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Business IT Alignment: A Never-ending Story

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Introduction

The impact of Information and Communication Technology (ICT) on organizations has been addressed extensively in research and practice. Leavitt and Whisler for example, observed as early as 1958 that Information Technology would soon spread (Leavitt and Whisler 1958). They stated: “One important reason for expecting fast changes in current practices is that information technology will make centralization much easier” (p. 43). In their view, modern information technology encroaches on one of the dilemmas that organizations grapple with, namely the impact of technology on how organizations act. It makes sense that the alignment of business with ICT, known in literature as business IT alignment (BITA), is a central issue for the management of organizations (see on this issue : Brancheau et al. 1996; Brancheau and Wetherbe 1987; Henderson and Venkatraman 1993; Herbert and Hartog 1986; Kappelman et al. 2014; Luftman et al. 2006; Nath 1989). In a longitudinal study started by Luftman in the nineties of the last century and continued by a.o. Kappelman (2014) it is shown that in the list of top-management concerns for IS/IT the BITA issue is in the top 3 since 1994. In table 1 the most recent overview of these top management concerns is shown.

IT Management Concerns/Issues	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003
Alignment of IT with the Business	1	1	2	1	3	2	1	2	1	1	1	1
Security/Privacy (b)	2	7	9	8	9	9	8	6	3	2	3	3
Business Agility/Flexibility (c) (d)	3	2	3	2	2	3	13	17	7		5	7
Business Productivity	4	3	1	4	1	1	7	4				
IT Time-to-Market/Speed of IT Delivery	5	(d) New; was with “Velocity” in 2013, and “Agility” through 2012.										
IT Value Proposition in the Business	6	New										
Velocity of Change in the Business	7	(d) New; was with “Time to Market” in 2013, and “Agility” through 2012.										
Innovation	8	New										
Business Cost Reduction/Controls	9	4	Combined with “Business Productivity” through 2012.									
Revenue Generating IT Projects	10	10	4	9	6	8	17					
(a) Blank cells, unless otherwise noted, indicate that the issue was not asked in that year of the Study. (b) “Security” and “Privacy” were recombined this year. Separated in 2013, “Privacy” was not selected by any respondent. (c) “Flexibility” was added this year. (d) In 2013, “Business Agility and Speed to Market” became “Time to Market/Velocity of Change” and “Business Agility.” This year, “Time-to-Market/Velocity of Change” was separated and became three selections: “Velocity of Change in the Business,” “Velocity of Change in IT,” and “IT Time-to-Market/IT Speed of Delivery.”												

Table 1 IT management concerns 2003 - 2014 (Kappelman et al. 2014)

Since Henderson & Venkatraman (1993) called for a focus on business IT alignment, several hundred journal articles were published. An overview of BITA literature was published by Chan et al. (Chan and Reich 2007a; Chan and Reich 2007b). According to them business IT-alignment leads to more focused and strategic use of IT which in turn leads to increased performance (see also : Chan et al. 2006).

In time, the proposed solutions for solving the alignment issue were questioned by a growing number of scholars. They wonder why after more than twenty years of scientific attention for BITA, the issue still isn’t solved (a.o. Burn and Szeto 2000; Chan 2002; Chan and Reich 2007b; Introna 2007; Maes et al. 2000; Yetton 1997). As reasons they mention that (1) alignment in many cases is too mechanistic, (2) it is

hard when the business strategy is not known and (3) it leads to a situation where IT doesn't challenge the organization. Ciborra (1997) adds the suggestion that alignment too often uses a static approach. In its current state of constant change reality can't be grasped in models. But Ciborra also suggest the following: "Our questioning, deconstruction and investigation have shown that possibly it is too early to sing the De Profundis for the concept of strategic alignment. On the contrary, our post mortem reflection on the managerial research programme on alignment has pointed out several new tracks."

The attention for growing dynamics in the environment of the organization is used as a starting point for our exploratory research. Our research aligns with the view of scholars who argue that the literature fails to capture important phenomena around dynamics, and that alignment as a final state in different phases of a change process is not always desirable. In this article we state that the fact that BITA is in the top 3 of management concerns is not only logical but a necessity. Information plays a different role in each phase of the change process.

The structure of the article is as follows. First we will give a quick overview of different approaches to Business IT alignment. Next we sketch a model to better understand dynamics in an organizational setting. The next paragraph will focus on the role of information in a changing organizational setting. Based on these insights we will describe the exploratory research we did to get a better insight in BITA in a dynamic environment. We will end with some conclusions.

Approaches to alignment

Three main approaches to the alignment issue are discussed in the scientific literature:

- The Strategic Alignment Model (Henderson and Venkatraman 1993) and related approaches (a.o. Abcouwer and Truijens 1997 (in Dutch); Avison et al. 2004; Gerow et al. 2014), in which key issues are strategic fit and functional alignment.
- The competencies approach with a focus on necessary skills and competencies (see a.o. Abcouwer et al. 2015 (in Dutch); CEN 2014; Luftman 2015; Luftman and Kempaiah 2007). In this respect scholars often use a maturity approach to indicate the level of competencies.
- The contingency approach where attention is given to the environmental issues that are of impact on the organization (Allen and Varga 2006; Khazanachi 2005; Melville et al. 2004; Teo and King 1997)

The different approaches focus on (1) the route that an organization has to follow to reach a state of alignment, (2) the competencies needed to be able to do so and (3) the degree to which environmental factors are taken into account.

