

# Study on Information Technology: Impact on Business Relationships

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**Abstract** — *in this paper study is to investigate changes of social interaction patterns due to information technology in business relationships, by analyzing one specific aspect of interaction in business relationships, namely the effect of information technology on the need for personal meetings. The method employed is statistical. Information technology in business relationships is examined by the level of use of information technology and the influence its use has on the need for personal meetings of the business relationship. The result shows that business relationships in which information technology increases or decreases the need for personal meetings to higher extent also have a relatively higher level of use of information technology in the exchanges. However, the relation between the level of use of information technology and its effect on the need for personal meetings is not linear, which means that although the need for personal meetings changes with higher levels of information technology use in exchanges.*

**Keywords**— *Information technology, EDI, personal meetings*

## I. INTRODUCTION

New technological development puts new demands on companies, or provides new possibilities for developing or improving market activities as well as products. One example of such technological development is the employment of information technology among industrial companies doing business. There are many different information technologies, hence also various possibilities for companies to use them as they conduct their exchanges. Some solutions make it possible for users that are geographically dispersed to share data bases and messages to be copied and delivered instantly to a vast number of receivers. Using for example Electronic Data Interchange (EDI) is a way of letting some information flows go entirely via information technology, such as the ordering of products and information on delivery, or for. Having integrated EDI increases efficiency and permits business relationships to save time and reduce costs. Such business relationships contain elements of business, information and social elements and there are a number of studies imposing the impact of information technology on those different elements.

While some proclaim that information technology increases relationship efficiency other researchers state the negative impact of information technology.

As business is conducted between two companies, people from them meet in order to exchange information on everything involving the product and the business. Over time the two parties get to know each other and thus a social dimension develops in the business relationship, through the interaction. It is suggested in this paper that when information technology is employed in a business relationship, it may change or replace former ways of exchanging information and one aspect of such change could be an effect on the social interaction.

## II. SOCIAL INTERACTION AND INFORMATION TECHNOLOGY

The exchanges of the business relationship inevitably involve interaction and social activity. The parties get to know each other as they interact. Social interaction takes place when people from the two parties talk or meet in order to get to know each other and exchange information. Social interaction varies in intensity depending on how many people are involved, how often they meet and the character of the information they exchange. The information that is transferred via social interaction is more than the tangible pieces of information on the product.

To interact in order to exchange information is an important aspect of business relationships, since information is needed in order to carry out ordering, communicate on specific requirements of the products, as well as to deliver and agree on payment. Interaction that involves exchange of information often provides the parties with additional information, such as that of the market.

The technical information on products and production processes is also decisive as to the extent and character of the information exchange. Furthermore, information exchanges are necessary for maintaining the product exchanges and the business relationship as a whole. Examples are exchange of information on products, order, delivery or economic transactions.

### III. MEETINGS AND INFORMATION TECHNOLOGY

The social interaction of a business relationship can be discussed in terms of how often people from the companies meet, or how well the parties know each other. It is argued that depending on the extent of the use of information technology for different exchanges, the impact on the social interaction patterns that are carried out without information technology may be influenced. One argument that could be raised in the theorizing on the effect of use of information technology in business relationships is that the number of meetings, or need for meetings will decrease, as the use of the technology handles a great deal of information exchanges, i.e. replaces some of the personal exchange of information.

The question is if the need for personal meetings decreases when the levels of information technology use increase. That would suggest increased efficiency of meetings, as the use of information technology then replaces other means of interaction for some types of exchanges. On the other hand, the use of information technology may require additional meetings, if the technology is difficult use or the purpose of its employment is another than making the information exchange more efficient by decreasing the need for meetings.

The reasons why the use of information technology in business relationships would decrease or increase the need for personal meetings can only be speculated on. This paper analyses the extent to which the need for personal meetings has decreased or increased in the investigated business relationships. If the use of information technology affects the need for personal meetings, and that effect is related to when the use is lower or higher, it is interesting to analyze why and how the need for personal meetings is affected by the use of information technology.

