

## E-business Collaboration Club

### A Case of Public Relation and Information Technology

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**Abstract**—Public Relation (PR) is an under-valued management tool for the small and median businesses (SMEs); especially, when PR is supported online. To many SMEs, PR is another form of advertising while others dismiss it as dealing with journalists and sending out press releases. However, PR is more than these. As the information technology becomes popular and mature, many communities like Facebook, Twitter and Line, play important roles in PR for fast communications in order to launch international cooperation. The traditional SMEs face the biggest challenge from the product innovation and the market circuit; interestingly, their collaborated ability often comes from the PR. Our research group including the Taiwanese and Polish professionals expects to assist the SMEs to enhance the competitiveness and international exposure by establishing the international platform for SMEs: E-Business Collaboration Club (EBCC). This research is supported by Ministry of Science and Technology (MOST) of Taiwan, Polish Academy of Science (PAS). The mutual cooperation leads to our initial success of SMEs to form social knowledge groups/communities such that we can observe the SME behavior in the platform. In addition, an actual bike company is used to validate the value of EBCC.

**Keywords**- Small and Medium Enterprise (SME); E-Business; Information Technology; Public Relation; Collaboration.

#### I. INTRODUCTION

Public Relations (PRs) are concerned with improving mutual understanding within an organization as well as between two organizations [1]. It directs a deliberate effort towards improving communication between the people and organizations to broaden its sphere of influence through appropriate advertising, publicity and other form of communication to create a good impression [3][4]. As the competition becomes severe among small and medium businesses (SMEs), and they often lack the innovation capacity and the marketing channels: setting up a collaborated platform for promoting PR of SMEs seems to be a good idea [10][11][12]. Although many scholars mentioned the value of cooperation among SMEs, they seldom talk about and practically observe the relationship between PR and collaboration. This study is focused on using Information Technology (IT) as a power tool to set up the E-Business Collaboration Club (EBCC) for SMEs by the

following new features: (a) the company of industrial design: Duck Image is the supporter and integrator of the platform, this platform integrates three main resources and encourages mutual dialogue: SMEs which need new product design, the design company, and the professors in Da-Yeh University, and (b) we try to practically observe that if a poor PR leads to the low collaborated ability of SME, and (c) we conduct the experiment for cloud prototyping in this study, which means we accept the orders of new product design online, and use EBCC intensively for online discussion and 3D-printing [13] to produce the product prototype for SMEs.

Management Master Prof. Drucker in 2001 [6] pointed out that, the business competition already changes from management of the traditional tangible assets: human affairs, to management of knowledge (intangible asset). In addition, the new knowledge: the experience or the technology is tacitly stored in staff's brains. Once the staff leaves the company, this results in draining or losing this precious knowledge. Now the development of the social group/community website as a result, online discussion either the exchange of new ideas has become simpler than before. We attempt to establish the EBCC here in order to help Taiwan and Poland's SMEs to share knowledge, to exchange information and to develop new products rapidly. The international cooperation project of two year grant is supported by Ministry of Science and Technology (MOST) and Polish Academy of Science (PAS): the first year of 2013 was focused on setting up the enterprise cooperation platform. The second year of 2014 is devoted to inviting all the partners to join in; thus, we have been able to analyze and appraise the knowledge sharing process in reality by these registered members.

In order to help the SMEs discussing the innovation concept completely, launch the new product development rapidly, and enter the market in time: the product innovation process should not consist of unplanned/random operations; on the contrary, it should be a sophisticated process from design to market. If we can launch the new ideas rapidly into product prototype, then the competitiveness of the SMEs will be greatly promoted. The design process includes the function, the outlook, the color, the material utilization, and fast prototyping of new products. In this study, each registered enterprise may express/show themselves with advantageous services/products by vivid pictures or videos

via EBCC (explicit knowledge), and seek for the collaboration and dialogue internationally (tacit knowledge). This EBCC is different from the traditional non-vivid, non-interactive websites.