Even though the third approach pays attention to contingencies, all of these schools of thought are based on comparative statics. A spot on the horizon is identified and solving the BITA issue is assumed to lead the way to reaching the spot. This implies that the above mentioned approaches (as well as many others) assume that it is possible to reach a state of Business IT alignment.

Based on the continued top 3 presence of BITA in the longitudinal study by Luftman cs, we can assert that the issues has not been solved yet. By including complex behavior of organizations we will seek to improve our understanding of BITA. The next paragraph will sketch the model we use to better understand the dynamics of the behavior of organizations.

Complexity in organizations

"The dogmas of the quiet past, are inadequate to the stormy present. The occasion is piled high with difficulty, and we must rise -- with the occasion. As our case is new, so we must think anew, and act anew. We must disenthrall ourselves, and then we shall save our country." (Abraham Lincoln, 1862)

As the above mentioned citation of Lincoln shows, we are already for centuries aware of the fact that we will have to act anew in a stormy future. Modern developments are stressing this necessity to an even higher extent. For example, literature from the last decade pays increasing attention to issues of risk-

management. An often cited author on these issues is Ulrich Beck. His thesis of the world risk society describes the world/organization as a system that no longer has the ability to control or even describe the risks it is facing (Beck 2002: 40-41). According to Beck, this world risk society is the result of the speeding up of modernization. Similarly, Peter Singer describes globalization as an important cause of uncertainty and risk (Singer 2002: 1). Globalization, he states, has made the world one world in which long and short term local events and behaviors have serious effects on people, organizations and societies all over the globe. Adam Rose (2007: 383) furthermore, describes events such as the Asian Tsunami and the attacks on the World Trade Centre to show the unexpectedness of today's disasters. He states that in current reality we are unable to predict these disasters because of their unexpected form, magnitude and location. In addition, Barnett (2001: 3) states that effectiveness of proposed prevention measures and solutions are uncertain ('uncertainty of effective solutions') due to the uncertainty of occurrence and magnitude of the disasters ('uncertainty of impact'). This is why there is a need for every organization to think about these developments.

Also in the field of ICT the impact of increased uncertainty and unpredictability is being recognized. There is a growing tension between traditional use of ICT (based on pride on the past) versus a focus on renewing and innovation (based on curiosity to possible futures). The view on the influence of ICT on organizations is changing. Two opposing approaches are relevant. Since the early attention for BITA onwards, ICT is used as a means to rigidly support the organization; from those days on, the alignment between business and ICT has been in the limelight. On the other hand, we became aware of the impact of ICT on innovation and its drastic influence on the strategic choices of the organization.

It is widely observed that there is no general one-size-fits-all solution for the major dynamic challenges that organizations are facing. Different approaches to organizations are key. Dyer (Dyer and Ericksen 2008) distinguishes between the theory of bureaucratic organizations versus the theory of complex adaptive systems (CAS) about organizations (regarding the concept of CAS see a.o. Kauffman 1995; Miller and Page 2007). The theory on ambidexterity stresses that a difference has to be made between exploitation versus exploration. According to He and Wong (2004) these concepts represent two fundamentally different approaches to organizational learning. To them exploitation implies organizations behaviors characterized by refinement, implementation, efficiency, production and selection while exploration behavior is characterized by search, discovery, experimentation, risk taking and innovation.

Where exploitation assumes defensive rationality, exploration just like the Complex Adaptive Systems (CAS) approach, offers the organization the possibility to deal with unsettling developments (He and Wong 2004).

Contrary to what is assumed in economic literature, the above mentioned approaches to organizations imply that people functioning in such organizations are often not behaving as a "homo economicus". According to (Kahneman and Tversky 2000) decisions in practice are often not rational. According to them, this finds its basis (see also Taleb 2010) in dealing badly with the estimation of uncertain chances and risks, in having a preference for the existing, having an aversion to losing, preferring to work with an inadequate model of reality rather than working without a model, etc. This creates a dominant set of psychological inclinations with the result that the *certain* chance of a crisis is not taken into account. Kahneman (2011) also speaks of thinking according to system 1, the experience system. This system acts intuitively, subconsciously, emotional and associatively. This means that decisions are made fast and often made on the basis of what is known, experiences and a personal repertoire of actions; however, man's associative ability still offers possibilities for progressive development.

The opposite is system 2, the cogitation system. This system states that acting is rational and calculative. System 2 is slow and works along logical, serial and progressive lines towards a reasoned act. However, as observed above, this rationality is in many cases dictated by experiences from the past. This way, rationality may lead to conservative behavior.

Signification forms the basis for the success of the organization (Kahneman 2011). However, changing contexts may be of influence on the process of signification and will also have its influence on the interpretation of the notion of success. This way, context determines the functioning of the organization. The crucial questions regarding this are, is (1) which types of action an organization takes, (2) when it takes these and (3) how all this relates to this changing context.

