Increasing the adoption of social collaboration software

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***Abstract*— The purpose of this research article is to identify the key requirements of social collaboration solutions which could be used within the Smart commerce concept. The research aims to find what factors and features of social collaboration software are important to different categories of customers. The research also determines online promotion channels that increase the diffusion of social collaboration software. The result of the analysis shows the key factors of social collaboration software for customers. The most influential factors that affect the adopter's decision are: Ease of use, Security, Price, and Design and Interface. The most useful online promotional channels for social collaboration software are: Search Engines, Official Websites and Blogs, Social Networks, and Email. Furthermore, the most valuable key-factors and online promotional channels are suggested to customers depending on their gender, age, level of innovativeness, type and size of their business.**

Keywords*— *social collaboration software; e-Collaboration; e-Business

I. INTRODUCTION

Nowadays, many businesses strongly rely on IT. In today's technological business world the processes of managing, record keeping, order tracking, selling and communicating are accomplished through the information systems, computer-based software and hardware [1]. IT eliminates barriers and distances. Companies set computer networks for sharing data and for efficient operational capabilities. From the creation of the Internet, businesses have become more and more electronic and more often referred to e-businesses. In recent years there has been significant growth of e-commerce worldwide. For instance, the growth of US e-commerce in 2013 is expected by 13% [2]. So, the importance of e-business is broadly accepted.

That is why today's companies, in order to benefit, pay much attention to adoption of innovative digital technologies and software solutions. Through innovation adoption, businesses increase efficiency and productivity. Innovations help businesses in responding to trends and competition, and improving existing processes and practices. Also innovations help to develop unique selling points [3].

As the role of e-business in the modern business world is increasing, new digital technologies and software applications appear to improve in performance. For enhancing collaboration on enterprise, social collaboration software is being created.

According to Australian Bureau of Statistics, more than 41% of companies, who are open to innovation and collaboration at work, have experienced an increase in productivity from the previous year [4]. Collaboration is critical for an organization to organize itself and adapt to change [5]. As a result, the enterprise collaboration software market is experiencing considerable growth producing high quality collaboration solutions that are in demand [6,7].

The aim of the research is to help social collaboration software developers and providers to improve the diffusion of their software and increase the adoption rate by customers.

II. PAST RESEARCH ON THE TOPIC

A. E-collaboration

E-collaboration is one component of e-business that can drive significant value in trading partner networks through increased revenue and decreased costs using Internet technology. It coordinates and aligns the efforts of two or more parties. E-collaboration takes the business principles of collaboration and applies them to the world of e-business [8].

Along with e-commerce, e-collaboration is a part of e-business. E-collaboration involves major changes in business processes, while e-commerce utilizes the technology of the Internet to automate existing processes. Nevertheless, e-commerce and e-collaboration have a tight relationship, for instance processes might migrate from e-commerce to e-collaboration [8].

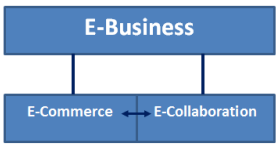

Fig. 1. Relationship between e-business, e-commerce and e-collaboration

E-collaboration operates throughout the supply chain. From the position of supply, e-collaboration helps to reduce time, cost, and inventory. From the position of satisfying customer's demand, e-collaboration increases sales, profit, and customers service [8]. Fig. 2 shows e-collaboration from the position of demand and supply chain.

978-1-4799-5779-8/14 $31.00 © 2014 IEEE
DOI 10.1109/CBI.2014.36

Fig. 2. E-collaboration in a supply chain

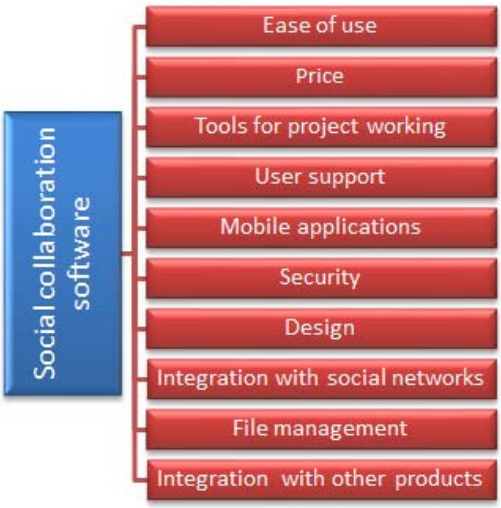

Fig. 3. Social collaboration software factors and requirements

B. *Social collaboration software*

Collaboration software is a term that encompasses networking tools designed to help different groups of people in achieving goals [9]. Collaboration software involves social aspect and is often called social collaboration software.

