# Factors that Increase Web 2.0 Adopting Within an Enterprise Environment

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**Abstract.** New forms of collaboration in business world have emerged with the developments of the recent technologies. The success of Web 2.0 usage encouraged business companies to adopt enterprise 2.0 technology. Enterprise 2.0 that use emergent social software platforms (ESSPs) have been adopted by companies around the world. However, although the huge advantages of this technology, the adoption of enterprise 2.0 process is regularly facing end-client resistance due to the lack of empirical evidence of how Enterprise 2.0 is supporting the business objectives. The purpose of this study is to highlight on how successful company like IBM use ESSPs to achieve collaborative efforts that lead to achieve the enterprises strategy goals. Theory of planned behavior has been picked to recount the operation of building awareness and trust to open and share experiences of sharing information and ideas through Enterprise 2.0 platforms. This theory has been applied on a case study that uses social network strategy within IBM Company. The results show that strategies of knowledge sharing, providing resources for instance time and effort, distributing trust, social influence and the use of technology are factors that increase the Enterprise 2.0 adoption in companies and it proof that collaborate, communicate and connection are the most important factors that should be achieved through Enterprise 2.0 to meet a business objectives.

**Keywords:** Web 2.0 · Enterprise 2.0 · ESSPs · Theory of planned behavior · Collaborative efforts · Knowledge share · Social software

## 1 Introduction

The quick development of the collaborative and Information Technology infrastructure has changed the communication method and strategies of communication in enterprises environment. The expression 'collaboration' inside the enterprise can be define as "a process whereby two or more individuals, groups or enterprises work together to achieve a common goal" [7]. Intelligent systems are employed in the information and knowledge gathering that are imperative to increase the collaborative and communication in enterprises. A good example of that is the web analytics that gets the market intelligence on a service that is sold in any place of the world [1]. To understand the concept of web 2.0 we should understand what the web 1.0 is first. Basically, web 1.0 is any static website which means "read-only web." In other words, it is any website that allowed users to search for information and read it only. No interaction or

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information interchanges in this type of technology. But the web 2.0 is a dynamic website which means "read and write web". It allows users to read and write comments. It can be saying there is a data exchange and there is more interaction in web 2.0 than web 1.0.

The use of web 2.0 technologies like wikis, mashups, blogs, and other social networks that its applications are designed in a manner that they merge various Web 2.0 innovations have made huge progressions in giving clients the tool which is needed for embrace and promote collaboration inside the enterprise. For more understanding of Web 2.0, there are few samples for each tool. Blogspot.com is based on blogs, Wikipedia is a good example of wikis, Twitter is social networking software, and YouTube is a social media. "Those Web 2.0 sites such as Facebook, MySpace, YouTube, Google, Wikipedia, blog, etc. are examples of emergent social software platforms (ESSPs)" [2]. ESSPs include wikis, social media, blogs, forums and social network software. It can be saying that web 2.0 is new strategy to knowledge management [3].

Using the technology of web 2.0 in the enterprise environment is known as "Enterprise 2.0". Enterprise 2.0 is community-based-user technology that supports collective intelligent which is cheaper, flexible and easier to apply. Enterprise 2.0 is a group based system; the more workers embrace it, the better the chance for this framework to success. McAfee defines Enterprise 2.0 as "the use of emergent social software platforms by organizations in pursuits of their goals" [2]. The term Enterprise 2.0 means using the Web 2.0 tools by enterprises [4]. However, both terms are different from each other. McAfee (2006), tried to distinguish the term enterprise 2.0 from web 2.0, he argues that Enterprise 2.0 is related only to companies' platforms that are bought or built to improve outputs of employee's knowledge [9]. According to Bidgoli, Professor Andrew McAfee describes Enterprise 2.0 as "the use of (ESSP) emergent social software platforms within enterprises, or between enterprises and their partners or customers" [5]. According to "the term 'Enterprise 2.0' is the utilization of Web 2.0 technologies inside the enterprise environment, to permit workers to team up, collaborate, communicate, share ideas and create content" [6]. Despite the different definitions, all of them have one meaning that is, Enterprise 2.0 main purposes is to improve employees' knowledge and to support them to share information to achieve collaboration which is required to company success.