An organization is constantly faced with changes and challenges, which means that constantly new equilibriums have to be found. This leads to organizations being permanently in motion. In this, stability and (threatening) chaos continuously alternate (Prigogine and Stengers 1987). The only way the organization will be able to function optimally, is when it finds a developing (in other words, each time a new) balance in this field of tension.

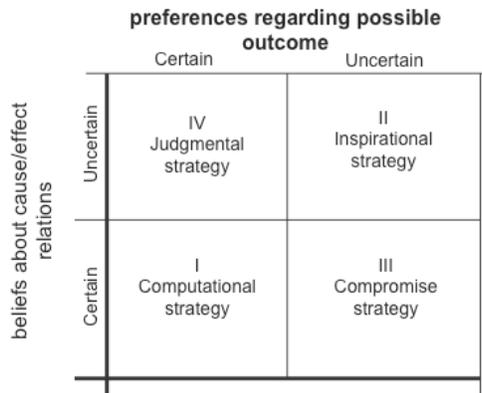


Figure 1 The strategies of Thompson

In line with this approach, we point at the fundamental work done by Thompson (Thompson 1967). Like many other authors, Thompson uses dilemmas. Confronting two dilemmas creates quadrant models, which can be used for interpreting reality. Figure 1 shows one of his central models. In this model, he confronts ‘preferences regarding possible outcomes’ with ‘beliefs about cause/effect relations’. Each combination in this view demands a different type of strategy.

Based on the approach of Thompson, combined with the theory on strange attractors of Lorentz as referred to by Gleick (1987). Parson et al. (1990) developed a model that further elaborates on this tension and translates it into the influence of ICT on organizations. In their model they use the axes *want* and *can*.

Want in the sense of providing direction, where an organization decides on the course it wishes to take and *can* in the sense of the ability to actually enable this direction.

In a later publication, Parson (2002) further dwells on the internal and external developments that keep the organization swinging back and forth between these quadrants. This view was further elaborated by Abcouwer et al. (2006; 2010; 2011) It is specified that this motion is not random. There is a certain logic to it: the development path is generic in character. The starting point is that an organization in a state of equilibrium will inevitably end up in a crisis situation. This crisis will be followed by a process leading to (temporary) recovery of equilibrium and stability. In this respect, the periodical need for fundamental reconsideration of the existing is a necessity for survival. Within the context of the model we described here, this development can be represented as a lemniscate. The lemniscate movement developed in this way, looks similar to the ‘adaptive cycle’ motion as indicated in the ecological literature (Gunderson and Holling 2002; Walker and Salt 2006). However, by choosing different axes, (Holling (2001) uses connectedness and potential as axes) the motion is not fully identical. However, the succession of phases does show a strong resemblance and the different views to the development can be used as a source of inspiration as we will see later in this article.

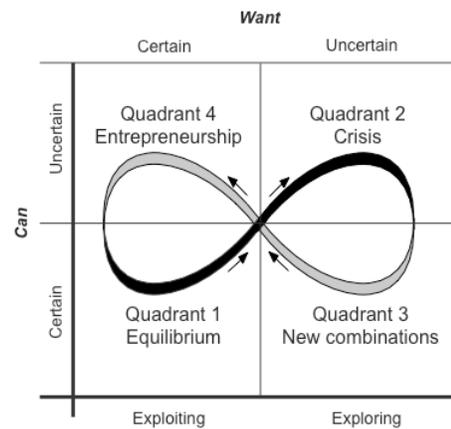


Figure 2 The adaptive cycle of resilience

Crucial in the model is, as we will see, the concept of crisis. If external influences that disturb this equilibrium can no longer be denied, or if a ‘Black Swan’ (Taleb 2010) occurs, the organization is generally far out of phase with the environment for finding a way out of the arisen situation. In that case we speak of a “crisis” (the upper right quadrant). At its core, the current mode of functioning in a situation like that is under threat and the proven (and often traditional) ways of dealing with it, will no longer be able to solve the problems. Reverting to outmoded approaches - in line with traditional view on the concept of crisis - is exactly what you should *not* do.

Based on this insights, in this article we use the following definition of a crisis:

An organizational crisis is a situation in which an organization resides, where the traditional ways of problem solving are no longer applicable and the organization is aware of that.

The start of a crisis usually demonstrates that the existing dominant coalition is no longer capable of dealing with the situation and new ways of acting will have to be found. It finally will have to lead to a new equilibrium.

We will describe the phases in the model more accurately in the next paragraph.

The phases in the adaptive cycle.

We already introduced the four development phases in form of a lemniscate. In this paragraph, we will describe this lemniscate model in more detail. It will also introduce some important aspects that we will use further on in our exploratory research.

In the description we consider the development along different lines. The table below includes the main (but not all) references. In the following text, we do not always refer to these authors individually.

<i>Strategy</i>	Thompson (1967)
<i>Type management</i>	Mintzberg (2009)
<i>Culture, game rules</i>	Graves et al. (2005), van Es (2008)
<i>Resilience</i>	Gunderson and Holling (2002), Folke et al. (2002)
<i>State of mind</i>	Graves et al. (2005), Taleb (2010; 2012)

Quadrant 1 Equilibrium

BUSINESS AS USUAL: WE KNOW WHAT WE WANT AND WE ARE PROPERLY ORGANIZED, STRUCTURED AND IN EQUILIBRIUM WITH THE ENVIRONMENT. OUR WORLD IS VERY SAFE.

