

University of Ljubljana – Faculty of Economics

Subject: Information System Management

Mentor: **prof. dr. Tomaž Turk**

Study Program: Business Informatics (Masters)

School Year: 2016/2017

## **Seminar Paper**

as part of subject

**INFORMATION SYSTEM MANAGEMENT**

# ***The True Cost of Enterprise Social Media***

*Student: Sara Jakša*

*Enrollment number: 19524001*

Ljubljana, January 2016

---

# Contents

<b>Introduction</b>	<b>1</b>
<b>1 Usage of Enterprise Social Network in the Companies</b>	<b>1</b>
<b>2 Measuring the Effect of Enterprise Social Network in the Company</b>	<b>2</b>
<b>3 Cost of Software and Infrastructure</b>	<b>2</b>
<b>4 Typing Time</b>	<b>3</b>
<b>5 Multitasking</b>	<b>4</b>
5.1 Task Switching . . . . .	5
5.2 Dual-Tasking . . . . .	6
5.3 Calculations . . . . .	6
<b>6 Management</b>	<b>6</b>
6.1 Managerial Support . . . . .	7
6.2 Signaling . . . . .	7
6.3 Attention Seeking . . . . .	8
6.4 Calculations . . . . .	8
<b>7 Conclusion: The Real Cost of Enterprise Social Network</b>	<b>8</b>
<b>References</b>	<b>10</b>

## List of Tables

1 Pricing of enterprise social network . . . . .	3
2 Number of Words on Stack Exchange Sites . . . . .	4
3 The Calculated Costs . . . . .	8

# Introduction

People spend a lot of times on the social networks these days. Americans spend around 20% of their time on social networks, and most of this time is spend during their working hours. This costs employers about 4452\$ per employee per year (Shore, 2012) or around 650 millions dollars per year, so there is a lot of companies that are trying to redirect this energy to the enterprise social network (Federman, 2013).

Maybe this is a reason, why when talking about the enterprise social network, they are usually presented in the positive light (Miller, Marks, & DeCoulode, 2011; Brzozowski, 2009; Burkus, 2016; Leftheriotis & Giannakos, 2014; Wallace, 2007).

Some of the positive effect include increasing trust among employees (Cao, Vogel, Guo, Liu, & Gu, 2012), gathering information (Leftheriotis & Giannakos, 2014) and increasing the flow of information, spending less time on some repeating tasks (Miller et al., 2011) and so on.

There is some talk about the negative effects of the enterprise social network, like Byrne (2016) claiming that what people want at work are applications that enable them to do better work, not another social network. But instead, is some articles there is a notion, that people perceive them as being negative, without giving any sources.

In this seminar paper, I am going to go over some of the costs of enterprise social network that I think are usually not really discussed.

## 1 Usage of Enterprise Social Network in the Companies

Leonardi, Huysman, and Steinfield (2013) defines enterprise social network as integrated web-based platforms that allow people to communicate with each other, link with each other and read, broadcast and edit different messages and documents.

There are still not that widespread. Less then half said that they are using enterprise social network, while only about 25% had a widespread use of it (Li, 2015).

People use enterprise social network for different things, like sharing personal stories, sharing expertise, brainstorming (Huh et al., 2007), informing people (Wallace, 2007), getting to know new people inside the company and keeping track of the former coworkers that now work in a different department (Brzozowski, 2009) and many others.

Most frequent users of the enterprise social network are marketing and engineering people (Brzozowski, 2009; Yardi, Golder, & Brzozowski, 2009).

## 2 Measuring the Effect of Enterprise Social Network in the Company

There are different ways of how to measure the effect of enterprise social network on the company. One way is to use the general measures for success of information system. The other is to use the metrics developed specifically for the enterprise social network.

One of the general IS success measuring models is DeLone and McLean (1992) model. In the original version there were 6 groups of elements that they were measuring.

- System Quality
- Information Quality
- Use
- User Satisfaction
- Individual impact
- Organizational impact

There were differences in the later revisions of the model. For example, the individual impact and the organizational impact were grouped together into net benefits (Delone & McLean, 2003).

