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Abstract.

The article explores social relations between business and IT professionals on operational level by employing the perceptual congruence model in the analysis. For the research purpose of this study data have been collected by on line survey of business and IT specialists who are working as partners on operational level in banking and telecommunication industry. The dyadic relation between business and IT specialists has been analyzed on 74 usable questioners or 37 pairs by pairwise comparison between means using paired one tailed t-test. The results were twofold: first they confirmed the existence of "false consensus effect" between business and IT specialists and second they showed that business professionals seek to understand their IT partner in process of collaboration on operational level.

Keywords: social alignment, perceptual congruence, agreement, understanding.

Introduction

Gartner Institute predicts that worldwide IT spending will grow 2.4% in 2015 and exceed $3.8 trillion. By 2018, spending is forecast to exceed $4.1 trillion ("Gartner Market Databook, 4Q14 Update," 2015). On the other side information productivity paradox was on stage in academic discussions and business practice for a long time. The initial spark of popularity was given by Robert Solow's famous quote "We see the computer age everywhere except in the productivity statistics" (Solow, 1987). Since than many papers has been published to solve the mystery behind the productivity paradox to provide deeper understanding of the problem (Brynjolfsson, 1993, Willcocks and Lester, 1996, Diewert & Fox, 1999, Stratopoulos & Dehning, 2000 Dos Santos & Sussman, 2000, Lee et al., 2005,). Two main streams explaining productivity paradox emerged in the academic discussions: first were the economists seeking better methods for measurement of IT contribution to productivity and second were the authors in the field of management who were in quest for better methods of management of IT (Macdonald et al., 2000). This paper is focused on the later considering business/IT alignment as key company governance output which enable achieving better business value from IT investments (Van Grembergen & De Haes, 2010) .

Papp, (1999) pointed out that business/IT alignment is key to achieve improved productivity from IT investments. Many scholars in the past confirmed the positive relation between business/IT alignment and organizational performance, either on business process or company level (Chan et al., 1997, Croteau & Bergeron 2001; Sabherwal & Chan, 2001; Bergeron et al., 2002; Chan et al., 2006; Cragg et al., 2002; Kearns and Sabherwal, 2007; Tallon & Pinsonneault, 2011). Recent publication from the Society for Information Management (SIM) confirmed again that business/IT alignment remains number one IT management concern for year 2014. The study presents the results for IT trends from a survey on 717 organizations in USA (Kappelman et al., 2014). Other comparative studies in Europe and worldwide on the same topic involving ranking of key IT trends gave consistent results. Business/IT alignment was mostly ranked in the top of the two priorities by chief information officers (Jerry Luftman & Barry Derksen, 2013).

Consulting the existing body of literature we are confronted with jungle of terminology related to alignment. Different terms have been used in relation to business/IT alignment such as: fit (Venkatraman, 1989) linkage (Chan and Reich, 2007) fusion (Smaczny, 2001) coherence (Chan, 1992) harmony (Luftman & Brier, 1999), coordination (Lederer and Mendelow, 1989) congruence (Chan and Reich, 2007). On one hand this pluralism in terminology, conceptualization and measurement represents the richness in the field but on the other hand it gives evidence for lack of agreement about the key constructs. In this way raising complexity is fostered in the field in which seems easy to get lost (Hiekkanen et al., 2013). Business/IT alignment as latent construct is difficult to measure and in the academic literature various ways of conceptualization of the phenomenon were used. Venkatraman (1989) was referring to the need of consistency between theory development and theory testing regarding the concept of fit.

Critiques of other scholars emphasize that alignment is mechanistic, static, not desirable and that it should often challenge business instead of following (Chan and Reich, 2007). Tallon and Kraemer, (2003) found evidence of alignment paradox arguing that the relationship between strategic alignment and increased payoffs from IT is only valid up to a certain point beyond which paradoxically further increases in strategic alignment appear to lead to lower IT payoffs. Others pointed out that models developed are mainly conceptual and does not correspond to the real world and they are difficult to implement in business practice (Ciborra, 1998, 1997). The previous elaboration naturally leads to conclusion that although there are many theoretical papers and industry cases published in academic journals, many questions still remain unanswered in the field of alignment. Otherwise business/IT alignment would probably not be rated as number one concern from industry practitioners. This was the main driver of the author to cover some gaps in the field of social business/IT alignment on operational level explained bellow in next section.

