

# Applying Synergy-4 in Informatics Research

## – Some Reflections

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### Abstract

In this article, we aim to scrutinize the ways Synergy-4 have been applied in informatics research so far and reflect upon the challenges the applying of Synergy-4 might bring along and how to deal with them. We have conducted a literature study in which the applying of Synergy-4 reported on in five different articles has been scrutinized. The main conclusion that can be drawn from the conducted study is that so far, Synergy-4 has not been applied to its full potential. This might be due to some of the lessons that we have learned during this study and when applying Synergy-4. One of these lessons is that the Synergy-4 model is easy to understand with its overlapping spheres, but the perceived simplicity of the model deludes the potential user to overlook the complexity of the model. It might be cumbersome to handle four different spheres and all the possible combinations between two, three or all four of them.

A second lesson learned is that Synergy-4 must be integrated already in the phase when the study is designed. It is not enough to depart from a holistic thinking inexplicitly or explicitly state that Synergy-4 is an illustration of the holistic thinking which is the philosophical base of the research if synergies are not explicitly discussed.

The third lesson learned is that it might be difficult to identify the synergies. Here, we call for some guidelines how to identify and measure the synergies.

**Keywords:** Informatics research, Police investigation, Synergy-4

## 1. INTRODUCTION

Research in informatics – at least in a Swedish context - has from the very beginning identified the intersection of information technology (IT) on the one hand and organizational and social issues of different kinds on the other as something of great importance. The very establishing of informatics (back in the old days labelled administrative data processing) as a subject in Sweden had this



the discussion concerning the relation between the organization and IT, we argue that T in the model represents IT while the C, M and O represent the organization. But as illustrated in the model, they all are interrelated and affect one another.

Even though the model as such and the arguments and ideas constituting the base for it are rather straight forward, according to Holmberg (2001), applying a multi-perspective is very challenging. The aim of this article is to scrutinize the ways Synergy-4 have been applied in informatics research so far and reflect upon the challenges the applying of Synergy-4 might bring along and how to deal with them.

## **2. METHOD**

The method for this article is to scrutinize the different ways – our own and others - Synergy-4 has been applied in informatics related research. To do this, we have conducted a literature study in which five different articles have been scrutinized. The following articles have been included:

1. Factors that improve traceability between information and process over time (Öberg, 2011).
2. Communication and information exchange among SMEs and their local environment (Asproth & Nyström, 2008)
3. Intranet use: a study of five Swedish organizations (Banck & Nyström 2005)
4. A holistic approach to competence development (Sundberg, 2001)
5. Success factors for police investigations in a hybrid environment: The Jämtland police authority case (Borglund, Persson Slumpi & Öberg, submitted)

From article 1-4 the use of synergy-4 will be synthesized and briefly presented in chapter 3, as well as used in the final analysis and discussion in this article. On the other hand, the article 5 will serve as:

- a) In-depth example on how synergy-4 normally has been applied by presenting a case.
- b) Analyze the applied use of synergy-4, aiming to identify shortcomings, and to present suggestions for improvement of how to use synergy-4 in future informatics research.

## **3. EXAMPLES OF WAYS SYNERGY-4 HAS BEEN APPLIED**

Scrutinizing the ways Synergy-4 has been applied in informatics research, one can conclude that on an overarching level, so far it has been applied in line with the original intentions for researching organizations in order to understand and develop them in different ways (Asproth & Nyström, 2008: Banck & Nyström,

2005; Borglund, Persson Slumpi & Öberg, submitted; Sundberg, 2001; Öberg, 2011). Apart from the above, one can also conclude that so far, Synergy-4 has been applied in rather different ways and has been given different importance in the research conducted, and thus it has had different impact on the organizations studied.

One of the ways Synergy-4 has been applied or has had impact on informatics research can be found in Asproth and Nyström (2008). In the research reported on in Asproth and Nyström's article, Synergy-4 is part of the philosophical base of the research, e.g. expressed as a holistic approach. The Synergy-4 model is described to the reader and the relevance of considering all spheres when for example new technology is introduced into an organization is reflected upon. This reflection reappears in the result section, but discussions concerning the synergies between the different spheres in the model are difficult to identify.

A similar approach is found in Sundberg (2001). Again, Synergy-4 can be said to be a part of the philosophical base of the research, perhaps even more pronounced than in Asproth and Nyström. A more explicit use of the model can also be identified, but the focus is more or less on the competence sphere and again, discussions concerning synergies are difficult to identify.