### IV. METHODOLOGY

The analysis is based on data from an empirical standardized study, which comprises a large amount of questions on business relationships and networks. For the purpose of the analysis of information technology and social interaction a number of questions on meetings and the perception of the social dimension of the business relationship were asked in the survey. As this paper is concentrated on the aspect of personal meetings and information technology, only a few questions from the survey are analyzed. Firstly the analysis concerns how the use of information technology influences on the need for personal meetings. The use of information technology for different

purposes is also part of the analysis, and hence are questions on its use also included in the analysis.

### V. PROCEDURE OF ANALYSIS

The first aspect to be analyzed is the extent to which the need for meetings is affected by the use of information technology in the business relationships. It is measured on a scale of 9 degrees, on which 5 is neutral (=no change) and lower values (1-4) represent a decrease in the need for meetings and the higher values (=6- 9) represent an increase in the need for personal meetings. The answers are grouped into “decrease of need for meetings” (values 1-4), “no change in need for meetings” (value 5) and “increase in need for meetings” (values 6-9) in the analysis.

The varying exchanges asked about are; (1) business contact, (2) social contact, (3) technical information, (4) information on products, (5) sales, (6) order or deliver, (7) production planning, (8) payment, (9) negotiation on terms, (10) marketing and (11) production collaboration. The scale is a seven degree scale on which 1 represents “not at all” and 7 “very much”. Then the 11 variables on use are analyzed and a single variable on the use of information technology in the business relationships is created, by being compounded to an index.

Mean values are analyzed and a non parametric test is used to assess the significance of the test. A non parametric test is used when the scale is ordinal.

### VI. NEED FOR MEETINGS AND INFORMATION TECHNOLOGY

Table 1 below shows the result of an analysis on how the observations are dispersed between the three categories of decrease, no change and increase of need for personal meetings.

| Value   | Frequency | Valid % | Share  | Group     |
|---------|-----------|---------|--------|-----------|
| 1       | 0         | 0       |        |           |
| 2       | 10        | 3       |        |           |
| 3       | 30        | 8,9     |        |           |
| 4       | 31        | 9,2     | 21.00% | decreased |
| 5       | 225       | 66,6    | 66.60% | neutral   |
| 6       | 20        | 5,9     | 12.40% | increased |
| 7       | 15        | 4,4     |        |           |
| 8       | 5         | 1,5     |        |           |
| 9       | 2         | 0,6     |        |           |
| Missing | 16        |         |        |           |
| Total   | 354       | 100     |        |           |

**Table 1 Frequency and division of answers on IT and change in need for meetings**

There are 338 valid responses to the question on the change of need for personal meetings due to the use of information technology. The right column suggests three groups; (1) decreased: where the need for personal meetings has decreased from the use of it, (2) neutral: where the need for personal meetings has not been influenced from the use of it, and (3) increased: where the need for personal meetings has increased from the use of information technology.

The first category, which think that the use of information technology has decreased the need for personal meetings (values 1-4) accounts for 21% of the answers. A share of 66.60% on the other hand does not think there is change in the need for personal meetings (value 5). Interestingly, 12.40% claim that the use of information technology increases the need for personal meetings. It means that the use of information technology sometimes increases the need for meetings, and sometimes decreases it.

Had the results shown that the need for meetings always decreases when information technology is used, that would have been a clear indication of increased efficiency in the information exchange: when information technology is employed for exchanges information they need to meet decreases? The continuation in this paper is about analyzing if the increasing or decreasing need for meetings due to information technology really relates to higher use of information technology, or if the level of use has no connection to the increase or decrease.