In this quadrant the cause/effect relationships are known. There is a pursuit for efficiency, preservation and improvement on the market. For 'not for profit' organizations it is the political position. The equilibrium should not be disturbed. In Anglo-Saxon management thinking, 'compliance' with the law, 'control' and short term predictability of the results are core issues. Analysis of the weal and woe of the organization takes place with an emphasis on financial indicators, e.g. the stock market value. Efficiency, standardization, specialization, obsession with power, predictability and the eternal cutting of costs leads to the creation of a dominant way of thinking. This way of thinking is internally aimed and attempts to solve problems by using more of the same. In learning theory, this way of thinking is known as *first order learning*. Yet, under the influence of dynamic developments in the environment, it is a matter of decreasing redundancy and variety in the actions. However, in this situation the collection of knowledge, assets and market power is given all possible attention.

A summary of this quadrant in terms of the above-mentioned line can be found below:

	Equilibrium
<i>Strategy</i>	Preservation of the existing equilibrium: Computational Strategy
<i>Management</i>	Management, optimization, efficiency and certainty
<i>Culture</i>	Certainty, method and order
<i>Resilience</i>	Decreases through lower variety
<i>State of mind</i>	Confidence in the present and the past

Quadrant 2 Crisis

CRISIS, SCENARIOS, GURUS: THE OLD AND FAMILIAR NO LONGER APPLIES AND THE FUTURE IS UNCERTAIN AND PRECARIOUS. THERE IS NO BEST METHOD OR MODEL FOR DEALING WITH THE SITUATION. WHAT IS TO BE DONE? GOOD ADVICE IS WORTH ITS WEIGHT IN GOLD.

In this quadrant, the organization is aware of the fact that disruptions can no longer be dealt with using the available repertoire of actions (see the aforementioned definition of crisis). In this respect, three crucial characteristics connected to the concept of crisis need to be pointed out:

- The crisis arrives unexpectedly and can be initiated anywhere,
- The crisis has a major impact on the organization / the system: everything changes,
- The crisis can only be predicted with hindsight; there were possible signs of an imminent crisis but these were not recognized from the prevailing logic. It was not taken into account.

In such a situation, the tools at the disposal of the dominant coalition do no longer suffice. The disruptions come into being from the development of variables whose impact was not assessed correctly. This did not happen because the management omitted to do a good job but because these slow variables (Walker and Salt 2006) caused durable changes to the context of the organization and existing working methods and insights did no longer suffice within the new context. In this situation, one needs to actively search for innovation. This means that the organization has to reinvent itself and that current objectives possibly no longer apply and that current processes possibly have to be turned around. There is fear of an uncertain future. Looking for inspiration may be the way to find a solution out of the crisis. However, the existing tools prove no longer efficient. The required variety for dealing with the crisis lacks.

In summary the crisis phase can be described as follows:

Crisis

<i>Strategy</i>	Understanding what is going on and choosing a new direction: Inspirational Strategy
<i>Management</i>	Leadership and charisma. Inspiration and finding a way out of the crisis and communication
<i>Culture</i>	Being open to system changes and putting a meaning on these. Practical initiatives for change and innovation
<i>Resilience</i>	None, no answer as yet to external variety
<i>State of mind</i>	Insecurity about the present and (curious about) the future.

Quadrant 3 New combinations

PLANS, INSIGHTS: THE NEW BUT AS YET UNKNOWN STARTS TO DAWN AT THE HORIZON.
FROM THE PALETTE OF POSSIBILITIES, NEW ROUTES ARE PROPOSED. LEADERSHIP AND CHARISMA. HOWEVER, LIMITED CAPACITY REMAINS DECISIVE.
FROM CHOOSING WITH LIMITATIONS TO CHOOSING IN ABUNDANCE DOES NOT MAKE IT EASIER TO DECIDE.

The result of the initiated search is that multiple options will become available. The organization has developed into a situation where it still does not know what it wants; nevertheless, a number of relevant new combinations (options) have been developed/chosen, on which the organization can investigate feasibility. This results in new zest, people within the organization see possibilities, and there is a feeling that innovation is appreciated. The expectations will become increasingly tense but the abundance of possibilities makes choosing harder. Searching for combinations of initiatives in order to limit the number of options demands that compromises are made. In this instance, it is all about acquiring experiences and thus ultimately making the 'right' choice. This implies that the organization will need to choose. After all, developing new combinations and testing these in pilots does take up (a lot of) resources (in the shape of saved capital and knowledge). Therefore, at a certain moment it all boils down to choosing.

New combinations

<i>Strategy</i>	Deciding to go for favorable options and deliver evidential value by means of a pilot: Compromise Strategy
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<i>Management</i>	Being able to choose which options are and are not chosen for research, pilots and development. Inspiring management of pilots whilst assisting in these
<i>Culture</i>	Innovation, new combinations, focus and fast learning. Create a basis for change.
<i>Resilience</i>	Increases through development of internal variety
<i>State of mind</i>	Hopeful about the future

Quadrant 4 Entrepreneurship

THE CHOICE WAS MADE: SCALING UP AND IMPROVEMENT IS THE CHALLENGE.