In the two articles referred to above, Synergy-4 was part of the philosophical base but some more in-depth discussions concerning the synergies are difficult to identify. The role Synergy-4 plays is in other words rather modest.

Two examples of when Synergy-4 has been given a more prominent role can be found in Banck and Nyström (2005) and Öberg (2011). In Banck and Nyström (2005), Synergy-4 and the holistic approach is again the point of departure or the philosophical base. However, the Synergy-4 model is applied more as a whole in this research. For example, there are some reflections on the fact that in one of the organizations researched the four spheres were in balance with one another, while in other cases imbalances were identified. However, again, synergies are not discussed as such.

In Öberg (2011), Synergy-4 is also applied as a whole but in a slightly different way than in Banck and Nyström. In Öberg, Synergy-4 is applied as a method for analyzing the empirical material and structuring the presentation of the empirical material. Öberg even suggests some kind of weighting system for the different spheres, which can be viewed as a development of the model and its use. However, as was the case with the earlier research in which Synergy-4 was applied, the synergies between the spheres are not discussed in such an explicit way.

Summarizing the ways Synergy-4 has been applied so far illustrates that it has been used as an indication of the philosophical base, as a map for what to focus on, the relation between the different spheres, and as a way to structure empirical

material. However, so far, any thorough discussions concerning synergies between the spheres are more or less absent. It is obvious that the Synergy-4 model has some strengths and potentials, but there are also some difficulties and challenges. To be able to identify experienced strengths and potentials as well as the difficulties and challenges, we argue that an in-depth analysis of the application of Synergy-4 is required. The base for this in-depth analysis is research communicated in Borglund, Persson Slumpi & Öberg (Submitted) and is presented below.

#### **4. IN-DEPTH ANALYSIS OF THE APPLICATION OF SYNERGY-4**

The organization in focus of the research conducted by Borglund, Persson Slumpi and Öberg is the police authority in Jämtland County in Sweden. The aim with the research as communicated in the article is to identify both success factors and needs of improvement in police work related to a prostitution investigation that became very successful. In Borglund, Persson Slumpi & Öberg (Submitted) it is claimed that Synergy-4 is applied in order to identify the success factors as well as the needs of improvement. It is this application of Synergy-4 that is scrutinized here.

The structure of this section is as follows: in 4.1, the background and the context of the research case, i.e. the police investigation, in which the synergy-4 model was applied, is presented. In 4.1, the research method used to collect the empirical data for this research case is also presented. In 4.2, the collected raw empirical data is presented, followed by a Synergy-4 analysis of the investigation presented in 4.3.

##### **4.1 THE UNDERLYING CONTEXT OF THE RESEARCH CASE**

The police authority in Jämtland County is the smallest regarding to the number of police officers employed (220 police officers). It operates in the west part of mid-Sweden in an area that covers 12% of the total area of Sweden which is populated by only 1.5% of the Swedish population. This small police authority was in charge of what later became the biggest prostitution investigation in Sweden ever. Four police officers in cooperation with the prosecutor succeeded in reporting one "pimp" and 427 buyers of sexual services living all over of Sweden. The achievement of this small group should be compared to the less than 200 men that are reported each year for violating the law against buying of sexual services in Sweden in total (Utredningen om utvärdering av förbudet mot köp av sexuell tjänst, 2010).

The context of the achievement of reporting more than twice as many buyers is that since 1999, it is not illegal to sell sexual services in Sweden, but buying these services are prohibited (6th Chapter, 11th section "Swedish Penal Code," 1962). The

argument for this has been that the women – there are mostly women being prostitutes – often have not chosen to become prostitutes. They have been forced due to different circumstances to sell the only asset they have, their body. Criminalizing the selling of sexual services would hence make the women doubly victimized. However, the Swedish police and the prosecutors have been criticized for being inefficient in identifying, reporting and bringing buyers of sexual services into justice (Utredningen om utvärdering av förbudet mot köp av sexuell tjänst, 2010). Hence, this achievement is astonishing in itself. Our interest in this case was however not triggered by the number of buyers reported. Instead, it was that at a press conference, when the result of the investigation was presented, digital footprints such as text messages (SMS), e-mail, and traces left from activities on Internet were claimed to have played a prominent role in the process of delivering a solid investigation. Even though more traditional methods had been applied in the investigation, such as telephone tapping and traditional surveillance operations, digital footprints were still of great importance. In other words, the traditional focus of informatics as an intersection between organization and IT was what triggered this research in the first place. However, the impact IT had on this investigation needs to be further presented, which is done below.

