon 2009; Bughin et al. 2011).
- 7 Enhanced productivity: E 2.0's result is streamlined communications and collaborations in the organization. It helps in lowering or removing of the functional silos by making the functional borders porous. E 2.0 can even lead to the organizational restructuring for the inclusion of hitherto untapped additional knowledge and expertise in the

organization. All this leads to the knowledge workers' productivity enhancement by 20% to 25% (Chui et al. 2012; Fuchs-kittowski et al. 2009)

- 8 Market intelligence: E 2.0 serves as an excellent platform for gathering market intelligence either by engaging with customers and other stakeholders through E 2.0 technologies or just by monitoring the conversations taking place on these mediums. Market intelligence so gathered abreast organizations with the latest trends in the market place (Fuchs-kittowski et al. 2009; Chui et al. 2012).
- 9 Open innovation expenditures: Web 2.0 can play a crucial role in innovative expenditures in the organizations especially the open innovation, which is about bridging internal and external resources and acting on those opportunities, to bring better innovation to market faster. Interaction and involvement are the key elements for both - open innovation and Web 2.0. Hence, E 2.0 has the potential to offer tremendous opportunities to entrepreneurs, especially smaller ones, for collaboration with the vast network of different stakeholders in an unimagined way and thereby bring new products and services to the market at faster pace. In addition, the unprecedented growth of the social media paves the way for the emergence of newer and better platforms for interaction, involvement, and collaboration. Though the use of social media in innovative expenditures is in nascent stages, yet the very idea of intersection of social media and open innovation shows tremendous promise for organization to reap future benefits. However, this requires a multi-target approach with many touch points to your innovation community, your innovation ecosystem, customers, and users (Fuchs-kittowski et al. 2009; Lindegaard 2012). Kalypso Media, a global innovation-consulting firm, in its survey of over 90 manufacturing firms, found that firms using social media in product innovation have more and better new product ideas, faster time to market, faster product adoption, lower product costs, and lower product development costs (Kenly and Poston 2011). Bughin et al. (2011) and Chui et al. (2012) found similar results.

Challenges of Enterprise 2.0

Though the discussion in the preceding section appears to create an illusion that everything is right with Web 2.0 technologies and E 2.0 is an infallible concept to adopt and implement. Nevertheless, Janus-faced E 2.0 has another facet to it revealing that not all is well. Given below are some of the pitfalls associated with E 2.0:

- 1 Security: The essence of Web 2.0 lies in its openness, sharing, and transparency, but Enterprise 2.0 does not warrant the same level of openness and transparency. Thus, security and confidentiality of important information is a major area of concern for Enterprise 2.0 as the World Wide Web is fraught of numerous cases of information theft by hackers using viruses and malware. Authoring feature of Enterprise 2.0 technologies can lead to accidental or cognizant leakage of vital information (e.g., new product concept) leading to competitive disadvantages in the market place. Although major software firms are working on these issues, yet until then, there is a need to strike a right balance between security and openness (Lennon 2009; Fuchs-kittowski et al. 2009; Chui et al. 2012).

- 2 Loss of productivity: Another impediment in the adoption of Enterprise 2.0 tools in the organizations is the wishful thinking of the management that employing such tools in the organizations would reduce the productivity of the employees, as they will waste a lot of time ‘playing’ with the features of Web 2.0 technologies. In this regard, organizations may focus on retaining and enhancing those features of the Web 2.0 which lead to increase in productivity (like relationship building) and on removal of time wasters (like ‘Poke’ applications, customizable layouts, etc.) (Lennon 2009; Chui et al. 2012).
- 3 Lack of ROI metrics: One of the major obstacles in the E 2.0 technologies is related to the lack of appropriate metrics. Science behind the measurement of the results of E 2.0 efforts is in nascent stage and is not fully evolved yet. It is thereby very challenging for organizations to ascertain with accuracy the relationship between E 2.0 investments and returns, using the currently available intermediate measures like engagement (Fuchs-kittowski et al. 2009; Chui et al. 2012).
- 4 Intellectual property rights: Another bone of contention in the E 2.0 is the intellectual ownership of co-created and crowdsourced ideas as the assertion of ownership by an organization may lead to inhibition on the part of contributors (Chui et al. 2012), and authorizing ownership to the contributors may lead to enhanced costs in the shape of completing legal and consular formalities to acquire intellectual rights or paying royalties etc..
 Mazumder 2008 has classified the challenges in the adoption of Enterprise 2.0 into two categories as shown in Figure 2.
- 5 Challenges related to the formative state of Web 2.0:
 - 5.1 Lack of clarity in Web 2.0 concepts: There is enough ambiguity among the researchers regarding what encompasses Web 2.0 concept (Mazumder 2008; Constantinides et al. 2008; Kaplan et al. 2010).
 - 5.2 Continuously changing Web 2.0 landscape: Fast pace of development of Web 2.0 technologies due to continuous innovations, consolidations, and diversifications in the Web 2.0 landscape makes it difficult for organizations to keep pace with it (Mazumder 2008).
 - 5.3 Lack of generic and proven usage pattern: The pattern of usage of these technologies varies from industry to industry and organization to organization resulting into no precedents for the organizations to follow (Mazumder 2008).