Social collaboration tools support collaboration by the fact that everyone has a voice. It means every user is able to post content, ideas or suggestions, and comment on others' posts. One of the key success factors for such tools is that they are easy to use. Also in social collaboration tools, information is accessible to the whole organization, but meantime can be limited in access. Moreover, this kind of software enables cross-organizational collaboration and co-operation. It changes the way of communication by reducing email volume and making faster drafting documents [10].

The main requirements and factors of social collaboration software are: ease of use, different tools to support project working and exchanging documentation, user support, mobile applications availability, security, and integration capability with the other software products [8]. Besides that, Claude Whitmyer emphasizes price and design as decision makers for people who choose collaboration software [11]. Due to the fact that collaborative software has a social phenomenon, the ability to integrate it with social networks also becomes valuable for users. Social collaboration software factors and requirements are represented in Fig. 3.

Social collaboration solutions bring benefits by protecting network information and terminating security concerns. This software allows sharing documentation and streamlining communication activities. It reduces administrative burden and makes conversation less formal and more informational. Finally, collaboration tools ensure that the right people get access to the right information [12].

Overall, the integration of e-collaboration tools throughout the supply chain positively affects operational and financial performance [13]. Furthermore, in *The Collaborative Organization* Jacob Morgan states that collaboration has positive impact on business performance [14].

Worldwide Enterprise Social Software 2012 Vendor Analysis, by IDC, forecasts the significant growth of social collaboration market by 45% annually. In 2011, the global market for 'enterprise social software' was worth $0.9 billion. By 2016 it will rise to $4.5 billion [6].

Clinked.com, a UK-based business collaboration solutions provider, has published a report which states that in 2013, 75% of businesses consider collaboration tools as "important" or "somewhat important" to their business, compared to 52% in 2012 [15]. Fig. 4 is based on Clinked.com report and shows the current stage in social collaboration market diffusion.

As it is seen, the market is growing rapidly and collaboration software reached the late majority that is 34% of the market. So, it is a sensitive issue nowadays for the software providers to increase the adoption of their products by customers.

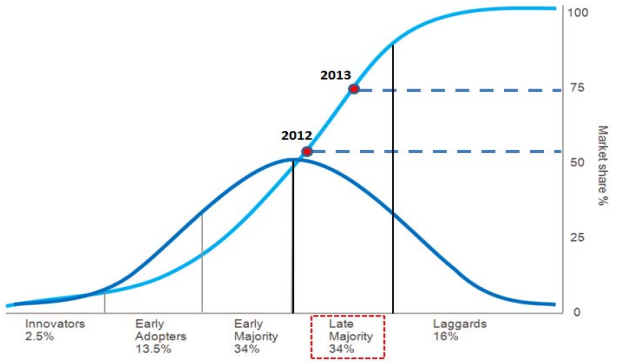

Fig. 4. Current social collaboration software market diffusion

III. RESEARCH DESIGN

For the research a quantitative questionnaire was composed of 13 questions and aimed to collect quantitative data about social collaboration on enterprise. The first section was for collecting individual's personal and professional background, i.e. gender, age, degree, place of work, size of company, current position title, whether or not individuals work in the project team and whether or not and on what extent they consider themselves an innovative person. Second section collected information about communicational channels at work and how individuals usually get information about new products or services. The last section was dedicated to social collaboration software by asking individuals to rank the importance of social collaboration software and then rank 10 main factors that would affect their decision when purchasing social collaboration solutions.

The survey covered 65 respondents from 17 companies operating in 10 industries: Advertising, Banking, Retail, Consultancy, Education, Marketing, Media, Publishing, Software Development and Telecommunications. It was aimed to collect data from companies in order to analyze and then make propositions for collaboration software providers on how to increase the adoption rate of their collaborative solutions.

The responses were collected among companies based in Infolab21 business center in Lancaster University and through companies who agreed to participate in the research. The responses were collected randomly and innominate to achieve accurate results.