The police investigation has been investigated by combining a variety of empirical sources like interviews, newspaper articles, broadcasted press conferences; one of the researchers in this study even has experiences as a police officer. This is in line with how Yin (2003) argues that a case study can be conducted. In this particular article, we mainly focus on the empirical material collected through interviews. This is because it is the primarily empirical source, but also, as Walsham (1995) argues, interviews is the best way to access the interpretations of the participants taking part in the event.

Interviews were conducted with several members of the group investigating the crimes. But because the group investigating the crimes was rather small – four police officers and one prosecutor – only three interviews were conducted. Despite the small number of interviews, we argue that a good first understanding of the investigation has been achieved. After all, interviewing three police officers corresponds to interviewing 75% of the police officers engaged in the investigation at the police authority responsible for the investigation. There were other police officers engaged in the investigation at other police authorities as well, but they were not responsible for the investigation.

The three interviews reported on here were the very first ones in this research project; hence, they were very open in character. The aim was to gain a first understanding of the investigation as a whole, hence focusing on methods used, the distribution of roles and work, and the role IT played in the investigation. To

gain this understanding, the following questions were presented to the interviewees:

1. How did it all start (the sex purchase investigation)?
2. How was the investigation conducted?
3. What roles are there in an investigation and how is work distributed between the different roles?
4. Is there some basic methodology to depart from?
5. What are the reasons for the success of the investigation according to your experiences?
6. Why did the police invest so many resources into this investigation?
7. How has information been communicated internally and externally?
8. How has IT been used both in the collection of evidence and to support in the investigation?

All of the interviews were conducted at the 27<sup>th</sup> of September 2010 and they were conducted in public spaces in the police house in Östersund. They were all recorded.

## **4.2 The police investigation in close up**

In large parts, the following in-depth presentation of the case can also be found in Borglund, Persson Slumpi and Öberg (Submitted; 2010).

Even though the police authority of Jämtland County was in charge of the investigation, it was not initiated by this authority. Instead, it was initiated by an analyst at one of the regional intelligence units. The analyst who initiated the investigation was employed in a special project to increase the knowledge about activities related to prostitution in the northern counties in Sweden. As part of this project, one task was to scan the Internet for web pages and web forums at which sexual services more or less openly were offered. During this scan, the analysts noticed that there were a couple of women that seemed to actively work as prostitutes mostly in the mid-Sweden region (Västernorrland County and Jämtland County). The women seemed to be like prostitute nomads, who moved their business around. Through the surveillance, the digital footprints from the women's activities on the Internet could be mapped into a cluster of activities with the centre in Västernorrland County. Through the digital footprints left on the Internet, the intelligence analyst could map patterns of how the girls moved in the north of Sweden, and how they communicated their presence in advance. The police authority in Jämtland was contacted and informed that one of the women planned a trip to Östersund (the largest city in Jämtland), and that she had offered sexual services on her advertisements on the Internet. This information triggered the police authority of Jämtland to initiate a surveillance operation. During this operation, the police managed to identify not only the woman but also a man that

seemed to be controlling her business and who had reserved the hotel room for the woman in which she was supposed to meet the buyers. This way, they could start an official criminal investigation about gross procuring that later resulted in 427 men being reported to have bought sexual services.

One success factor in more or less any criminal investigation also in this one is to have well-documented evidences of the crime that the public prosecutor can use for the court proceedings later. With the identity of the women that visited Östersund identified, the police could continue to follow her as well as her activities on the Internet, and capture her digital footprints. Through this process, they succeeded to get a permit to set up a phone tapping of the "pimp". Through telephone tapping, and Internet surveillance, the police identified another four women controlled by the same "pimp". The "pimp" used Internet but also the teletext (Text TV) as the forum where he advertised the services the five women provided. There exist several sites for this purpose, and the communication and advertisement was done very open. When the police collected the evidence, it was important to document what happened in a chronological order. For example, when there was an advertisement on the Internet, the police needed to take a screen shot of the web page, record it and follow up that information with recordings from the telephone tapping, pictures of persons entering the hotel where one of the five women stayed. The goal was to gather a chain of digital footprints of activities that could act as evidence of what the "pimp" had done and the persons buying sexual services had done. It was extremely important to make sure that this chain of evidence could not be broken and questioned by e.g. an attorney. Until the police had collected as much evidence needed according to the public prosecutor, the police worked like this: **a)** Follow the information put on Internet and teletext, try to see patterns. **b)** Compare this information with telephone tapping, identify patterns. **c)** Carry out real surveillance, document meetings between suspected buyer of sexual service and the women that were suspected to provide the services.