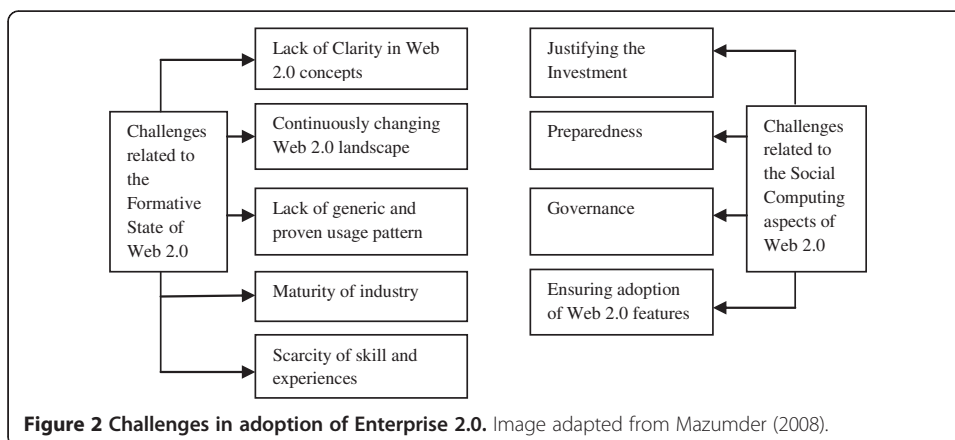


Figure 2 Challenges in adoption of Enterprise 2.0. Image adapted from Mazumder (2008).

- 5.4 Maturity of industry: Due to the dynamism of the Web 2.0 technologies, it is difficult to locate a single platform or feature which can support all Web 2.0 related needs (Mazumder 2008).
- 5.5 Scarcity of skill and experiences: Scarcity of people with right skills and experience to integrate the Web 2.0 technologies with the enterprise architecture is another challenge for E 2.0 as the people proficient in Web 2.0 technologies are inexperienced in the application of the same in organizations and vice versa (Mazumder 2008).
- 6 Challenges related to the social computing Aspect of the Web 2.0:
 - 6.1. Justifying the investment: Intangible and incremental benefits accruing from Web 2.0 technologies make it an unfit case for justification for fund allocation in the organizations.
 - 6.2. Preparedness: Successful implementation of E 2.0 demands organizational readiness in terms of transformational changes in structure, procedures and practices, as well as cultural readiness in terms of culture characterized by mutual trust, less control, openness, and collaboration (Mazumder 2008; Chui et al. 2012; Stobbe 2010).
 - 6.3 Governance: On one hand, E 2.0 tools empower the employees in unimagined ways whereas on the other hand the absolute authority and control of the managers is reduced. These altered roles at times may lead to unintended outcomes in the form of dissents and negative remarks for management and hence warrant the managers not to react in an exaggerated manner to such criticisms, as they are the ones who primarily motivated the employees to use these platforms. Though in such situations of classical conflict between people's theory-in-use and espoused theory (Argyris 1998; McAfee 2006; Chui et al. 2012), the theory-in-use emerges a clear winner. Accordingly, the lack of judicious application of control and governance on the part of managers turns out to be a big obstacle in proper implementation of this empowerment initiative (McAfee 2006; Mazumder 2008).
 - 6.4 Ensuring adoption of Web 2.0 features: Mere implementation of Web 2.0 technologies will not serve the purpose until and unless wholehearted adoption by the staff is not ensured (Mazumder 2008; Chui et al. 2012). Demographic (age), psychological (fear of unknown and public ridicule), technological (lack of requisite skills and training), and personal factors of the staff may lead to less or no embracing of the emerging concepts such as Enterprise 2.0 (Lennon 2009; Fuchs-kittowski et al. 2009). Problem of nonusage of technologies by knowledge workers even after training and prodding is also quite a prevalent problem (McAfee 2006) as majority of the people (90%) using internet are only passive audience to the content, 9% are the editors and only 1% are the creators of the content (Owyang 2010). It remains true even in E 2.0 environment leading to less than desirable contribution from the employees.