One measure that was developed specifically for the enterprise social network in return on contribution. It is calculated with the formula:  $ROC = \frac{\text{number of people benefiting}}{\text{people creating resource}}$ . When using it in real life, it works under the assumption that if the person accessed the resource, it was useful to him (Muller, Freyne, Dugan, Millen, & Thom-Santelli, 2009).

## 3 Cost of Software and Infrastructure

There are different pricing of the enterprise social network. Most companies do not disclose the information of how much they spent on the enterprise social network. One of the exceptions is Wallace (2007), where they published that they had the budget of 11.000 AUS (7.500 EUR) for implementation of the wiki solution to the company.

We can estimate based on the pricing some of the cloud solutions are having displayed on their websites. They are written in the lower table, but they are usually in the range from 0\$ to 10\$.

Table 1: *Pricing of enterprise social network*

Software Provider	Price (user per month)	Conditions
Joincube	4-8\$	
Yammer	3\$	
IBM Connections	6\$	
Slack	6.67\$	
BLUE	1-3.2\$	JIRA server (Atlassian)
Chatter	0\$-15\$	CRM license (SalesForce)
G Suite	5-10\$	

Source: Joincube, n.d.; Yammer, 2012; FinancesOnline, 2016; Atlassian, n.d.; TechSolCom, n.d.; Salesforce, n.d.-a, n.d.-b; Google, n.d.

## 4 Typing Time

People usually ignore the cost of typing and reading. But this costs can be bigger than imagined. On of the examples of calculations like that was done by Cochran (2015). He calculated the cost of email, and he realized that use of email for this company was a 7 figure number. The cost of every single email was 0.95\$.

Here, I am going to be using some assumptions to try and figure out what would the typing and reading cost be for the enterprise social network.

I think that a pretty good comparison of the blogging and A&Q parts of the social network is the Stack-Exchange type of site. I think it is similar to the function of A&Q NetWeaver in SAP (Miller et al., 2011) or blogging aggregator WaterCooler at HR Brzozowski (2009).

In the StackExchange sites there is on average 5378 questions posted per day (Yannis, 2012). This is done by 32025 relatively active users (Jaydles, 2015). This comes to around 5 questions per month. Each questions has on average 2 answers (Raphael, 2016). Which is somehow smaller than the Janssen-Cilag reports in their case for their first 12 months of usage (Miller et al., 2011), but let us go with the conservative estimation.

To find the average number of letters per question and answer, I averaged the letters in the first 5 questions on the StackOverflow (<http://stackoverflow.com>) as an example of the technical content and Workplace StackExchange (<http://workplace.stackexchange.com/>) as an example of more policy and company culture related content.

Table 2: *Number of Words on Stack Exchange Sites*

Site	StackOverflow Workplace	Stack Exchange	Average
Questions	2535	1138	1837
Answers	1152	2080	1616

Source: Me

Average typing speed in 41 words per minute (Ratatype, n.d.). To get the typing speed for words, the number of strokes is divided by 5 (Arif & Stuerzlinger, 2009). So to get the speed for the letter, the words per minutes speed needs to be multiplied by 5. This means that the average typing speed is 205 letters per minute.

This means that people spend 45 minutes writing questions and 79 minutes writing answers.

In all social media, not just the enterprise ones, there is more content than a person can keep track of. For example at HP, there is a new post ever 4 minutes (Brzozowski, 2009). Based on Yardi et al. (2009) information, there is around 78 hits for each posting. That means that people on average read 78 times more of content that they write.

In order to calculate, we need the average reading speed. In languages with the latin alphabet, the reading speed is close to 1000 letters per minute. The slowest is actually Slovenian language with 885 characters per minute, but we will take 1000 characters (Trauzettel-Klosinski & Dietz, 2012).

Taking this into account, people would spend 33 hours reading content. So together with writing, a person would spend 35 hours on the enterprise social network.

The average gross salary in Slovenia in October 2016 was 1567,99 EUR (Statistični Urad Republike Slovenije, 2016a). In the third quarter of 2016 people worked on average 126 hours (Statistični Urad Republike Slovenije, 2016b). Which makes a hourly rate at around 12,44 EUR.

This makes the total cost of typing and reading about 435 EUR.