The paper is arranged as follows: in Section II, we briefly introduce the PR and IT. In Section III, the detailed content of EBCC is presented. In Section IV, an actual observation and an experimental example are proposed to show how EBCC works, and validate its value in reality. Finally, the conclusion is available in Section V.

## II. PUBLIC RELATION AND INFORMATION TECHNOLOGY

PRs is much more than advertising [2]. It is the practice of managing the delivery of information between two individuals or two organizations [8]. Public relations may include an organization or individual gaining exposure to their audiences using topics of public interest and news items that do not require direct payment [9]. This differentiates it from advertising as a form of marketing communications. The aim of public relations is to inform the public, prospective customers, investors, partners, employees, and other stakeholders and ultimately persuade them have a good view for the organization, its leadership, products, or of business decisions. According to Daramola in 2003 [7], the purpose of public relations is “to create goodwill, understanding and awareness...of an organization or institution by using the PR techniques of persuasion, information and education to project the organization to its public...”.

Professionals of PR serve in government organizations as well as private sector as a significant field communication. Serving its role of management function within and outside these organizations in order to meet the demands of the rapidly changing world, PR needs to employ an effective tool: information technology, that will enable it to achieve its objectives, and spread its messages/information globally. Therefore, application of information technology is a good support of PR [5].

Information Technology defined by the Information Technology Association of America (ITAA) is: design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware. It deals with the use of electronic computers to convert, store, protect, process, transmit and securely retrieve information. Nowadays, numerous users rely on Facebook, Twitter, and Line, etc., supported by information technology, to achieve fast communication online. The individual impressions are now well spread by the social communities above, but the SMEs still lack a good tool for international dialogue. The gap between the SMEs which are able to or not able to effectively access the information technology and international resources, will dominate the successes or failure of SMEs. Furthermore, those SMEs without or with limited access to information technology are referred to “digital divide.” It includes the lack of resources and expertise needed to effectively utilize the available information technology.

In this study, we use EBCC to improve the collaboration and PR of SMEs.

## III. CONTENT OF EBCC

Our experimental idea is simple. We set up an IT platform: EBCC for promoting the PR, and observe the behavior of SME and validate the value of EBCC. That is, we see how they cooperate together. In this study, we simply define the PR of a SME is its used history in EBCC, which could be quantitatively tracked by registered members.

Since the application of information technology is so important today, using such a technology to empower the PR is valuable [2][5]. The project achievements by our efforts comprise:

### A. Establishment of Information Technology (IT) platform

This is set up for the interior/exterior knowledge management, which provides the internal discussion and idea exchange for registered members; e.g., the blog, the new knowledge sharing, the talented person recruits, the immediate messenger in order to promote the team work efficiency and to deliver the creativity, thoughts and new product files, etc. Furthermore, we also provide the space of show case for each registered member such that interested customer can track the latest news of SME easily.

### B. Establishment of the exterior IT platform for promotion of services/products of SMEs.

Our platform may provide the demonstration spaces for SMEs, and they may interact with exterior customers directly. We define this part as the marketing knowledge, which is explicit.

### C. Establishment of the interior IT platform for idea exchanging of SMEs.

This platform preserves the dialogue history among SMEs when they discuss the new product development. Real time messages with sketches, pictures or files could be intensively exchanged here. In addition, we also provide the service of cloud prototyping by 3D printers. We define this part as the collaborated knowledge, which is tacit.



Figure 1. Portal Entrance of SMEs for EBCC [14]

The service goal of EBCC enables the SMEs to have the primary IT competition power as soon as possible such that their impressions could be improved. The portal entrance is shown in Figure 1. On the top area of the webpage pictures

in Figure 1, which may be automatically changed for the registered members for multimedia (video, pictures) of news, this area is available for the browsing of multi-pictures within one webpage.