IV. RESULTS

A. *The importance of social collaboration software*

The respondents evaluated the importance of social collaboration software on average as 3.34 out of 5. Fig. 5 shows the results in breakdown of gender, age, level of innovativeness, size of company and degree level.

Male	3,38
Female	3,32
Age	
18-24	3,85
25-34	3,28
35-44	3,42
45-54	2,5
>55	2,67
Innovativeness	
Very innovative	4,5
Innovative	3,5
Neutral	3,43
Traditional	2,62
Very traditional	0
Size of company	
<10	2,87
10 to 50	2,86
50-250	3,63
>250	3,44
Degree	
A-level	3,13
Bachelor	3,1
Master	3,55
PHD	3,25

Fig. 5. The importance of social collaboration software

B. *The most useful online information sources among different groups*

To identify the most useful online sources of getting information about new products and services among different categories of users, Fig. 6 represents summarized responses in breakdown of Gender, Age, Innovativeness, Working in a project team, and Size of Company.

The result is quite clear: among all the categories, using a Search Engine is the most common way of searching and getting information about novelties. Besides that, females outline email ads and official websites. Younger ages tend to use social networks, while elders use email ads and official online sources for this purpose. The same pattern can be seen between more innovative individuals and more traditional ones. Those, who don't work in teams, use all the sources almost equally. Lastly, large companies broadly use social networks as an informational source about new products and services. The least useful sources are online banners and pop-ups.

	Email Ads	Search Engine	Official websites/ blogs	Social networks	Banners/pop -ups
Gender					
Male	6	20	9	14	1
Female	17	19	17	14	1
Age					
18-24	2	10	6	9	0
25-34	11	18	11	16	0
35-44	6	7	6	3	2
45-54	1	0	0	0	0
>55	3	4	3	0	0
Innovativeness					
Very innovative	1	5	5	4	1
Innovative	9	13	5	11	1
Neutral	7	13	10	6	0
Traditional	5	7	5	7	0
Very traditional	1	1	1	0	0
Working in a project team					
Yes	8	22	10	12	1
No	15	17	16	16	1
Size of company					
<10	2	6	4	3	1
10 to 50	3	6	2	1	0
50 to 250	2	4	5	3	0
>250	16	23	15	21	1

Fig. 6. The most useful sources of information

C. *The most important factors of social collaboration software*

The respondents were asked to evaluate 10 factors that would affect their decision when buying social collaboration solutions out of 5 points. As it can be seen from Fig. 7, the most valuable factors on average are the 'Ease of use', 'Security', 'Price' and 'Design and interface'.

Factor	Rank
Ease of use	4,1
Security	4
Price	3,94
Design and interface	3,89
User support	3,6
File Management	3,58
Integration with other products	3,34
Project management tools	3,13
Applications available for mobile	3,05
Social networks integration	3,02

Fig. 7. Factors affecting the purchasing decision

D. *The most important social collaboration software factors among different groups*

Fig. 8 shows what factors mostly affect the decision of choosing and purchasing social collaboration solution. Respondents evaluated 10 factors from 1 to 5. Their responses were summarized and grouped by Gender, Age, Innovativeness, Working in a project team, and Size of Company.

Security, Ease of Use, Design and Interface, and Price rated higher than the other factors.

Ease of use is a key factor amongst almost all the categories. The same can be said about Security except elder groups of individuals, and micro- and large enterprises.

Price is more important for smaller companies while bigger ones care about design and interface. Price is less important for project teams rather than for those who work individually. Price is significant factor for 'very innovative' and 'innovative' individuals, while more traditional individuals rank higher the design of social collaboration solution.

E. *Correlation between factors of social collaboration software*

The positive correlation between ten factors shows that following pairs of factors have a strong positive relationship: mobile application availability and social network integration (0.69), project management tools and integration with other software products (0.59), social networks integration and integration with other software products (0.57), and the last one is relationship between project management tools and social networks integration (0.54). This means that developing features affecting one of these factors positively affects the other.

V. RECOMMENDATIONS

This part tells what key factors to promote for different categories of customers, and what online channels to use for promotion.

Among all the categories of customers the most preferable promotion channel is Search Engines. Considering 10 factors, the key factors are the following six: Ease of Use, Security, Price, Design and Interface; and less often User Support and File Management.