According to Ducker and Payne, there are increases numbers of enterprises that are using this new technological development to make different in the way they handle data and carry out various transactions [8]. Enterprises are currently interested in the use of Web 2.0 primarily in two areas: within the enterprise to improve the operations and efficiency and outside the organization to the clients to improve revenue and the clients' satisfaction.

### 1.1 Problem Statement

Despite the huge number of Enterprise 2.0 benefits, some companies are still encountering significant difficulties that related to adopting the use of Enterprise 2.0 collaboration technologies in the enterprise section. The adoption of enterprise 2.0

process is regularly faced end-client resistance and this is resulting in a long adoption process. This low willingness to embrace the system among elder employees is because of the fear of cultural change [10] and the lack of empirical evidence of how Enterprise 2.0 is supporting the business objectives [11].

## 2 Conflicting Attitudes of Adopting Enterprise 2.0

Some researchers stated that using Enterprise 2.0 within enterprises offers many advantages by encouraging collaboration among suppliers, customers and employees. It is eventually adding more value towards enterprise-intellectual capital [12]. Furthermore, according to McAfee, the biggest advantage of Enterprise 2.0 is self-organization which means "the ability of users to build valuable communities and resources and shape them over time without having to rely on guidance from any center or headquarters" [2]. The unexpected high quantity of companies' embrace Web 2.0 was a proof to their perspective [13], this happens because it helps companies achieve unique collaborative environments [9]. Enterprise 2.0 technology adoption is increasing, especially for corporate issues [14, 15]. Social media can be considered as a revolutionary orientation for online business and communication. Tapscott believes that enterprise 2.0 can improve enterprises products and services and solve the big problems as well [16]. On the other hand, some researchers believe that there is lack of understanding about what can be gained from social network [17]. It is because there are some kinds of worries about the utilization of the Enterprise 2.0 inside the organization. Besides, it doesn't fit companies whose privacy is critical and data security is basic.

Furthermore, some organizations appear to be uncomfortable to embrace social media, because users can use it to speak freely among others. Patel stated that, the use of the technology can lead to the loss of productivity since the employees tend to waste lots of their time playing with the features of the social networks, instead of using the sites for the productive benefit [18]. It is also predicted that there may be some bias of adoption among different segments of age. The younger ones are more likely to become active on the social network platforms while older employees may be reluctant in the use of the computers since they show less enthusiasm for the computer [8]. The implementation of an enterprise 2.0 system has to take into account a balance between information openness and data protection into consideration. The Enterprise 2.0 is a defunct tool without data sharing. A balance should be addressed between being properly relaxing and being productive.

## 3 Research Methodology

Secondary data method has been chosen for this study. Studying the case of International Business Machines (IBM) due to its adopting of old platforms which is IBM Connection Lotus Notes that enterprise has designed for collaboration and knowledge sharing purposes. Achieving collaboration and knowledge sharing at IBM is not only

an administrative purpose, IBM also provide collaboration and knowledge sharing to external clients by selling IT solutions as well.

International Business Machines or IBM is a multinational PCs corporation. IBM headquarter is in New York, US. IBM has a big history since the 19th century. The main product in IBM is offering hardware, software and frameworks services. IBM considered as one of the world's biggest PC organizations that has a big history, epically lately. It has over 400,000 workers around the world. IBM has over 34 million employees, speaking 165 languages across 75 countries and serving clients in 174 countries [19]. IBM is a globally integrated company and it provides some services regarding to the social networking to enhance lots of thing within the enterprise. For example, improving the way that employees search, helps employees to find answers for their problem with short time and effort, provide an expertize category for instant questions, and other office tools like the ability to share documents and templates that are required daily.

For IBM case the theory of planned behavior will be used because this theory has been used many times to explain people behavioral intentions toward technology.