Social dimension of business/IT alignment

Different dimensions of business/IT alignment were studied in the literature including strategic, structural, operational, intellectual, social, cultural and cognitive dimension. Making clear separation between organizational level on one hand and the content of business/IT alignment on the other hand is good road sign which reduces the complexity for newcomers in the field. This idea of clear separation was proposed by Schlosser et al., (2012) in order to provide integrated categorization of business/IT alignment dimensions and prevent overlapping in future research. Regarding the organizational level on which alignment can and should be assessed they distinguish between a strategic layer, a cross domain layer, and an operational layer. The organizational levels proposed by the authors are based on the Strategic Alignment Model (SAM) of Henderson and Venkatraman, (1993). When it comes to the discussion about organizational levels of business/IT alignment it is valuable to mention the extension of SAM done by Maes, (1999,1999). Most papers in the past were focused on studying alignment on strategic and structural level and only some on operational level (Aversano et al., 2012; Jentsch and Beimborn, 2014).

In relation to dimensions of alignment Schlosser et al., (2012) identify three distinctive groups 1) human dimension, 2) social dimension and 3) intellectual dimension. Most of the studies done in the past (Floyd and Wooldridge, 1990; Kearns and Sabherwal, 2007; Reich and Benbasat, 1996) were primarily focused on intellectual alignment and strategic level neglecting the possibility of exploring intellectual dimension on structural and operational level. Certainly all three dimensions are important to study but stronger research gap can be found in the domain of social and human dimension of alignment on operational level.

The social dimension is about relationships and cognitive linkages. It encompasses relationships, mutual understanding, cultural issues and informal structure (Schlosser et al., 2012). Reich and Benbasat (2000) define social alignment as state in which business and IT executives understand and are committed to the business and IT mission, objectives and plans. Often in the literature this is generally accepted definition

of social alignment. They made distinction in terms of short term alignment conceptualized as mutual understanding of current objectives and long term alignment as congruence of IT vision. Most of the authors were following this approach of distinguishing shared or mutual understanding about current and future role of IT as short and long term alignment (Zhao et al., 2009). Shared understanding or mutual understanding was conceptualized in various ways in the past as:1) degree of shared cognition about the role of information systems (Preston and Karahanna, 2009) 2) shared business/IT knowledge (Vermerris et al., 2014) or only 3) business knowledge of IT (Wagner et al., 2014, 2010). Jentsch and Beimborn, (2014) in their literature review paper indicate that although some authors (Preston and Karahanna, 2009) make clear distinction between knowledge and understanding others (Ray et al., 2005, Nelson and Cooprider, 1996) use both terms interexchangeable. Also they came to conclusion that aside from existence of different approaches towards conceptualization of shared understanding most of the papers have presumptions that shared understanding does not just mean pure understanding but also mutual consensus between business and IT professionals. Authors of this paper supports the arguments of previous scholars (Jentsch and Beimborn, 2014, Marshall and Brady, 2001) that shared understanding does not by default implies mutual agreement. Making clear distinction between agreement and understanding and evaluating them as separate constructs on all three levels strategic, structural and operational provide deeper insight about the complex phenomenon of social alignment. Exploring both dimensions as equally important give broader picture about maturity in social business/IT alignment indicating that highest level of alignment would be achieved when partners understand and agree on the validity of other's positions.

Haffke and Benlian, (2013) supports the argument that understanding and agreement are different aspects of social relationships although they are related. They extend the concept of shared understanding between business and IT by using perceptual congruence model and give more comprehensive approach towards business/IT shared understanding. Similar to Haffke and Benlan most of the authors were studying social relationships and cognitive linkages between business and IT executives as members of board of directors. Authors acknowledged that partnership and mutual understanding between the CEO and CIO facilitates business/IT alignment and thereby enhance the contribution of the IS to business performance (Johnson and Lederer, 2010, Henderson, 1990, Karahanna and Preston, 2013). In this paper the author replace the idea of Haffke and Benlan on a different organizational level – operational level. The core idea in this paper is to test the relations between business and IT professionals on operational level by using perceptual congruence model. Many authors (Jentsch and Beimborn, 2014, Wagner and Weitzel, 2006, Wagner and Weitzel, 2012) call for more research in business/IT alignment on operational level. Only recently the paper of Wagner et al., (2014) is one that combines social perspective of IT and business linkage at nonstrategic levels in daily business operations involving regular staff. Therefore this study can contribute to the existing literature by providing more insight in the perceptual congruence and interdependence of operational business and IT staff.