A. *Recommendations by gender*

For both male and female customers the key factors are Ease of Use and Security, but males also give value to a solution's Design and Interface.

Regarding communication channels, both genders are attracted more by search engine advertisement and official websites/blogs. Females can also be affected by email advertising.

B. *Recommendations by age*

Three categories under 45 years emphasize Security and Ease of Use. Also, the youngest respondents outline User Support as a key factor affecting their decision to adopt software, 25-34 year olds outline Price and 35-44 year olds care about Design and Interface. Category 45-54 evaluates all the factors on the same level. The oldest age group requires a satisfactory price, friendly interface and user support service.

The age groups under 35 years are affected more by search engine advertisements and social networking advertisement, while the categories over 35 evaluate more information from search engines, official sources and email advertising.

	Price	Design, Interface	Ease of use	File management	User support	Security	Mobile applications	Project management tools	Social network integration	Integration with other products
Gender										
Male	90	93	92	83	78	92	69	74	67	76
Female	**154**	152	166	139	145	160	117	117	117	130
Age										
18-24	43	46	48	46	47	49	43	43	42	42
25-34	135	127	145	115	113	136	93	102	95	110
35-44	40	44	43	39	36	47	36	31	32	34
45-54	5	5	5	5	5	1	1	1	1	5
>55	21	23	17	17	22	19	13	14	14	15
Innovativeness										
Very innovative	26	23	25	24	25	26	21	22	19	24
Innovative	85	80	87	76	72	91	72	66	69	70
Neutral	84	93	95	79	81	86	56	64	55	70
Traditional	44	46	46	40	40	44	34	36	38	39
Very traditional	5	3	5	3	5	5	3	3	3	3
Working in project team										
Yes	128	131	142	120	119	140	92	100	89	107
No	116	114	116	102	104	112	94	101	95	99
Size of company										
<10	28	30	30	27	24	27	20	22	19	21
10 to 50	29	25	29	26	22	30	14	19	10	16
50 to 250	27	28	29	28	27	24	19	23	22	18
>250	160	162	170	141	150	171	133	127	133	141

Fig. 8. Factors affecting the decision of purchasing

C. Recommendations by type of adopter

Both Innovative and Traditional categories give more value to Security, Ease of Use and Price. Individuals who consider themselves as traditional people also outline Design and Interface, because they want to feel comfortable using new products.

In terms of online promotion channels, software providers should attract innovative people by search ads, email ads and information on official websites and blogs. Traditional people, who tend to prefer offline informational channels instead of online channels, emphasize search engines only.

D. Recommendations by type of business

Both project oriented businesses and businesses oriented on individual work specify Ease of Use, Security, and Design and Interface of social collaboration solutions as the key factors though those who work individually are also concerned about the price of software.

The result of identifying promotional channels for these categories shows that project teams get information from search engines, whilst there is no clear evidence found for individuals who work separately.

E. Recommendations by size of business

Companies of all sizes outline Ease of Use as a decisive factor. Micro-entities also emphasize Design and Interface, small companies and large companies – Security and Ease of Use, medium companies' concerns are about Design and Interface and good file management capabilities.

All the businesses use search engines to find new collaboration solutions. Nevertheless, medium companies also trust official websites and blogs, and large enterprises appreciate social networking advertising.

Overall, if the target customers belong to several categories, key factors and promotion channels should be used in conjunction.

VI. Conclusions

The social software market growth is overviewed and found 45% growing annually. The current diffusion rate of this software for 2013 is analyzed and found in the Late Majority adopters' category.

The analysis showed that social collaboration software plays an important role in e-business. People's responses range from 'somewhat important' to 'essential'. Overall, in the quantitative analysis part the importance was marked 3.34 out of 5. Also, the analysis part identified the most important factors of social collaboration software that affect customer adoption. They are: Security, Ease of Use, Price, Design and Interface, and less often User Support and File Management. Also, this research helped to outline the most efficient online informational channels that are search engines, email ads, official websites and blogs, and social networks. This research resulted in the part, where recommendations to software developers, providers and other interested people were listed. These recommendations suggest how to reach out to the customer and what to propose depending on customer's age, gender, level of innovativeness, size of business, and whether an individual works in the project team or not. Different categories of customers require a different approach. Moreover, the efficient types of advertisements for search

engines, email and social networks were outlined.

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