## 5 Multitasking

Every new way of communicating can also drastically change the way people communicate. One of the examples of this is when IBM implemented mail for the first time. They studied the way people communicate, so how frequently do they communicate and how long messages do they send. Then they created the system with a safety margin in mind. In a week after implementation, the server was no longer able to keep up with the demand (Newport, 2016a).

The multitasking literature distinguishes between dual-tasking and task switching. Dual tasking means doing two things at the same time. Task switching refers to doing one task, and then changing to another one (Pashler, 2000).

## 5.1 Task Switching

While I don't have the individual data, Yardi et al. (2009) show that people use enterprise social network through the day.

There were at least two main groups of reasons why people could overuse enterprise social network at work: tasks on enterprise social network are more enjoyable than the real work (Friedman, 2014) and because they have a higher need for socialization in the workplace (Federman, 2013).

There is some research that shows, that the performance of simple, mindless tasks goes up with interruption, while the results of complex or cognitive demand tasks go down (Speier, Valacich, & Vessey, 1999).

But the work that matters in the today's economy is so called 'deep work', the work which produces new value, but it needs environment that can push the cognitive abilities of the worker to the limit, which means distraction free (Newport, 2016b). Which is likely why Tetard (1999) claims that if people's time is fragmented, then allocation of resources in the company is wrong. He attributes this to the IT technology that we created to be more productive.

The effect of fragmented time can be quite steep. There are different cognitive processes that can impact one's work. For example, there is attention residue, which is defined as ruminating thoughts that are related to the previous task or social encounter (Leroy, 2009).

They tested attention residue directly. In one research, the people that were interrupted in the previous task performed 20% worse in the sequential task (Leroy, 2009). There was a different experiment, where the performance was not worse, but they needed 30% more time to finish it (Conard & Marsh, 2010).

There were also studies that showed other negative effects of interruptions. For example, switching the task can cause the IQ to drop for 10 points (Friedman, 2014).

There is also a question of how the time is structured. In the time famine model, the more the interaction time is structured, the more people can afford to take it, before it impacts their work (Perlow, 1999). Which was shown, when they adapted the 'quiet time' at Ditto (Perlow, 1999). But so far it does not seem like the time for enterprise social network is structured (Yardi et al., 2009), which means that it can quickly impact the workers.

## 5.2 Dual-Tasking

There are multiple negative effects of the dual-tasking. People dual-tasking during the negotiation get worse results and they appear as less professional (Krishnan, Kurtzberg, & Naquin, 2014). People dual-tasking work slower on their tasks (Ophir, Nass, & Wagner, 2009).

People who regularly dual-task are less likely to filter irrelevant information, experience more interference while doing tasks and have a harder time switching tasks (Ophir et al., 2009).

The dual-tasking effect can be dependent on other factors, like the personality types. Some authors found the difference in the extroverts and the introverts. The background music has different effect on their task performance (Furnham & Allass, 1999). But there was no difference in the effect of regular dual-tasking (Ophir et al., 2009).

## 5.3 Calculations

This means that for this segment, we are going to be using the attention residue as the marker. Out of 126 hours, we already spent 35 hours on the social network. But the rest of the tasks can also be impacted. I am going to assume the lower end impact of 20%, and I am going to assume that it impacts lasts the whole time.

This calculates together to 226 EUR per worker per month.

Here I did not take into account that the more we switch tasks, the less likely we are to create something worthwhile (Friedman, 2014). Fried (2012) gives everybody a month off, because they found out that this brings forth much better ideas.

## 6 Management

The implementation of the enterprise social network usually does not go without friction. 64% of the companies doing it faced management resistance, while 72% of the company faced user resistance (Miller et al., 2011).

But there are also other aspects of the company culture, that could effect the adoption of enterprise social network. For example, the people could think that using enterprise social network is the not a productive use of their time (Brzozowski, 2009; Yardi et al., 2009). But there are also other aspects.



## 6.1 Managerial Support

The managerial support is important for the successful adoption of the enterprise social network. Li (2015) talked about the case, where after the initial spike, the usage started to fall down. The main reason was, that top executives were not using it, since they considered it not the best usage of their time. And the employees followed suit.