The intelligence analyst that initiated the investigation, together with the police, recorded as many activities possible on the web pages where the five women announced their services, with an aim to collect as much evidence for the investigation as possible to show the extent of the prostitution business. When the public prosecutor had collected enough evidence, she decided that it was time for an arrest. The police arrested the male "pimp" for gross procuring.

Once the "pimp" was arrested, the public prosecutor decided that the police should aim to gather more evidence so that the full extent of the prostitution business could be presented at court and used in the prosecuting of the "pimp". The public prosecutor also decided that the aim was to convict as many buyers of sexual services as possible. The search for evidence went six month back in time.



One important source of digital footprints was the usage of mobile telephone. 16,000 records of SMS or calls between potential buyers and in this case, one of the five women was analyzed during the police investigation. Parallel to this analysis of digital footprints, a more traditional police investigation took place, where involved persons were interviewed. Other digital evidence was also collected, when the police could follow the “pimps” activities on various Internet sites and online auctions, where he bought train tickets for the women. All 427 men that had been reported for buying sexual service at least on one occasion were interviewed and during the interview the collected evidence was presented to them. If a buyer confessed, he was offered to pay the fine without court proceeding.

### **4.3 The Synergy-4 analysis of the police investigation**

The empirical material is claimed to be analyzed by applying Synergy-4 as a lens by Borglund, Persson Slumpi and Öberg (submitted). However, before the analysis, the authors’ view of the different spheres is developed. They define the different spheres as follows:

*“Management, we argue, is the ways the investigation and the group conducting the investigation have been supported by the different levels of management through decisions and actions. This means that it is not one level of management but several. Organization and procedures is the actual organizing and conduct of the investigation. The technology in focus is IT, both as source of digital footprints and as a support in the investigation. Finally, competence is the skills and knowledge the group investigating the crime has or needs to acquire.”* Borglund, Persson Slumpi & Öberg, p. 4, Submitted

After having defined their views of the different spheres, a Synergy-4 analysis structured by the different spheres in model follows. This presentation in large parts corresponds to the one found in Borglund, Persson Slumpi & Öberg (Submitted) and is recaptured here. However, some alterations have been made but only with the aim to improve the presentation and not to change the content.

#### **Technology**

For researchers with a base in informatics, technology is a natural place to depart. In this case, it was also the main reason that we got interested in the case in the first place. In fact, digital footprints generated by different types of IT artefacts were what triggered the whole investigation to start with. Drawing on the deeper introduction of the investigation presented above, IT can be said to play three different roles. Firstly, IT generated digital footprints that could be followed in the investigation. Secondly, IT was used as tool for analyzing the information gathered. Thirdly and finally, IT was used for communication both internally and externally by the group of police officers.

Starting with the digital footprints identified by the analyst, they initially occurred on sex websites and on the teletext of one TV-channel. This was the main communication channel used to reach potential buyers. However, also other types of IT artefacts were used in the communication between the women/"pimp" and the potential buyers. The most comprehensive set of digital footprints originates from communication between the different parties by using mobile phones. All in all 16,000 unique digital footprints - text messages, phone calls, etc. - or so called events were detected that indicated potentially the closing of an agreement for buying sexual services. This set of events conveys information like what different numbers that were engaged in a communication, when this communication took place and where in Sweden the different parties were at that particular point in time when the communication took place. What must be recognized though, is that these 16,000 events were not all the events registered. Some events were excluded because it was not possible to clearly detect who had made the call as the phone was registered on a company and not an individual. Phones registered on 60 to 80 different companies had been used in the communication with the provider of the sexual services, but these were not included in the 16,000 events.

The method for detecting these events was that the police requested lists from the phone companies concerning all communication to and from that particular number. Later on in the investigation, the phones the women were using were confiscated and by scanning what other numbers had also been related to the phones unique IMEI-number and additional numbers could also be detected. The confiscation of phones also gave access to the phonebooks, in which several regulars under nicknames like "Stupid man" or "Likes tits" were identified. Being enrolled into the phonebook strengthened the suspicions towards these men and made it difficult for them to assert that they had only called the wrong number.