TO THIS PURPOSE, RESISTANCE HAS TO BE OVERCOME, NEW PROCESSES NEED TO BE STREAMLINED AND MARKETS (RE) CONQUERED. RADICAL CHANGE PROCESSES ARE THE RESULT. SAILING THE WILD SEAS DEMANDS HELMSMANSHIP.

In this quadrant, one strives for a desired improvement or new development with much energy and focus. Fast growing/development is the motto: we know what we want, we have a vision and objectives, we are growing fast/are scaling up and are improving the knowledge of cause and effect. This development actually adjusts the existing method for doing things, the old 'business-as-usual' within the company, into a new 'business-as-usual'. In an existing company, for example by scaling up a new product/service possibly in combination with dissimilar knowledge and skills for being able to operate truly differently. Ultimately, this involves the designing of a new business-as-usual, based on new equilibrium within and outside the organization.

Entrepreneurship

<i>Strategy</i>	Allowing chosen options to grow fast and conquer a market position and/or scaling up for replacing existing product/market combinations: Judgmental Strategy
<i>Management</i>	Enterprising and aiming at success and the start of standardization, efficiency
<i>Culture</i>	Learning, homogenizing and standardizing
<i>Resilience</i>	Large, all varieties aimed at the choice are still available
<i>State of mind</i>	Confidence in the present and the future

Reaching a new equilibrium

It is important to acknowledge that the business-as-usual situation thus achieved is not the same as the old one. In this respect, we can join the ecological resilience concept as defined by (Gunderson et al. 2009). Using this term, Gunderson et al. argues that any system can face conditions far away from any equilibrium steady state. In this case the measure of resilience is the magnitude of disturbances that can be absorbed before a system changes its structure by changing the variables and processes that control behavior. The ability to identify multistable states for competing technologies, together with the ability to determine when to make the change to a new, different, business-as-usual situation, determines the level of ecological resilience of an organization. Ecological resilience is in this view the process of finding a balance between being able to overcome minor changes but moving to a new steady state when necessary. This view on resilience is closely related to the theory of the strange attractor of Lorentz (as described in Gleick 1987). However, where in the quadrant model, the lemniscate development process ultimately leads the organization back to the quadrant of equilibrium, this quadrant has shifted

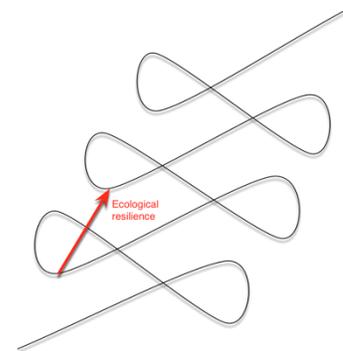


Figure 3 Ecological resilience

in relation to the old equilibrium. The degree of successfully shifting this equilibrium is determined by the ecological resilience (see figure 4); that is to say, an equilibrium within the organization once again being in line with its changing environment.

The role of Information in facilitating this change process

There is no doubt about the importance of information in a modern organization. In this respect we have to make a distinction between information as an initiator for change and information as a facilitator for change. We do focus here on the specific role of facilitation the organization for change. The change itself will in many cases be initiated by information (technology) but we do explicitly not exclude change initiated by other developments.

In the different phases of the above-mentioned cycle the facilitating role information is playing is quite different. Where the left side in the model focuses on exploitation of the strength of the organization, the right side is dealing with exploration. We referred in an earlier paragraph already to the concept of ambidexterity which is relevant in this context.

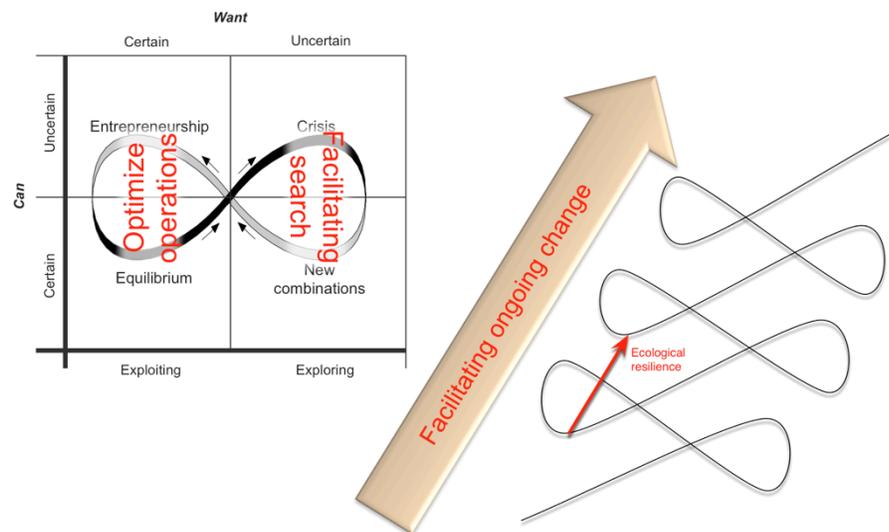


Figure 4 The role of information in a dynamic context

The role of information in the cycle can be identified via three characteristics. We describe them shortly:

1. **Optimize operations** with the role of IT to facilitate the business processes (exploitation mostly based on an evolutionary development). This role is especially important at the left side of the model. Registering, reporting and control are the key issues here. Traditional system development approaches are key here.
2. **Facilitating search** with the role of IT to support creativity, analysis and experimentation (exploration preparing for potential revolutionary change). This role does not make sense in the exploitation phases of the model. Nobody knows yet what the focus in the organization will be. Searching for new combination (not specifically on the field of ICT) is a key facilitating role for information and communication. It will lead to a set of opportunities that can help the organization out of the crisis.
3. **Facilitating ongoing change.** As mentioned above, the adaptive cycle makes clear that the process of change is an ongoing one. It also makes clear that a process will take place to reach a new equilibrium. It means that IS needs to be able to facilitate the cyclical change process in the

long run. Architectural thinking and fostering a flexible IS infrastructure are key issues to allow changes to be absorbed easily.

In the different phases of the model these three roles are of changing importance. Left in the model the first role is key (**optimize operation**). The emphasis in the equilibrium phase is mainly on rationalization and optimization. In the entrepreneurship phase management has to be aware of the **facilitation ongoing change**. The first role has to be strengthened by this facilitation.

Right in the model **facilitating the search** process is key. This role will be initiated by the apparent crisis. By developing the new opportunities (in the new combination phase) management has to take into account the facilitating role IS has to play in offering a flexible infrastructure. This approach is necessary because it is not yet clear how beneficial the different opportunities will prove to be.

In a actual organizational setting all three the roles have their strength. All three roles will have to be covered. In the different phases a specific bias towards one of the roles may occur. This requires a changing attention towards the role ICT plays and linked to that a changing BITA position. This approach to the role information systems play in an organizational setting makes also clear that an 'one-size-fits-all' approach to BITA issues doesn't make sense.

It is the role of management to be aware of these roles and the necessity to find a balance between them. This assumes that management should be aware of the phases in the adaptive cycle model and the way how to turn IS into actual practice in the different phases. It is our belief that this is the key issue of BITA in a changing context.

The role of the manager in recognizing the phases

These insights gave rise to the question whether this approach leads to more understand the BITA issue. It assumes that management is able to recognize the different phases and is aware of the development process an organization will go through in the adaptive cycle.

This assumption led to a quantitative yet explorative study focusing on the following aspects:

1. Does management recognize the phase their organization resides in?
2. Are they aware of the logic behind the change process as depicted by the adaptive cycle.
3. Is current management able to oversee the impact of the adaptive cycle of resilience on the BITA issue?

After a thorough literature review on the different aspects of the adaptive cycle (see also www.adaptivecycle.nl), a number of experts was invited to participate in a research meeting organized by the Adaptive Cycle research group. During this meeting we focused on the development of a questionnaire to analyze the afore mentioned research questions. A pilot version of the questionnaire was tested with a limited number of respondents. The results were analyzed and the questionnaire was finalized.

The questionnaire consisted of six statements. Four of these statements were followed by four possible completions of which each represented a phase in the adaptive cycle. For each statement, a total of 15 points had to be distributed among the four completions (constant sum approach). The constant-sum question-type represents the most suitable approach to incorporate this notion into the questionnaire as it permits collection of "ratio" data, meaning that the data is able to express the relative value or importance of the options' (www.surveyanalytics.com).

The statements covered the main dimensions with which we describes the different phases of the adaptive cycle model, namely (1) Culture / climate, (2) Strategy, (3) Management and (4) Innovative capability (as representation of resilience and state of mind). The other two questions served as control questions and were focusing on the complexity of the setting and the learning capabilities in the organization.

The final questionnaire was send to 621 organizations in the Netherlands which form a good representation of the Dutch society. In general the adaptive cycle model was not known by the respondents. Overall, the questionnaire received 86 (14%) valid responses.

Demographic characteristics of questionnaire respondents

The breakdown by sector is shown in table 2, table 3 shows the organizational size of the respondent's organizations and table 4 shows the role the respondents play in their organization. It also shows that a

Type	Quantity
Manufacturing	4
Service	24
Government	26
Other	32

Table 2 Industrial field of respondent

Size	Quantity
1-10	9
11-100	12
101-500	10
501-1.000	9
1001-5000	17
Over 5000	29

Table 3 Organizational size

Role	Quantity
Senior management	30
Middle management	16
Supervisory	9
Non-Management	22
Other	9

Table 4 Position of respondent

majority of the respondents hold a higher management position. This fact impacts the quality of the data positively as it can be assumed that managers who hold higher management positions are actively engaged in the organization-wide decision-making and therefore possess insights that enable them to assess the organizational situation more adequately. Moreover, it is noteworthy that more than 50% of the participants work for organizations that employ a workforce of more than 1.000 employees (table 3).

Results

To determine in which phase a specific organization resides the number of points assigned to a specific statement representing a phase were summed. This position is identified with the color green in the figures and tables below. In this way out of the 86 available responses 39 respondents were identified as being in an equilibrium state, 26 were in a crisis phase, 14 in a new combination phase and 7 in the entrepreneurial state.