In the Brzozowski (2009), almost half of the people felt like the usage of enterprise social network was not supported by the management and some of them stopped using it because of it. Though Yardi et al. (2009) noted in his case, the the buy-in from the managers directly above was more important than top-down policy.

Even when it comes as a bottom-up initiative, some people are reluctant to use it because of their bad experience with project that were either voluntary based or were not sanctioned by the IT (Brzozowski, 2009).

Also, the importance that managers attach to different outcomes could have great effect. While not in connection to the enterprise social network, the Perlow (1999) case is a good example of that. In this case, the managers attached more importance to the result than teamwork, which lead to people seeking help as soon as they needed it, but were punished by offering it. This lead to dissatisfaction at work and suboptimal working practices, even when the workers knew that they are not optimal.

## 6.2 Signaling

The visibility to the manager is important for advancement (Perlow, 1999).

And the usage of the social network allows them to appear busy, without doing the work they were hired to do (Simpson, 2010). Bendoly, Swink, and Simpson (2014) showed that managerial check had much more effect on what the employees worked on than priorities. One of the reason that the author mentions is, that they want to show some kind of progress, which could lead to the higher priority actions being ignored.

Perlow (1999) case is also a good example of this. Working long hours and working reactivity was awarded, so people stopped planing ahead. Even though they work was better and quicker done, once they were forced to do it.

### 6.3 Attention Seeking

Attention seeking can be quite a problem. For example, a lot of for-your-information emails are sent because the people want to be noticed (MangoApps, n.d.). Attention is the currency on the social media. Where there is a high amount of information, it is the attention that becomes scarce (Yardi et al., 2009).

In the Yardi et al. (2009) case, they were people that stopped using enterprise social network, because they got no reaction from their co-workers or managers. Attention would be good enough payment for these people.

But how much attention is needed depends on the person. They need to receive as least as much they were expecting it. And it does not matter, if the attention comes from inside or outside of the enterprise social network (Yardi et al., 2009).

### 6.4 Calculations

Here it is very hard to do the calculations, since each company would need to weight the cost and benefits of each approach. For example, the more the managers spend on the enterprise social network, the more people will be using it and the more useful it becomes. But on the other side, the manager can not do the rest of the work. Or the people could be paid for the contribution, maybe based on the return to contribution factor. But then the rest of the work can slide off, as this will be perceived as more important.

## 7 Conclusion: The Real Cost of Enterprise Social Network

The enterprise social network can have a real cost, in both the time of the employee and the productivity of the employee. The following table is going to summarize the costs that I have discussed in the previous parts.

Table 3: *The Calculated Costs*

Type of Cost	Calculated Costs
Solution	5 EUR
Typing and Reading	435 EUR
Multitasking	226 EUR
Managerial	depends on the action
Total	> 666 EUR

Source: Me

I have went over just a couple of costs that can come to life with implementation of the enterprise social network. And here we can be talking about the cost of above 40% of the total cost of the worker. That is why I think that people should think carefully before implementing an enterprise social network.