## VII. THE LEVEL OF USE OF IT AND NEED FOR MEETINGS

The following analysis compares the variables of use of information technology with the one on the effect on need for personal meetings. The purpose is to find out if there is a relation between the two, i.e. to answer whether the increase in need for meetings due to the use of information technology really relates to the level of the use. Table 3 shows the three groups of decreased, neutral and increased need for personal meetings and the use information technology.

| Use of IT  | Mean values |         |          |         | Wilcoxon (Z/ p-value) |        |        |
|------------|-------------|---------|----------|---------|-----------------------|--------|--------|
|            | Decrease    | Neutral | Increase |         | 1 vs 2                | 2 vs 3 | 1 vs 3 |
| Mean       | 45.1        | 34.2    | 44.3     | Z-value | -5.0                  | -3.7   | -0.4   |
| Frequency  | 64          | 210     | 38       | p-value | 0.00                  | 0.00   | 0.67   |
| Percentage | 20.5%       | 67.3%   | 12.2%    |         |                       |        |        |

**Table 3 Mean values of use of IT for the three groups**

Looking at the first analysis of Table 3, it is clear that the mean values for the two groups which think

information technology changes the need for meetings is higher (1: 45.1 and 3: 44.3) than of those which do not think the need for meetings are affected

(2: 34.2). Furthermore the Z-values and p-values show that the difference between the groups which think information technology affects the need for meetings are significant, whereas the last test, on the difference between the two groups which think information technology has made a difference, is not significant.

The analysis provides three groups of interest. The first group is business relationships with relatively higher use of information technology in which the need for meetings has decreased as an effect of the use of information technology. This group accounts for 20.5% of the observations.

The second group is business relationships with relatively lower use of information technology in which the need for meetings is unaffected by the use of information technology. This group accounts for 67.3% of the observations. The third group is business relationships with relatively higher use of information technology in which the need for meetings has increased as an effect of the use of information technology. This group accounts for 12.2% of the observations.

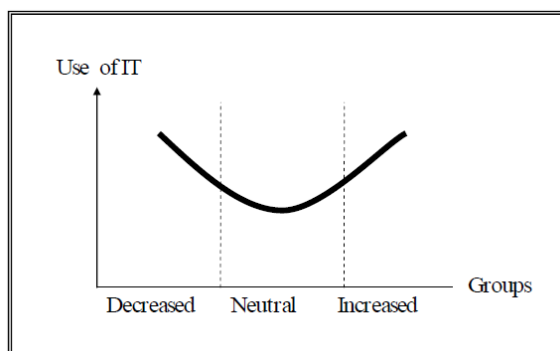
Apparently, the need for personal meetings is related to the use of information technology in business

relationships. Both the groups of decreased or increased need for personal meetings have higher levels of use of information technology than the neutral one. This strongly supports that an increasing level of use of information technology relates to an increasing impact by information technology on the need for personal meetings.

## VIII. CONCLUSIONS AND FURTHER RESEARCH

This paper studies the effect of information technology as a condition companies increasingly adapt to. The focus of attention in this paper is the possible changes of the social interaction patterns in industrial business relationships when information technology is used in the exchanges for different purposes. The analysis showed that the use of information technology is related to change of the need for personal Meetings when the use is relatively higher. In general, higher levels of use of information technology for different purposes of exchange relate to higher levels of change of the need for personal meetings due to use of information technology. Interestingly, the change

in need for meetings can be either an increase or a decrease. The pattern of the three groups regarding their level of use of information technology is shown in Fig 1



**Fig1 Use of IT related to the change of need for personal meetings**

There had been a straight line shown in fig1, a linear relation between the use of information technology and its effect on need for personal meetings could have been supported. The reasons lie within the varying purposes of the employment of information technology as well as other characteristics of the business relationship and calls for deeper analysis.

Further research should be conducted to find differences between the three groups regarding the character of the business relationships in various aspects, in order to explain when the use of information technology increases or decreases the need for personal meeting. To analyze the social interaction patterns deeper would be a starting point, but other elements such as different aspects of exchanges must also be included in such analysis, such as delivery patterns, types of products, production technologies and so on. In this paper, we are not discussed elements of behavior, such as trust, commitment, adaptation, interdependence or cooperation of business relationships, which otherwise are thoroughly investigated in contemporary research.

This paper, however, shows that information technology, when employed in business relationships, affects the need for personal meetings. The conclusion is that this is a complex issue, as there is no simple answer to how the need for meetings is affected by this new technology.

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