Perceptual congruence model

To examine the interpersonal relations between business and IT professionals the author draw on White's perceptual congruence model (White, 1985) used also in Haffke's and Benlian's, (2013) paper. Before the study of Haffke and Benlian (2013) the full concept of perceptual congruence that includes separate measures of actual agreement, perceived agreement and understanding has not been applied in research. Only Feeny et al., (1992) was measuring mutual agreement between CEO and CIO separately from understanding but they were not considering the CEO's prediction of the CIO's responses. The analysis was only in one direction asking CIOs' to predict CEOs' responses on IT related questions and compare their predictions for accuracy. Also there was no study that contrasts the two directions of interpersonal CEO-CIO understanding. Therefore Haffke and Benlian suggest that potential of dyadic analysis in social business/IT alignment has not been fully explored.

Exploring the social and personal relations between business and IT professionals from various angles give insight into the collaborative partnerships between business and IT professionals in everyday operations. Business and IT professionals are often involved in operational interactions during IS change and maintenance. In many organizations the structural linkage between business and IT professionals on operational level have dyadic relationship in form of business and IT system owners or as a team involving domain demand (business and IT) managers. Business and IT system owners or domain demand managers are mainly responsible for integrity and availability of information processed on the IS. This way of creating team with two people with business and IT background is often used as a solution to improve mutual understanding between both parties and to provide better handling of IS change requests. Therefore the quality of collaboration is highly dependent by the ability to understand another's perspective. The utilization of perceptual congruence model on operational level can help in deeper understanding the level of collaboration and partnership between business and IT professionals.
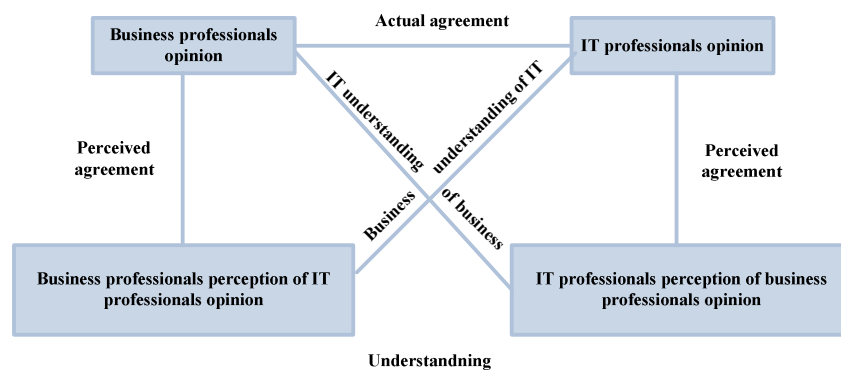
Figure 1 Business - IT professionals' perceptual congruence model

White's (1985) model was often used in social research for evaluating relationship between husband and wives or parents and children. In the model of perceptual congruence reciprocal perceptions are measured of both professionals as a pair. This means that individual opinions of both professionals are measured and their perceived opinion of the other person. In this manner four variables are compared to measure 1) actual similarity of business and IT professionals referred to as actual agreement, 2) the level of perceived similarity referred to as perceived agreement and 3) the ability to accurately predict the opinion of other dyadic partner referred to as understanding.

Many researchers in the past (Acitelli et al., 1993; Levinger and Breedlove, 1966; Ross et al., 1977) who were examining interpersonal relations confirmed that people often tend to perceive other people's perspectives more similar to their own opinion than they actually are. This tendency is described as a result of the inner need of most people to believe that own beliefs, attitudes and behavior are not very different from others with whom they interact in close working environment. Ross et al., (1977 call this phenomenon "false consensus effect". Therefore the first hypothesis is derived from the previous elaboration that the relation between business and IT professionals on operational level is expected to be subject to the same "false consensus effect". *Hypothesis 1: In the relation business-IT professionals' perceived agreement is greater than actual agreement.* Both hypothesis and their relation with the perceptual congruence constructs are presented in table 1.

Table 1 Hypothesis and respective constructs

Hypothesis	Constructs
H1: In the relation business-IT professionals' perceived agreement is greater than actual agreement.	1. Actual agreement 2. Business professionals perceived agreement 3. IT professionals perceived agreement
H2: There is no significant difference in understanding between business and IT professionals on operational level.	4. Business professionals understanding of IT professionals 5. IT professionals understanding of business professionals

Several social relations researchers (White's 1985; Acitelli et al., 1993) has confirmed that power differentials between two dyadic partners play crucial role in their mutual understanding. They indicate that it is more important for individuals with lesser power to understand those with greater power and control. Haffke and Benlan in their study hypothesized the same about the relation between CEO and CIO because their positions are on different level in the organizational structure with different power. This is not the case on operational level in the process of collaboration between system owners or demand managers. It is difficult to say that there is significant difference in power between the people working on daily basis on IS change requests and maintenance. In most companies they work as a team with very similar authority and responsibilities regarding the IS. Therefore the second hypothesis *Hypothesis 2* states: *there is no significant difference in understanding between business and IT professionals on operational level.* Both hypotheses were tested by paired t statistics.