## References

- Arif, A. S. & Stuerzlinger, W. (2009). Analysis of text entry performance metrics. In *Science and technology for humanity (tic-sth), 2009 ieee toronto international conference* (pp. 100–105). IEEE.
- Atlassian. (n.d.). Jira software. Retrieved December 26, 2016, from <https://www.atlassian.com/software/jira/pricing?tab=self-hosted>
- Bendoly, E., Swink, M., & Simpson, W. P. (2014). Prioritizing and monitoring concurrent project work: effects on switching behavior. *Production and Operations Management*, 23(5), 847–860.
- Brzozowski, M. J. (2009). Watercooler: exploring an organization through enterprise social media. In *Proceedings of the acm 2009 international conference on supporting group work* (pp. 219–228). ACM.
- Burkus, D. (2016). Some companies are banning email and getting more done. Retrieved December 30, 2016, from <https://hbr.org/2016/06/some-companies-are-banning-email-and-getting-more-done>
- Byrne, T. (2016). Should you kill your enterprise social network. Retrieved December 16, 2016, from <https://www.youtube.com/watch?v=tzEgAHMyDfU>
- Cao, X., Vogel, D. R., Guo, X., Liu, H., & Gu, J. (2012). Understanding the influence of social media in the workplace: an integration of media synchronicity and social capital theories. In *System science (hicss), 2012 45th hawaii international conference on* (pp. 3938–3947). IEEE.
- Cochran, T. (2015). Email is not free. Retrieved December 31, 2016, from <https://hbr.org/2013/04/email-is-not-free>
- Conard, M. A. & Marsh, R. (2010). Single and multiple interruptions increase task performance time, but don't affect stress, pressure or flow.
- DeLone, W. H. & McLean, E. R. (1992). Information systems success: the quest for the dependent variable. *Information systems research*, 3(1), 60–95.
- Delone, W. H. & McLean, E. R. (2003). The delone and mclean model of information systems success: a ten-year update. *Journal of management information systems*, 19(4), 9–30.
- Federman, E. (2013). Recouping \$650 billion in workplace social media cost. Retrieved December 16, 2016, from [http://www.huffingtonpost.com/eliyahu-federman/social-media-addiction\\_b\\_2480109.html](http://www.huffingtonpost.com/eliyahu-federman/social-media-addiction_b_2480109.html)
- FinancesOnline. (2016). Enterprise social networking software. Retrieved December 26, 2016, from <https://collaboration-software.financesonline.com/c/enterprise-social-networking>
- Fried, J. (2012). Why i gave my company a month off. Retrieved January 1, 2017, from <http://www.inc.com/magazine/201209/jason-fried/why-company-a-month-off.html>
- Friedman, R. (2014). The cost of continuously checking email. Retrieved December 30, 2016, from <https://hbr.org/2014/07/the-cost-of-continuously-checking-email>
- Furnham, A. & Allass, K. (1999). The influence of musical distraction of varying complexity on the cognitive performance of extroverts and introverts. *European Journal of Personality*, 13(1), 27–38.
- Google. (n.d.). G suite pricing. Retrieved December 26, 2016, from <https://gsuite.google.com/pricing.html>

- Huh, J., Jones, L., Erickson, T., Kellogg, W. A., Bellamy, R. K., & Thomas, J. C. (2007). Blogcentral: the role of internal blogs at work. In *Chi'07 extended abstracts on human factors in computing systems* (pp. 2447–2452). ACM.
- Jaydles. (2015). How many active users/contributors does stack overflow/stack exchange have? Retrieved December 26, 2016, from <http://meta.stackexchange.com/questions/269334/how-many-active-users-contributors-does-stack-overflow-stack-exchange-have/269344#269344>
- Joincube. (n.d.). Joincube pricing. Retrieved December 26, 2016, from <https://www.joincube.com/pricing/>
- Krishnan, A., Kurtzberg, T. R., & Naquin, C. E. (2014). The curse of the smartphone: electronic multitasking in negotiations. *Negotiation Journal*, 30(2), 191–208.
- Leftheriotis, I. & Giannakos, M. N. (2014). Using social media for work: losing your time or improving your work? *Computers in Human Behavior*, 31, 134–142.
- Leonardi, P. M., Huysman, M., & Steinfield, C. (2013). Enterprise social media: definition, history, and prospects for the study of social technologies in organizations. *Journal of Computer-Mediated Communication*, 19(1), 1–19.
- Leroy, S. (2009). Why is it so hard to do my work? the challenge of attention residue when switching between work tasks. *Organizational Behavior and Human Decision Processes*, 109(2), 168–181.
- Li, C. (2015). Why no one uses the corporate social network. Retrieved December 16, 2016, from <https://hbr.org/2015/04/why-no-one-uses-the-corporate-social-network>
- MangoApps. (n.d.). Why enterprise social networking will overtake email. Retrieved December 16, 2016, from <https://www.mangoapps.com/blog/enterprise-social-networking-overtake-email/>
- Miller, M., Marks, A., & DeCoulode, M. (2011). Social software for business performance. *Deloitte Development LLC*.
- Muller, M. J., Freyne, J., Dugan, C., Millen, D. R., & Thom-Santelli, J. (2009). Return on contribution (roc): a metric for enterprise social software. In *Ecscw 2009* (pp. 143–150). Springer.
- Newport, C. (2016a). A modest proposal: eliminate email. Retrieved November 23, 2016, from <https://hbr.org/2016/02/a-modest-proposal-eliminate-email>
- Newport, C. (2016b). *Deep work: rules for focused success in a distracted world*. Piatkus.
- Ophir, E., Nass, C., & Wagner, A. D. (2009). Cognitive control in media multitaskers. *Proceedings of the National Academy of Sciences*, 106(37), 15583–15587.
- Pashler, H. (2000). 12 task switching and multitask performance. *Control of cognitive processes*, 277.
- Perlow, L. A. (1999). The time famine: toward a sociology of work time. *Administrative science quarterly*, 44(1), 57–81.
- Raphael. (2016). Average number of answers per question. Retrieved December 26, 2016, from <https://data.stackexchange.com/stackoverflow/query/82904/average-number-of-answers-per-question>
- Ratatype. (n.d.). Average typing speed infographic. Retrieved December 26, 2016, from <http://www.ratatype.com/learn/average-typing-speed/>
- Salesforce. (n.d.-a). Chatter. Retrieved December 26, 2016, from <http://www.salesforce.com/chatter/free-trial-pricing/index-new.jsp>
- Salesforce. (n.d.-b). Sales cloud pricing. Retrieved December 26, 2016, from <https://www.salesforce.com/editions-pricing/sales-cloud/>