Apart from the above mentioned digital footprints, also footprints from transactions on the e-commerce site Tradera<sup>28</sup> were identified. At Tradera everything from computers to travels are offered and in this case it was train tickets to different cities in Sweden that was purchased. Finally, e-mails sent to and from the women were also a potential generator of digital footprints, because in some cases the contact information was a Hotmail account. However, in this particular case, no e-mails were detected and hence used as evidence in the investigation.

The second role IT played was in the police officers' work when analyzing all of the information gathered, but perhaps even more so in creating relations between different information sets. One part of this process was to identify the potential buyers. Some of them were caught by regular surveillance of apartments or hotel

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<sup>28</sup> [www.tradera.se](http://www.tradera.se)

rooms in which the police knew that the sexual service would be purchased. In other cases, the purchasers were identified through the phone number. The police simply used their own registers and telephone number services provided on the web, like Eniro<sup>29</sup>, to identify these men. In the process of linking different information sources, external special software used in police work practice were used. In the process of linking information together, the police used for example information from the phone lists that was manually pasted into Excel sheets. Then a macro was applied that translated the prostitutes and the buyers into icons.

Thirdly, IT played the role as means for communication mostly with managers, the public prosecutor, the court, but also with media. To communicate with the public prosecutor and different managers, e-mail as well as calls and SMS were used. IT was also used in the design of presentations of the results of the investigation. However, one problem in this process was that the lists from different phone companies had different structures. This forced the police to manually reorganize several thousand events so they were presented in the same way.

## **Management**

Turning to the sphere of management, the support from the different levels of management for this investigation was indicated in several different ways. One of the most visible supports for the investigation was from the group leader. Her job has been to manage the investigation and spur the investigation group. But a considerable amount of time has also been spent on promoting the relevance and the importance of the investigation to the superior, and showing the progress the group is making. This has been of great importance because in this case, the group leader has no authority to make decisions concerning resources or what to focus investigations on. The budget responsibility is on a higher level and to get the investigation approved, she describes it as a lobbying process towards the superiors. Part of this lobbying process is to keep the superiors well-informed during the whole process. To do this in the best way possible, the group leader has adapted her communication strategies depending on which superior she communicates with. In some cases, the superior wants a brief summary in an e-mail and in other cases an oral report is what is favoured. The important thing though is that all superiors have the same information.

Turning to management levels higher up in the hierarchy of the organization, managers on these levels have shown their support for the investigation by approving the investigation and assigning resources to it. For some time during the

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<sup>29</sup> [www.eniro.se](http://www.eniro.se)

investigation, the group did not work with anything else than the investigation in focus for this article.

### **Organization and procedures**

The organization of the investigation can best be described as close cooperation between different actors important for the investigation. Firstly, it has been a close collaboration within the group investigating the crimes. Traditionally, there are two different groups working in an investigation. One group is the one that so to say creates the base for the investigation by collecting evidence, identifying perpetrators, etc., and a second group is interrogating perpetrators, interviewing victims and witnesses. In this particular investigation, these two groups more or less worked parallel with one another, at least in the later part of the investigation. Within the investigation group, they also communicated more or less on a daily basis, for example what the most recent developments in the investigation were and what the expected developments were.

The public prosecutor also played an important role and also worked close with the investigation group. The group leader estimates that she has been in contact with the public prosecutor several times a week in person, by phone calls or SMS.

The procedures used are a mix of traditional police investigations and the identification of digital footprints that requires somewhat new approaches. To the traditional procedures we count surveillance, interrogations with suspects, interviewing victims and witnesses. To the new procedures the gathering and analysis of digital traces like websites, e-mail, SMS, etc. can be counted.

### **Competence**

The major competence of the police force of course lies in traditional police work: surveillance operations, interrogating suspects, interviewing victims and witnesses, etc. In this investigation, all these competences and others have come into use. Because this type of crime had not been investigated before by the local police authority in Jämtland, they needed to get prepared by getting up to date concerning methods, etc. This was done by for example contacting the Street prostitution group in Stockholm.

A competence that was crucial for the success was that of communicating with different actors the way they wanted to. This was to a large extent the job of the group leader. In some cases, they wanted an e-mail once every other week; others wanted an oral account of the status of the investigation. Related to this is how to structure the information to get the best result.

Another competence aspect in this case was that throughout the entire police investigation, the police officers with best competence to solve upcoming problems

were assigned to solve the problem. Even in a small group as in this case, not all had the same skills.

In the process, an increased competence concerning the impact IT might have and the lack of proper tools for effectively investigating crimes with this kind of information sources was developed.