Table 5 gives an overview or the results. It should be read as follows. The 39 organizations who are in equilibrium, 43,4% of the points were assigned to that phase. The second highest score is marked in yellow, the third in orange, and finally the fourth in red. Summarizing the row naturally adds up to 100%.

	Equilibrium	Crisis	New Combinations	Entrepreneurship	
Equilibrium (n=39)	43,4% (1)	16,4% (4)	18,0% (3)	22,1% (2)	100%
Crisis (n=26)	13,5% (4)	44,3% (1)	25,3% (2)	17,0% (3)	100%
New Combinations (n=14)	20,7% (3)	22,7% (2)	39,6% (1)	16,9% (4)	100%
Entrepreneurship (n=7)	26,7% (2)	19,0% (3)	18,3% (4)	36,0% (1)	100%

Table 5 The outcome of the survey

It is clear that the Equilibrium and Crisis phases scored highest. These phases appeared to be interpreted more or less as "state"-phases. An organization is in Equilibrium or in Crisis. The other phases, New Combinations and Entrepreneurship were identified as "process"-phases. The organization is *looking* for

new opportunities (NC) or is *implementing* a chosen option. Making this distinction appears to be relevant in interpreting the outcomes.

In table 6 a recognized logic in the distribution of point in the different phases is presented using colors. It appears that the manager in the different phases reason more or less along the same lines of logic. Starting at the residing phase the second is always on the same side (left of right) of the model. The third phase is in all the cases the opposing phase (same row), the last phase finally is the diagonal on the other side of the model.

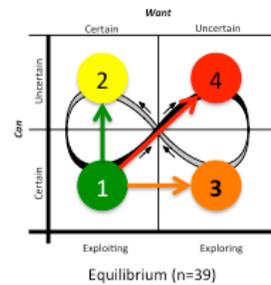
Score	Recognized Quadrant
Highest score (1)	Identified Residing Phase
Second – best (2)	The accompanying phase left or right in the cycle
Middle score (3)	The opposing phase from left to right or visa versa
Lowest score (4)	The diagonal opposing

Table 6 Phase recognition

The above mentioned logic forms an interesting outcome of the research. Below follows a sketch of a possible explanation:

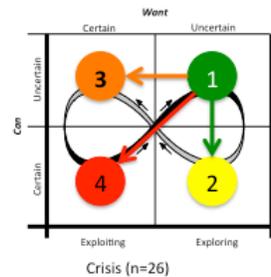
- **The logic in the equilibrium phase.**

When a manager assumes his organization resides in an equilibrium phase, he will in most cases be satisfied about the actual state of the organization. A crisis is more or less unthinkable. At best he recognizes that incremental improvements are necessary which can be implemented in the entrepreneurship phase. That other options are available, is recognized but in the current state of the organization not really relevant.



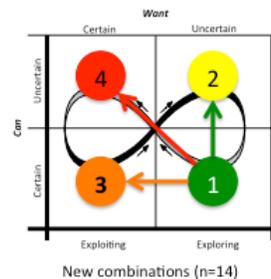
- **The logic in the crisis phase**

A manager who places his organization in a crisis phase is panicking. He doesn't know what to do, where to go etc. He will most probably recognize that initiation of an intensive search process is necessary to identify possible solutions. This will lead him to the New Combination phase which he will recognize. He understands the fact that implementing one of these options may be difficult and he severely doubts whether the organization will ever reach a new equilibrium-state.



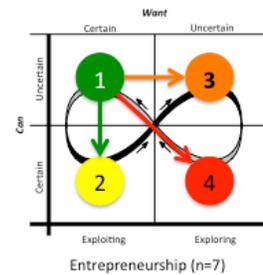
- **The logic in New Combination phase**

Searching for new opportunities is initiated by the notion that a way out of crisis needs to be found. The objective is to find and select a solution. The manager will be aware of the crisis situation that forms the basis for this phase. Once a good opportunity will be recognized the initial response will be to seize the opportunity. The fact that implementing this opportunity requires hard work will not be recognized based in a beatifically believe that finally a solution out of the crisis was found. Based on the belief that the crisis was resolved, the entrepreneurial phase is not necessary and the risk of a failure in that phase will not be recognized.



- **The logic in the entrepreneurial phase**

Once a manager has chosen a solution to lead the organization out of the crisis the focus will be on reaching a new equilibrium. You may expect that the chosen solution is based on the belief that this is the only opportunity with enough potential to reach that new equilibrium. A manager will not recognize that other solutions (identified in the New Combination phase) also are potentially good.



It is clear that managers suffer from blind spots, which make it unlikely that they are able to develop a complete overview of the issues surrounding BITA. Whether this reasoning will stand cannot be proven yet. To elaborate on these findings we are currently working on several case studies in different sectors and are conducting interviews with experts both in general and IT management.

Conclusion

In the first part of our research we started from a concise literature review. The literature on BITA is vast and the fact that several overview articles and annotated bibliographies on this issue are published illustrate that much has been said on this issue. Several arguments were given why BITA isn't solved yet. In line with a.o. Ciborra (1997) it is our believe that the reason for this failure in reaching BITA has to be sought in a lack of attention for dynamic aspects of change.