According to Ajzen, theory of TPB is a theory that links beliefs and behavior [20]. The TPB explains the user perception that affects the behavior not only according to the behavior characteristics, but according to the user general attitude about the behavior, subjective norms and behavior control [21]. Thus, theory of planed behavior (TPB) can be used in this research to explore the adoption factors which are associated with user attitude toward using such technology, subjective norms and behavioral control of adopting enterprise 2.0.

## 4 Discussion

### 4.1 IBM Social Media Strategy

The policy at IBM is embracing and applying the social business within the company. The IBM manager for Lotus solutions, James Ek, thinks of social media as the future way to communicate. He also believes that, IBM strategy of adopting social business can be achieved by changing all company applications to be 'social'. According to James Ek, the more and quick use of information by many people in a valuable way is the way to the success. He also believes that, social awareness mixing with a great need of collaboration technology are making companies achieve more communicates internally and externally [22].

IBM now is aware that individuals are all more socially mindful today. But rather than utilizing social media for relaxation purpose, IBM effectively utilize it at the work place to improve profitability. Another accomplished issue through social media in the enterprises is achieving "Collaboration". Along these lines, the common motto among workers at IBM is: "When team IBM comes together, we are unbeatable" [22]. In order to gain and cultivating more collaboration inside IBM, they adopted the open information culture through their platform which calls "Connection". The Connection system is an open platform created for inward utilize at IBM. Now it is much easier to access to information and resources. IBM makes it possible by adopting social network

throughout the enterprise. According to Zaffar and Ghazawneh, James EK states that: "Social media flattens the organization and facilitates access to the right information and resources" [22]. The company empowers the workers to share their information with everybody. With social media, IBM makes progress toward an all-inclusive incorporated organization, one which expands the capacity of outreach of its workers. That is why the IBM's CEO decided to create important tools to support collaboration. They were success to design and create the tools that they dream about to achieve collaboration within the enterprise. This tool calls IBM Lotus Connections. The purpose of it is to build a strong network for all IBMers generation to collaborate social computing inside or outside the organization.

### 4.2 IBM Connections Platform

A set of ESSP's (the emerging social software platforms) has been coordinated and merged to create one site with Social Networking pattern named IBM Connections. It is a Web 2.0 enterprise social software platform created by IBM to offer online social networking tools for employees who are associated with the company. IBM connections incorporate a wide range of various platforms over the company. This system is created to enable smoothly integration with the current frameworks at the company. In a commonplace internet framework, the chiefs and IT managers choose which data can be accessed; they also choose the person who is able to access them, and what time they can access. In contrast, IBM Connections gives clients opportunity to choose the type of information they want to share, whom to share it with and how to share with them. IBM Connections main purpose is to create collaboration and knowledge sharing inside the organization. Seven categories are forming the IBM's Connections services: profiles, communities, blogs, bookmarks, activities, files, and wikis [23].

### 4.3 Theories Related to the Adopting of Enterprise 2.0

Investigating the user intention to adopt Enterprise 2.0 and its tools like wiki, blogs, social networking websites and bookmarking is a big concern not only in industrial environment but in academia as well. Hester and Scott reviewed the adoption theories as well as Web 2.0 tools and develop a conceptual theory/model for Wiki diffusion [24]. They come up with some possible wiki adoption factors includes relative advantage, critical mass, complexity, organizational culture and organizational compatibility.

A conceptual model has been built by Chiu et al. based on the theory of Reasoned Action to proof that, Technology Acceptance components which are perceived usefulness, perceived ease of use are required for user acceptance and participation towards Enterprise 2.0 to be successful [25]. Theories like Social Exchange Theory [26], leadership and behavioral science, assumption from perceived organizational support theory [27], Time frame adopted, Culture of sharing information and ideas adopted [28] and many other theories are used to recount the operation of building

awareness and trust to open and share experiences of sharing information and ideas through Enterprise 2.0 platforms. In addition, Louw and Mtsweni argued that, top administration should support users to switch towards using Enterprise 2.0 collaboration technologies through applying motivation, communication, training and support [10]. And that is all cannot be achieved through using models like, Technology Acceptance Model, Value-added model and diffusion of innovations theory. Instead, they suggested a four critical adoption factors which is going to form part of any Enterprise 2.0 collaboration technology adoption strategy. According to them, these factors can be concluded as following: the adoption strategy of the enterprise, alignment, communication, governance, and training and support.