Research methodology

To test the previously stated hypothesis a survey was designed including questions related to different business and IT related topics. The same questions were given for answering to both types of business and IT specialists including the questions for predicting the opinion of the partner in the dyadic relation. Pretesting was done before launching the survey with 8 business and IT specialists from business practice and two academic colleagues working in the field of interest. As a result of pretesting some of the survey questions have been improved and reformulated in accordance with the received suggestions. Data have been collected from an on line survey with 19 questions. The contacts for the business/IT specialists' pairs have been obtained from previously established contacts with key informants from the surveyed companies. In communication with the key informants was highly stressed that for the purpose of this research are needed contacts from business and IT specialists working together as a pair on daily basis mainly on IS changes and maintenance. The survey was conducted in banking and telecommunication industry in R. of Macedonia (August-November 2014) because this industry was identified as highly IT intensive. The data on which analysis was performed are collected from 12 banks and 3 telecommunication companies. A total of 123 responses have been collected from 172 sent questioners or 71.51% rate of response. From the total number of responses 7 questioners have been removed from the data sample because in 5 of them there were too many missing values and in two questioners the servants did not engage enough in answering the survey. Data analysis was performed on 74 questioners or only on 37 pairs of business and IT specialists because there was no equal distribution in the responses from both professions and making pairs for the total number of responses was not possible [i].

Both business and IT specialists were receiving exact version of the survey with the same indicators for measuring the perceptual congruence. In the same way like in study of Haffke and Benlan (2013) perceptual congruence of business and IT professionals was measured by asking both dyad members to rate their own level of agreement with statements related to various business and IT topics as well as the perceived opinion of the other person to the same topics. The statements were covering several important business and IT issues related to business and IT collaboration often pointed as controversial by

academics and practitioners. A seven point Likert scale was used to rate the statements. The four responses per dyad were than compared intrapersonally and interpersonally. Numerical congruence scoring technique was used (approach used by Acitelli et al., 1993 and Haffke and Benlan 2013) by translating two seven-point Likert scale ratings to a congruence score between one and ten assigning relatively lower congruence score when the responses are in opposite side of the spectrum and relatively higher congruence score when both answers fall in the same side of the spectrum. The perceptual congruence scores of each indicator were aggregated on a level of global score per indicator as an average score. Global scores have been tested by using paired t – statistics.

Data analysis and results

Both hypothesis H1 and H2 were tested by pairwise comparison between means using paired one tailed t-test. Authors (Acitelli et al., 1993, Haffke and Benlan 2013, White's 1985) who were using perceptual congruence model indicate that using t-tests provide satisfactory results. Table 2 shows sample means and standard deviations of all variables from perceptual congruence model. High means up to 10 indicate higher congruence of responses whereas low means as low as 1 indicate low congruence or higher incongruence of responses.

Table 2. Perceptual congruence scores (means and standard deviations)

Construct	Mean	Standard deviation
1. Actual agreement	6.96	1.14
2. Business professionals perceived agreement	7.49	1.17
3. IT professionals perceived agreement	7.91	1.06
4. Business professionals understanding of IT professionals	7.13	0.92
5. IT professionals understanding of business professionals	6.58	1.21
N = 74		

In the testing of the hypothesis 1 and 2 p-value method was followed. The means of the constructs have been compared and the significance of p-value was tested in relation to standard error $\alpha=0.05$. The t-test for hypothesis H1 confirmed that perceived agreement is significantly greater than actual agreement. This was the case for perceived agreement of business professionals' with means of 7.49 and 6.96 and $p=0.0105< \alpha=0.05$. The same hypothesis was confirmed even with greater significance in case of perceived agreement of IT professionals with means of 7.91 and 6.96 and $p= 0.0005< \alpha=0.05$. The data supported the hypothesis 1 for existence of "false consensus effect" between business and IT professionals' on operational level. The opinions of business and IT professionals in the sample were less similar than both perceived them to be.

The level of mutual understanding was compared between business and IT professionals to test the second hypothesis H2. The results confirmed statistical significance on global score between the means because the p value was $p=0.019< \alpha=0.05$ and the means were 7.13 and 6.58. Accordingly business professionals had greater level of understanding of IT professionals. Therefore hypothesis H2 had to be rejected.