So, what should be done by organizations to implement E 2.0 effectively in pursuit of innovative and entrepreneurial efforts?

Suggestions for effective implementation of E 2.0

Mazumder (2008) advocates a comprehensive and incremental approach for effective implementation of E 2.0 after a thorough analysis of the needs, preparedness, and benefits already realized by the organization by incorporating some features of Web 2.0. Thorough analysis of the present state of affairs in the organization is advised alongside envisaging of future requirements of the organization. This internal analysis needs to be continuously matched with innovations and changes happening in web 2.0 in order to keep track of the trends and direction, maturity of technology, and the availability of best practices and experiences. Mazumder (2008) supports the short implementation phases to be carried out in an iterative fashion. Each iteration should have clearly delineated boundaries as to what results are to be achieved and continuous monitoring and assessment of the result of the previous iteration will be an effective feedback for the future iterations.

Booz et al. (2010) have envisaged a formal approach in the form of two complimentary and integrated service offerings, *viz* Enterprise 2.0 adoption framework and Enterprise 2.0 solutions architecture. Enterprise 2.0 adoption framework is comprised of four phases, *viz* baseline analysis, pilot planning, training and piloting, and institutionalizing. Baseline analysis brings to the fore the current collaborative efforts underway in the organization and accentuates the need for improvement. Pilot planning phase, after prioritizing the E 2.0 technologies for adoption, caters to the planning aspects in relation to training, pilot implementation, and institutionalization. The focus of training and piloting phase is on imparting new skills via training modules and pilot testing the induction of Web 2.0 technologies. The fourth and final phase, after analyzing the feedback from the previous stage, modifies the process as per the need and then integrates it in to standard work practices of the organization. Enterprise 2.0 solutions architecture, on the other hand, facilitates the culture of communication and collaboration by the means of social networking, blogs, wikis, and tagging.

Formal approach to E 2.0 is advocated due to the holistic impact of E 2.0, across diverse organizational areas, *viz* policy, governance, resources, and culture which warrants that impacts across change management, systems engineering, technical development, cyber security, risk management, and mission assurance are taken into account (Booz et al. 2010).

McAfee (2006) talks of the ease of use and no preconceived notions about the output structure and work process as the two ground rules for the incorporation of these technologies. In addition, a ten-prong strategy propounded by The Economist Intelligence Unit (2007) for effective E 2.0 incorporates the following:

1. Remember, Web 2.0 is omnipresent.
2. Hire young people and learn from them, as internet is their life and blood.
3. Look around and learn from the mistakes of others.
4. Hire the help of professionals in your endeavors.
5. Web 2.0 does not tantamount to online advertising.
6. Do not avoid discussions rather lead these.
7. Make a straightforward business case through cost-benefit analysis.
8. Harness the in-house talent.
9. Avoid being 'me too'.
10. Test the waters before taking a plunge.

As evidenced, different researchers have proposed diverse ways for effective implementation of E 2.0 technologies and thereby for a smooth transition to E 2.0 stage for organizations. However, most of the suggestions put forward by researchers in this regard are generic in nature with no specific industry or sector in consideration. This may be because the concept of E 2.0 is still in nascent stages and the organizations though have embraced the concept realizing its importance but are still to frame any industry specific benchmarks (Fuchs-kittowski et al. 2009). In addition, the discussion above reveals that even when researchers are proposing different models and approaches, common meeting grounds can be gleaned for effective implementation of E 2.0. Some of these suggestions have been enumerated below:

- 1 Precise targets and appropriate tools are crucial: Precisely defined targets, synchronized with corporate strategy, are necessary for successful E 2.0 (e.g., a corporate blog of software development by employees and external developers). Precise targets will in turn help in deciding about the target groups, i.e., are we going to use the tools for employees or customers or suppliers or experts? Choice of Web 2.0 tools is also dependent on the target definition as different tools are appropriate for different functions, like wikis are most suitable for collecting and consolidating knowledge whereas a blog or a forum is more suitable for exchange of ideas (Frappalo and Keldsen 2008; Stobbe 2010).
- 2 Receptive culture: Organizational culture's profile, strengths, and challenges impact the execution of a strategy within organizations' domains, same being true for implementation of E 2.0 strategy (McAfee 2006; Frappalo et al. 2008; Stobbe 2010) as DrKW CIO J.P. Rangaswami says 'I'm not sure wikis would work in a company that did not already have 360 degrees performance review' (McAfee 2006). Hence, there is an urgent need to assess the cultural dimensions of an organization with respect to attitude toward knowledge capture, collaboration, trust, risk taking, experimentation, innovation, and generational attitudes. Attention needs to be given to the various sub-cultures prevalent in the organizations as their unique characteristics may impede or accelerate the adoption of E 2.0 technologies (McAfee 2006; Frappalo et al. 2008; Stobbe 2010).
- 3 A common platform: A common collaborative platform or infrastructure is necessary. However, the degree of fragmentation permitted in an organization can be decided after evaluating a trade-off between commonality and customization (McAfee 2006; Chui et al. 2012). E 2.0 technologies, though completely amorphous and egalitarian, spread more quickly when there is some structure and hierarchy in place (McAfee 2006).
- 4 Organization restructuring and process reengineering: Traditional, centralized, hierarchical, and bureaucratic structures characterized by control and inflexibility are not conducive to the effective implementation of E 2.0 strategy. Instead, what are required are decentralized, flat, flexible, contingent, porous, and continuously learning organizations. There is also a need to make social technologies the part of workers' daily work flow even if the current work flow and processes have to be altered to do the same. The idea is not to let it become a part of their 'To Do' list, e.g., Google has modified the work in order to make web tools most relevant to employees' daily workflow (Chui et al. 2009; Chui et al. 2012).

- 5 Pander to the employees' ego needs: In order to generate a critical mass of participation for achieving self-sustaining levels of E 2.0, traditional monetary incentives in the shape of bonuses, and individual feedback may not be giving the desired results in unlocking participation. A more effective approach would be to bolster the reputation of participants in relevant communities as done by ArcelorMittal (Chui et al. 2009; Chui et al. 2012).
- 6 No preaching but help to scale: Organizations should refrain from dictating and publicizing the preferred use of these technologies (McAfee 2006; Chui et al. 2009). A better approach would be to let the actual users experiment and then find out the best use on their own. This is because the applications contributing most value in the organization may not be the ones as expected by the management, e.g., at AT&T, support given by the management to spread the awareness about the effective usage of a participatory technology by frontline staffers led to widespread adoption of the technology in the organization (Chui et al. 2009). So, instead of a formal rollout, it is advisable to observe what works and then scale it up (McAfee 2006; Chui et al. 2009; Chui, et al. 2012). Though some online culture and norms will evolve in the organization with the passage of time so that digital online content can be produced productively and collegially (e.g., Wikipedia). Same may be true for the organizations as well (McAfee 2006).
- 7 Managerial support from the top: Successful implementation and functioning of E 2.0 technologies demands a different leadership approach from the managers. Managers are required to play the role of mentor, enabler, catalyst, and motivator. As actions speak louder than words, they should act as a role model and involve people through deeds and actions but should refrain from interfering too much (McAfee 2006; Chui et al. 2009). At Lockheed Martin, the CIO assured widespread acceptance and collaboration across the company's divisions by establishing his own blog, acting as a role model and setting goals for adoption of E 2.0 (Chui et al. 2009).
- 8 The need to have cyber resilient systems in place: Omni-digitization necessitates weighing the trade-offs between opportunities intrinsic to hyperconnected (Chinn, Kaplan and Weinberg 2014), networked (Bughin et al. 2011) enterprises and accompanied threats due to cyber attacks (Chinn et al. 2014). Security controls, essential for protection against cyber attacks, inhibit the information sharing among employees in inter- as well as intra-organizational Web 2.0 environments. Such restraints are not conducive for the implementation of E 2.0 as the essence of E 2.0 technologies lies in their openness, sharing, and transparency. Hence, there is a need to have cyber resilient systems in place. Successful implementation of E 2.0 demands high-level cyber security entrusted to senior level cross-functional teams and a proper balance between the security and sharing (Lennon 2009; Fuchs-kittowski et al. 2009; Chui et al. 2012; Chinn et al. 2014).