Some researchers see another element based on Louw and Mtswen elements. They believe that applying TPB theory on studies can fit the Enterprise 2.0 environment and web in general. This theory states that attitude toward behavior, subjective norms, and perceived behavioral control, together shape an individual's behavioral intentions and behaviors. Theory of Planned Behavior has been used lately by many researchers for many web purposes. Liaw has a research in the impact of behavioral intentions in using search engines as a learning tool; he applied the TPB on his study [29]. Studying the purchaser studies using the TPB is winning power among the researches of behavior toward digital technologies. Another researcher as Goby used TPB on his study that is regarding to online purchasing [30], Hsu and Chiu studied electronic service continuance by using a disintegrated version of the TPB [31]. Hsu et al. (2006) tried to study the expectation of the people's behavior toward online shopping using the TPB model [25]. This theory is much flexible than others. Some studies have changed the TPB to particular settings. For example, Consumers' acceptance of broadband web [32] or bases of social impacts in online environments [37]. It can be saying that, in this theory, the more positive that subjective standard is, the more excellent the perceived control, the stronger ought the person's intention to perform the behavior in question [33].

### 4.4 TPB Theory and IBM Strategies

There are some strategies that IBM uses to increase the Enterprise 2.0 adoption. This study is highlighting on the method that IBM followed based on TPB theory variables as following:

#### 4.4.1 Attitude to Behaviour (Behavioural Beliefs)

– Knowledge sharing

It refers to the action of exchanging ideas, thoughts and information among individuals [25]. Knowledge must be shared among co-workers, group team, it is because companies face difficulties with knowledge loss that happen when a particular employee leaves the company [34]. Employees' willingness to share in IBM is a determent for the success adoption of enterprise 2.0. Through the IBM Connection system, users can quickly locate people, content, expertise and activate the workforce.

Knowledge share can be also from outside to inside the company because through this system, it can be learned what customers are thinking about by gaining customer insights. Moreover, enabling a wider knowledge reach to build a smarter workforce to the employees. IBM doesn't want its employees to waste their time searching for information and knowledge. Wiki option that IBM provides through its system is a good tool for such thing.

– Resources for instance time and effort

Employees voluntarily participate and share their knowledge. All applications on IBM platform are accurately linked together to facilities the process of finding right resources in less time and efforts. IBM BluePages is an employee directory that makes employees find each other easily by allowing people to search for other employees based on their areas of expertise. Finding expertise for employees' questions is the vital purpose for IBM Connections. Not only this but providing category for specific problems makes it much easier for employees and it saves their time and effort as well. Moreover, IBM Connection is available globally because the platform is fully integrated in the web and can be accessed through the Internet from any point around the world. And this is a really good sign for its success.

### 4.4.2 Subjective Norm

– Trust

It could be defined as "The subjective assessment of one party that another party will perform a particular transaction according to his or her confident expectations, in an environment characterized by uncertainty." [35]. In the context of this study, trust includes trust the quality of the content generated, trust employees to recognize each other contributions and trust others so they can share their own knowledge. Moreover, Trust leads to more openness. Adopting openness policy at IBM through its globally platform means to be transparent company which are permeable to external ideas.

– Social influence

Since the social related to relationship, not to personal thing, IBM create its policy to provide financial reward to the employee to share information. In another word, IBM provide social motivation to encourage connect workers with their colleges for socializing or work purpose. To be digitally linked to a diverse and huge number of social contacts through participation in different virtual group activities, support the concept of the social influence on IBM social network. IBM provides many tools to make the social influence support the employee especially the elder to be more active. IBM's Beehive Social Network gives IBM'ers a rich connection to the people they work with wither they are professionally or personally. Using this platform, workers can create new connections, track exist co- workers, and re-contact with individuals they have worked with them before.