Testing of the hypothesis H1 confirmed that perceived agreement between business and IT professionals is greater than their actual agreement. This means that there is more disagreement than it is actually perceived. The results of this study gave contrary findings to the study of Haffke and Benlan (2013) regarding the testing of the hypothesis 1 and are in line with marriage studies (Acitelli et al., White's

1985) in confirming the "false consensus effect". Perceiving significantly more agreement than existent might be an evidence of lack of open dialogue and effective communication and knowledge exchange between the two parties. However greater level of perceived agreement of business and IT professionals than their actual agreement confirms lack of agreement about important business and IT issues on operational level. This situation can seriously affect the level of social business/IT alignment and effective utilization of IT systems in achieving business value of IT. Nevertheless Haffke and Benlan (2013) were also arguing that neither the opposite situation where individuals perceive significantly more disagreement than existent is not healthy relationship. In this situation the individuals are more likely biased by negative prejudices and lack of effective communication of each other viewpoints. The best case is probably situation in which perceived and actual agreement between business and IT professionals would be not significantly different which should be a good precondition for effective collaboration.

In the testing of the second hypothesis regarding the level of understanding of each other viewpoints and opinions about relevant IT and business issues the results showed more important role of business professionals than IT professionals. The null hypotheses which was assuming no significant difference in mutual understanding between the two groups of specialists based on no power differentials on operational level was rejected. The power differential theory assumes that less powerful individual tend to understand the partner with more power in order to achieve future collaboration. The results showed statistical significance that IT professionals want to be understood while business professionals seek to understand their partner. This sounds not in accordance with the theory of power differentials between business and IT professionals mostly assuming that business people have more power than IT people. The distribution of power on operational level between the two groups of professionals might not be equal and even might be in favor of IT professionals. Although as a team they might belong to the same level of the formal organizational structural there are also other sources of informal power. Often business professionals from business practice stress that IT specialists require detail technical specification for change requests in IS. In the same direction some business professionals report that IT professionals have more power regarding the information systems changes coming from their expertise, prioritization and the way of implementation. In some other cases of low level of business/IT alignment in organizations or lack of IT staff business people emphasize that IT professionals do not bother to understand business requirements and that they only concern with the technical aspect of the problem. However the evidence from this study showed that on operational level business professionals were the one who were seeking to understand IT professionals in order to collaborate.

Research limitations and future improvements

Although this study has contributions, it has inherent limitations that warrant caution in interpretation of the results. First important limitation is the sample size. Increasing the sample size with more than 74 respondents or 37 business and IT specialist pairs would probably yield more valid and reliable results. Second important limitation is related to the way how data have been collected. Using key informants as contact points for receiving e mail contacts from business and IT professionals who are working as a team on IS change and operations might bound the quality of the data collected. Third the number of business and IT topics used as indicators for measuring perceptions of both groups should be extended. Fourth the survey data have been collected at single point in time from distinct geographic area in Macedonia from banking and telecommunication industry. It would be interesting if the study in future is repeated as longitudinal study in other countries and industries particulary with higher level of IT maturity in business practice. In this way validity and realibility of the study results would be improved. Fourth subjective interpretation of the results can also be strong limitation of the study. Future research should explore the dyadic relations between business and IT specialists on operational level more deeply by using perceptual congruence model. Repeating the study with overcoming the research limitations mentioned above should provide more deeper understandning of the social relation between business and IT professionals on operational level.

Conclusion

The paper is response to the call of many authors for more research in social dimension of business/IT alignment with more focus on operational level. This study makes several contributions to IS research by focusing on social dimension of alignment on operational level. For the first time perceptual congruence model was used to explore the social relations between business and IT specialists in the process of their collaboration for implementing IS changes and executing everyday operations. The hypothesis testing in the study showed interesting results. First the existence of "false consensus effect" in the relations between business and IT specialists was confirmed meaning that there is more disagreement than actually is perceived. Greater level of perceived agreement than actual agreement between business and IT professionals is an evidence for lack of agreement on operational level between business and IT specialists. Regarding the level of understanding of each other viewpoints and opinions about relevant IT and business issues the results showed more important role of business professionals than IT professionals. The results showed statistical significance that business professionals have been better in prediction of IT professionals' opinion about relevant business and IT topics. To a certain extent the results were surprise for the researcher expecting that there will not be significant difference in predictions of each other's viewpoints between the groups in accordance with power differentials theory. It would be interesting in future to explore the cause for these results and to repeat the research in other environments in order to test the validity and reliability. However in this study the results showed that on operational level business professionals were the one who were seeking to understand IT professionals in order to effectively collaborate.

Endnotes

[i] All survey items and distribution of respondents by companies can be obtained on request from the author taking in consideration the limited space of the article.

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