This platform could be extended by general computer languages. The platform is divided into the following parts for the development:

A. Discussion Space

The internal discussion space only allows registered companies to propose their own preliminary ideas, discuss, and exchange ideas with each other. This part could be open publicly or privately by user option. The discussion is set up by different industries via blogs; for example, bike blog, electrical blog, agriculture blog, ribbon blog, mechanical blog, etc. which is shown in Figure 2.

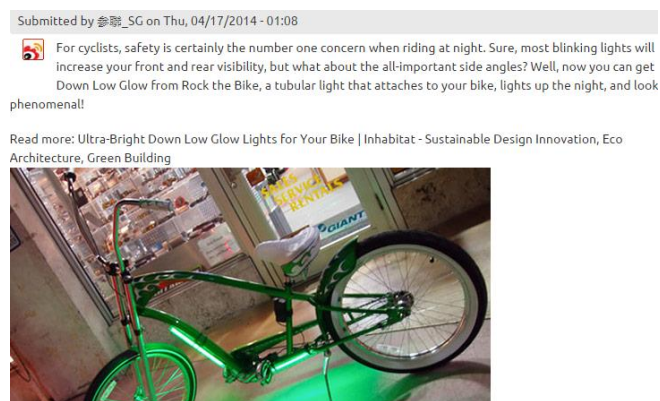


Figure 2. Individual Forum for each Enterprise [14]

B. Sharing Space

The sharing space is designed for industrial designers in order to show their crafts/sketches, these designers may have a demonstration space.



Figure 3. News of SMEs in EBCC [14]

This part is mainly used to release the latest issues for each registered member, which is shown in Figure 3. In addition, the latest news could be easily spread by sharing buttons of social networks.

C. Individual Space

The individual space allows the individual designer to work independently and privately. We provide the cloud prototyping service online. Simply speaking, we accept the orders by designers or SMEs for prototyping. This means we integrate the manufacturing capacity with the designer's idea in order to practically propose the prototype/service in time for SMEs. This service is shown in Figure 4.

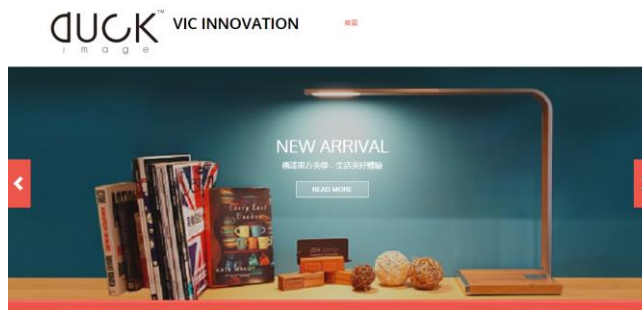


Figure 4. Individual Service in EBCC platform [14]

We induct the cloud concept in the system structure, the private cloud represents individual/private space; the social group cloud represents the discussion space; the blending cloud represents the sharing space to the public. The sharing space is similar to social groups/communities, such as well known models of Facebook or YouTube. The success of Facebook and YouTube comes from the user's self-awareness and the desire of personal showcase.

IV. EXAMPLE

We had collected about thirty registered members in EBCC, such that we can observe how they cooperate together by their explicit image (PR). We found that if a SME is good at PR by EBCC, then it is easy to get more supports/collaboration in EBCC. The PR here is simply defined as the tracking number of the specified SME in EBCC. This behavior is somewhat similar to the phenomena in Facebook.



Figure 5. Bike Frame Example

We also demonstrate a bike example in Figure 5 here to show the EBCC value from design to market. This company now enters the platform to seek a new design for a bike frame, and expects to see the frame prototype within 2 months resulting from the European Bike Exhibition.

First of all, we accept the order online, and clarify that this bike company has the time pressure to finish the job within two months.

Second, the Duck Image Company joins to prepare the sketches for candidates. An example of this process is shown in Figure 6. The selection process considers multiple attributes among five candidates; for example, outlook, strength, the time of 3D-printing (time to market), etc. At the same time, the bike company and the design company communicate mutually and intensively online via EBCC. The discussion content mainly focuses on the issues of progress and strength of this new product.