### 4.4.3 Perceived Behavioural Control

– Technology

There are some technological characteristics which have an impact on employees to accept enterprise 2.0 in IBM. These characterizes might be general attributes for any technology like ease of use and trainability. Moreover, because IBM enterprise 2.0 technologies have no access costs for users, youth generation of 17–33 years old adopted this technology faster than others (Fig. 1).

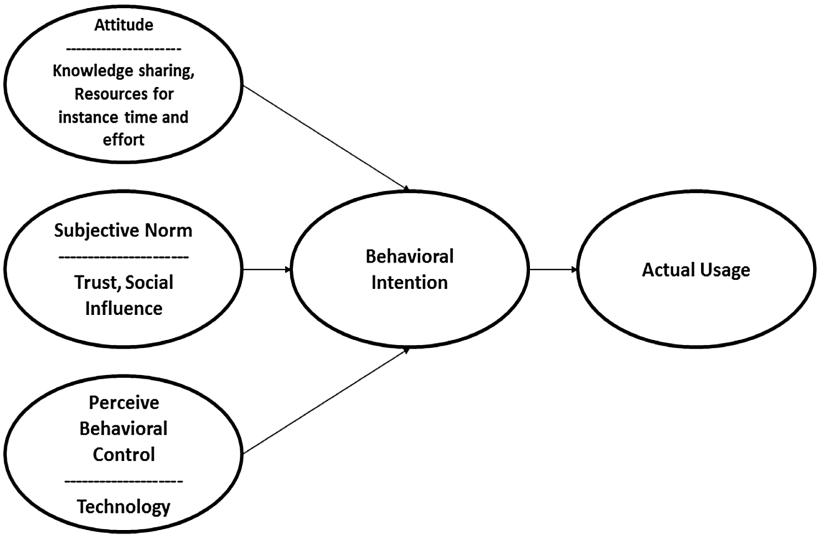


**Fig. 1.** Theory of planned behavior [21] mixing with IBM strategies.

## 5 Conclusion

IBM has been aggressively using social media to tie its far-flung and enormous workforce together and also with a mind towards selling these technologies as part of its service offering. IBM Company is reliant on a great enterprise 2.0 adoption. For Enterprise 2.0 successful, it is a crucial thing that employees accept it. Applying the TPB theory to measure the acceptance of enterprise 2.0 at IBM showed how IBM succeeded to encourage its employees to adopt it and it shows much benefits companies can get when adopting it. By adopting Enterprise 2.0 in an enterprise, end-users are able to establish community networks inside and outside the enterprise environment, thereby enabling end-users to establish relationships with customers, suppliers and partners [36]. Furthermore, Enterprise 2.0 should not only be viewed from a technology perspective, but also from a people perspective.

As explained earlier, Enterprise 2.0 is the use of the technology web 2.0 inside the enterprise and the key role of these tools is to support knowledge management enterprise 2.0, facilitates the sharing of the employees in the company, sharing

knowledge and ideas in a collaborative manner. In other words, the benefits of Enterprise 2.0 are conditioned by the user's acceptance and adoption. The adoption of this technology may be affected by several factors. Thus, a case study of IBM using Enterprise 2.0 as a business strategy has been reviewed. The results show that IBM strategies like knowledge sharing, providing resources for instance time and effort, trust, social influence and the use of technology are factors that increase the Enterprise 2.0 adoption in companies.

Enterprise 2.0 technology works with various resources to improve three overlapping informal organization skills which are: Collaboration (which means, gathering of individuals working mutually towards solving problems), Communication (which is exchanging of data through existing contacts that have social pattern) And Connection (which is creating a new relationship and links inside the enterprise or between enterprise's employees and the external environment). Each of these elements does not work by itself. It can be saying that, Enterprise 2.0 is employees inside enterprises that collaborate, communicate and connect to meet a business objective.

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