- Shore, J. (2012). Social media distractions cost u.s. economy \$650 billion [infographic]. Retrieved December 27, 2016, from <http://mashable.com/2012/11/02/social-media-work-productivity/>
- Simpson, W. (2010). Project planning and control when time matters: focus on process to synchronize and drive results. *Production and Inventory Management Journal*, 46(2), 26–43.
- Speier, C., Valacich, J. S., & Vessey, I. (1999). The influence of task interruption on individual decision making: an information overload perspective. *Decision Sciences*, 30(2), 337–360.
- Statistični Urad Repiblike Slovenije. (2016a). Povprečna mesečna bruto plača za oktober 2016 za 0,6% višja od plače za september 2016. Retrieved December 26, 2016, from <http://www.stat.si/StatWeb/prikazi-novico?id=6402&idp=15&headerbar=13>
- Statistični Urad Repiblike Slovenije. (2016b). V 3. četrtletju 2016 opravljenih več delovnih ur kot v istem obdobju 2015. Retrieved December 26, 2016, from <http://www.stat.si/StatWeb/prikazi-novico?id=6194&idp=3&headerbar=2>
- TechSolCom. (n.d.). Blue, enterprise social network. Retrieved December 26, 2016, from <https://marketplace.atlassian.com/plugins/ca.techsolcom.blue.confluence/server/pricing>
- Tetard, F. (1999). Modern information technology to support interrupted work environments. In *European conference on information systems*.
- Trauzettel-Klosinski, S. & Dietz, K. (2012). Standardized assessment of reading performance: the new international reading speed texts ireststandardized assessment of reading performance. *Investigative ophthalmology & visual science*, 53(9), 5452–5461.
- Wallace, N. (2007). Our intranet, the wiki: case study of a wiki changing an enterprise. Retrieved December 30, 2016, from <http://e-gineer.com/v2/blog/2007/08/our-intranet-wiki-case-study-of-wiki.html>
- Yammer. (2012). Introducing: new yammer pricing plans — direct from sharepoint conference #spc12. Retrieved December 26, 2016, from <https://blogs.office.com/2012/11/12/introducing-new-yammer-pricing-plans-direct-from-sharepoint-conference-spc12/>
- Yannis. (2012). How many questions are posted per day on stack overflow? Retrieved December 26, 2016, from <http://meta.stackexchange.com/questions/146412/how-many-questions-are-posted-per-day-on-stack-overflow/146414#146414>
- Yardi, S., Golder, S. A., & Brzozowski, M. J. (2009). Blogging at work and the corporate attention economy. In *Proceedings of the sigchi conference on human factors in computing systems* (pp. 2071–2080). ACM.