Figure 6. The Sketch of Bike Frame

Third, once the sketch is chosen, professors in Da-Yeh University receive the final sketch with dimensions online, and use the software: SOLIDWORKS[15] and ANSYS[16] to construct the 3D-model, and analyze the frame to see if it meets the European safety requirements. After it passes the requirements, professors separated the 3D frame model into many small parts for 3D-printing. The 3D printer and the research team are shown in Figure 7.



Figure 7. The Research Team and 3D Printer

Finally, we join all the small parts from 3D printing to form the whole frame, and send the new product (prototype) back to the bike company. The company received new orders because of the fast-manufacturing prototype via EBCC. The prototype is shown in Figure 8. The bike company and the

design company are both satisfied with the test run via EBCC.

To summarize, we evaluate the EBCC that has the following new features which facilitate the success of cloud prototyping for the bike company. First, the knowledge management system within EBCC is quite huge, which contains a series of steps: the knowledge collection, the reorganization, the dispersion, the application, the renewal, the creation of values, and so on. Taking the bike company as an example, we may collect the bike design cases via internet: these data include the image, the writing or the multimedia. And these data are stored in the interior databases for reference by the registered members.



Figure 8 The Printed Bike Frame

Second, registered members are able to read the interior references. After that, in view of the new product development, they may discuss everything in the platform by the forum. In addition, if the discussion process is stopped for a short run, we allow the user to save the wisdom from discussion to the platform for internal databases, the discussers may continue the discussion in the next time by the support above. This function is just like the discussion history in Facebook.

Third, in the exterior platform, each SME is able to summarize, arrange and show their past history, present development, and the future vision one by one, and is able to contact the external customer by gathering fans via EBCC. The feedbacks from exterior customers may enter the interior social group/community for additional discussion of new products or services.

Finally, we had already and successfully connected the on-line 3D files to the 3D printer, which means if we receive the 3D data online, then we are able to control the 3D printer online. Furthermore, the company delivering orders is also able to track the progress online by project management.

## V. CONCLUSION

The most common challenging problems for SMEs are the innovation capacity and the marketing channels. Our approach is not different from the existed approaches of social communities; on the contrary, we integrate the existed approaches and provide a simple and integrated solution for SMEs. Interestingly, we observe that a SME lacks the collaboration ability resulting from the poor PR in EBCC. Simply speaking, if a company PR is poor, then it is not easy to find a good partner to cooperate with it, and vice versa.

Since the IT power dominates the PR of SMEs today, each SME should do it best to show itself and to seek the supports/resources internationally for survival.

The poor PR could come from various aspects: this SME may not update its news rapidly, this SME may not be enthusiastic to use IT for PR, this SME could be afraid of the secret exposed to its competitor, etc. We need further study on this issue later.

The challenging issue of EBCC is the business secret security, which is left for resolution. In the phase of business secret management, the traditional method is secured by the paper copies, which can be read with interior approval of company in tradition, but the shortcoming problems are on the retrieval of complexity, large consumption of man-power for data management (big data), and the data search is not easy. Although we had successfully set up the IT framework; however, EBCC still needs more protections for business secret security. If more products/services and various members could be displayed and invited into EBCC, this platform could be expanded for PR of SMEs. We now focus on the local partners in Taiwan and Poland for customization. In the long run, we hope the EBCC could attract more international members to join in, and our final goal is encourage SMEs stand locally and win globally. Since an actual B2B platform to encourage international cooperation is still not easy to be observed nowadays; thus, we think the experiments here are valuable.

#### ACKNOWLEDGMENT

We appreciate the supports from the University of Economics in Katowice : Dr. hab. Jerzy MICHNIK, Prof. dr hab. Jerzy GOŁUCHOWSKI, Dr. hab. Krzysztof KANIA, Dr. Barbara FILIPCZYK and Dr. Tomasz STAŚ.

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