Various other suggestions for ensuring use and success of E 2.0 technologies include leadership buy-in, bringing right people together, shared understanding of the problem, understanding operating environment, developing a customized solution, incessant updating, continuous drive for adoption and usage, community building, and evaluation and improvement (Chui et al. 2009; Bughin et al. 2011; Booz et al. 2010).

Conclusions

In the present paper, researchers reviewed the concept of Enterprise 2.0 based on the definitions propounded by various researchers and concluded that there is no consensus as to what exactly constitutes the concept of E 2.0. This may be attributed to the fact that the concept is still in nascent stage and is yet to be embraced by organizations in entirety. Another important factor contributing to this perplexity may be the dynamic nature of the technological platforms on which the concept has been founded. Researchers hope that the wider acceptance of the concept as well as element of stabilization on the technological front may result in crystallization of the concept in the times to come.

Meanwhile, crystallization or no crystallization of the concept, its antecedent advantages such as more efficient organization structure enabling inclusion of distributed work force, collective decision-making, enhanced information updating and accession, and gathering of market intelligence and innovations has endeared the concept to the organizations. However, inclusion of web 2.0 technologies is not a cakewalk due to the concomitant challenges that organizations have to deal with, *viz* confidentiality of important information, productivity loss due to non-productive features, lack of ROI metrics, ownership of intellectual property rights, and the challenges consequent to formative state of web 2.0. Thus, effective incorporation of organizations necessitates introduction of common collaborative infrastructure for the delivery of precisely defined targets, which are synchronous with corporate strategy. Besides this, organization restructuring, process reengineering, cyber resilient systems, and managerial support are also mandated alongside the effective handling of motivational issues of employees.

Research is beneficial for the academicians as it is a value addition to the existing body of knowledge and provides a comprehensive view of the concept of Enterprise 2.0, its building blocks, attendant advantages, challenges, and suggestions thereof. As the research enumerates advantages and challenges associated with the incorporation of social media tools and practices in the organizations, it may assist practitioners in anticipating the opportunities and hurdles on their way to E 2.0 more realistically. Wide-ranging list of suggestions may also be beneficial by providing them guidelines for effective incorporation of the social technologies in their organizations and helping them to avoid costly errors thereby.

To conclude, it can be said that Enterprise 2.0 may not yet be the 'the future of business' but the super-portal concept, linking social enterprise applications with business enterprise applications such as ERP and CRM, is definitely entering the early majority stage (Miles 2009). It appears to be no longer whether 'to be or not to be' as far as the adoption of Enterprise 2.0 technologies are concerned rather the issue to be tackled now is 'how' to best incorporate these technologies in the organization as E 2.0 is an integrative business strategy and therefore requires the holistic implementation approach. As change is the only constant in the world of E 2.0, creating an E 2.0 means embarking on a never-ending journey in the pursuit of excellence (Miles 2009; Buytendijk et al. 2008). Major software vendors such as IBM, Microsoft, and Oracle are all readying new technology offerings, loaded with Enterprise 2.0 features, to bear a hand to the organizations in their quest for innovation. Though not a panacea for all the dysfunctions of corporate, yet Enterprise 2.0 is ready to take a plunge into mainstream business market, to usher in a new era (McAfee 2006; Lennon 2009). An era characterized by a

new class of networked organizations working on the socio-technical ideologies of Web 2.0. Networked organizations which are 'learning organizations' with multiplicative benefits, which are more agile, more flexible, more responsive to customer needs, and have improved information flows. These organizations would be permitting decision-making at the lowest levels in hierarchy and right at the point of action (Bughin et al. 2011). Such organizations will be in tandem with the digital consumer (Chatterjee et al. 2010). This is because the E 2.0 technologies used by these organizations will help them to understand customers, to connect with them, to forge closer marketing relationships, and to involve customers in product-development efforts in the socially networked world, as has been done by Unilever to co-create Axe Twist brand (Chatterjee et al. 2010; Bughin et al. 2011). All this will take the market competition to new levels thereby leading to new benchmarks for competition in coming time across industries (Bughin et al. 2011).

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

Both the authors, PD and AS, have contributed almost equally in conception and design of the paper, collection, analysis and interpretation of secondary data and are responsible for the final draft. Both the authors have read and approved the final manuscript.

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