## **5. SCRUTINIZING THE SYNERGY-4 ANALYSIS**

The above Synergy-4 analysis could be scrutinized by applying the different approaches identified earlier: philosophical base, a map for what to focus on, and the relation between the different spheres, as a way to structure empirical material. To these approaches, also discussions concerning synergies between the different spheres should be added.

When designing and initiating the above presented research case study, Synergy-4 was not in our immediate attention. Hence, one cannot say that Synergy-4 was a part of our philosophical base, when the design of the research started. But scrutinizing the questions that were formulated for the interviews they could most definitely be mapped to the different spheres of the Synergy-4 model. The questions that were in focus in the interviews were the following:

1. How did it all start (the sex purchase investigation)?
2. How was the investigation conducted?
3. What roles are there in an investigation and how is work distributed between the different roles?
4. Is there some basic methodology to depart from?
5. What are the reasons for the success of the investigation according to your experiences?
6. Why did the police invest considerable resources into this investigation?
7. How has information been communicated internally and externally?
8. How has IT been used both in the collection of evidence and as support in the investigation?

Firstly, in informatics, IT is more or less always in the forefront. In this case it is illustrated by question 8, in which IT is solely in focus. This means that the technology sphere of the Synergy-4 model is addressed.

Turning to the sphere of organization and procedures, it is addressed in questions 2, 3, 4 and 7. In these questions the issues of how the work in the investigation is conducted, what roles could be identified in the investigation and what ways the work is distributed between these roles, if there are some particular work method that the investigation departs from, and the different communication patterns are addressed.

Question 2 and 4 can also, along with question 5, be related to the competence sphere. The competence of the interviewed police officers should be visible in the way they have conducted the investigation and if there was some specific method used. Being able to identify success factors also draws the attention to the competence of the individual police officer.

The management sphere is most explicitly addressed in question 6. The group of police officers investigating the crimes in focus did not have any authority to decide what type of investigations to conduct. This was decided by managers higher up in the organization.

It is really only question 1 that cannot be related to the different spheres. On the other hand, this question is as such very wide and opens up for potential reflections and discussions concerning all the spheres.

The conclusion of this is that the ideas behind Synergy-4 are something that seems to be part of the very core of informatics research. Without intentionally departing from Synergy-4 when we designed the study and formulated the questions, they still seem to embrace the holistic thinking that Synergy-4 is funded upon. Synergy-4 could hence be a natural point of departure for researchers within informatics. However, the questions formulated do not really address the synergies as such which is a clear indication that Synergy-4 was not the point of departure for this study in the first place.

In the research case study presented above, Synergy-4 has also been used as a combination of a map and a way to structure the empirical material. By having the four spheres, the discussions are centred on four different themes. These themes, e.g. the four spheres, are then used as a way of structuring the presentation of the empirical material. There are, however, few if any discussions concerning the relations between the different spheres or concerning any synergies between spheres. This is also in line with the way Synergy-4 was applied in the four other research articles presented in chapter 3.

## **6. LESSONS LEARNED**

After having scrutinized both others and our own application of Synergy-4, we can conclude that there are a lot of lessons to be learned. One of these lessons, which Holmberg (2001) already has indicated, is that applying a multi-perspective is difficult. For example, the Synergy-4 model is easy to understand with its overlapping spheres, but the perceived simplicity of the model deludes the potential user to overlook the complexity of the model. It might be cumbersome to handle four different spheres and all the possible combinations between two, three or all four of them. An indication of this might be that we so far we have not seen a really good attempt to discuss synergies between the different spheres in the Synergy-4 model.

A second lesson we have learned is that Synergy-4 must be integrated already in the phase when the study is designed. It is not enough to depart from a holistic thinking inexplicitly or explicitly state that Synergy-4 is an illustration of the holistic thinking which is the philosophical base of the research if synergies are not explicitly discussed. Hence, in order to apply Synergy-4, research should be designed to explicitly try to identify these synergies.

The third lesson learned is that it might generally be difficult to identify the synergies. Here, we call for some guidelines how to identify and measure the synergies. So far, most of the research in which Synergy-4 has been applied has been qualitative. Perhaps a quantitative approach would be more suitable. In either case, a development of guidelines for ways to approach the synergies is welcome.

We see great potential in the Synergy-4 model, but its application must be further developed so that the complexity of the model is recognized from the very beginning, but also that the complexity is dealt with by different guidelines.

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