Our research showed that in every phase of the change process a different balance in BITA is required. A structured approach intending to find *the* alignment between business and IT will thus be unsuccessful and also undesirable. The dynamic context an organization is working in, combined with the delay in time to reach a desired state of BITA, will by definition mean that you are aligning with the past, not the future. Result of traditional BITA undertaking may in many cases be a declining flexibility in the ability to react - or better proact - on future developments. Below we give some conclusions we found regarding the Information/IS issue.

- Due to the changing role of information in the different phases of the model we conclude that BITA is - and should be - a never ending story. It will always require (top) management attention.
- In organizations functioning in a state of equilibrium, in many cases the focus is on cost reduction and improving profits. Preparing for an uncertain future by using an architectural and infrastructural view on the information systems, with the accompanying (high) costs for realizing this infrastructure, appears not to be high on the list of priorities of management. According to the longitudinal research of Luftman et al. managers attention for BITA appears to be focused on cost reduction and efficiency of the BITA relationship.
- A logical conclusion based on our findings may be that an organization should focus on the BITA process towards preparing for uncertain futures (mind that we are speaking of possible futures, plural, because we do not know yet what impact the changes will have). The actual approaches for BITA are mainly focusing on linking the IS to current requirements of the business.

A second major reason for problems in the BITA field is that management isn't fully aware of the different phases in the change process as our data seems to indicate. They appear to have certain blind spots that make them value the impact of the actual changes insufficiently. Based on these findings we may conclude that a changed focus of management in the different phases of the change process is necessary. We conclude that there is reason for severe doubt whether a single manager will have the necessary skills/competencies to excel fully in the various phases of the change process. In this respect we have to be aware that the environment (shareholders, human resources, financial institutions like banks, etc) do expect the manager to behave in the same way that made the organization successful. From that side there is a resistance against change. There are several reasons for that:

- In general a distinction between exploitation and exploration appears to be understood by management in the sense that they understand the state they are in and what to do there. But the change *process* from one side to the other is not really recognized.
- Looking at the distribution of the outcomes in our exploratory research it appears that there is logic in the way they recognize the different phases in the AC model. It shows that managers who have the skills to function in a particular phase appear to have certain blind spots for other phases

in the change process. This makes it plausible that they lack the overview of the change process to guide the organization to a new (temporary) state of BITA.

- If the aforementioned logic holds especially managers working in equilibrium and new combinations do not recognize the problems they are facing. Consequently they are less aware of the problems they face in the upcoming phase.
- The competencies a manager needs to be able to make a good estimation of the role of information in the different phases, are really different in the subsequent phases of the change process.
- Based on our findings we may not expect a manager to be able to build a full overview of the change process.

Preliminary management implications

These findings lead to an indication what behavior of management may be successful in a complex dynamic environment. We also have to explore the vast amount of literature that focuses on creativity, innovation and novelty. This is beyond the scope of this research. We will limit us here to some - and for sure incomplete - suggestions.

A manager who is aware of the dynamics of organizational change will also understand that he is unlikely to foresee an upcoming crisis. The following actions could be considered:

- Pilots, to experiment with new ideas to stimulate divergent thinking and creativity.
- Shareholdings; when an organization is facing a situation where a lack of creativity may threaten the survival of the organization, the market can possibly offer a solution. Participation in new initiatives may have a positive impact on the own organization
- Venture capital activities; These types of activities may play a comparable role as shareholdings.
- Management buy-outs; in many cases, management is hampered in its creativity and out of the box thinking. A management buy-out can take place for those ideas that are not immediately successful for the organization over time. In the long run this development of new ideas can lead to a situation where much profit can be achieved.
- Ancillary positions of management, to enforce management to 'open their eyes' and stimulate them in recognizing different world views.

These activities help to broaden the view on the changing context. It is important to see that these options in many cases will *not* be successful. But failing to do so may lead to a situation that 'the golden opportunity' may be overseen and most probably will not lead to success in the long run .

This leads us to the following observations:

- Management should look for random curiosity and the ability to search for understanding
- In all these activities a member of the dominant coalition must be involved.
- Management development should include the active stimulation of open mindedness.
- Management development should also include a different look on career paths. Management development means that you must have worked in the right side of the model!

The above mentioned approaches were not part of our exploratory research, these findings need to be further elaborated. Key in this respect is the link to divergence and creativity as well as innovative and exploratory thinking. It is an important part of the research field we are initiating and exploring.

Limitations and for further research

Given the exploratory character of this research and the surprising outcomes further research is necessary. Also, a response rate of 86 calls for additional investigation and validation. Therefore we initiated, a new, larger scale, project which will also include international organizations to get a better insight in the broad meaning of the findings.

Next to that we started several case studies to get a more detailed look into actual issues at hand in an organization. The first results in this research indicate that we really have in interesting field of study. We feel that this research can be seen as an initiation of a research field on dynamics, organizations and BITA.

Focus in the upcoming research should be on operationalizing the necessary management actions (with associated competences and skills) and on a further elaboration of the facilitating role of ICT.

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